

# JONES GAP

## STATE PARK

Mountain Bridge Wilderness Area Headquarters  
Caesars Head State Park  
8155 Geer Highway, Cleveland, SC 29635  
(864) 836-6115



### Directions

Jones Gap State Park is located northwest of Greenville, South Carolina off U.S. Highway 276. From Greenville take Highway 276 north to Cleveland. Take River Falls Road; the road ends in the park.

Park personnel will meet you at the parking lot entrance. Please keep all students on the bus until further instructions are given.

### Facilities

The Environmental Learning Center for the Mountain Bridge Wilderness Area is located at Jones Gap State Park. The learning center includes a large classroom/meeting room and a separate laboratory.

Restroom facilities and water fountain are located between the parking area and the Environmental Learning Center.

Picnic tables are available in the park for students to have lunch or enjoy a snack.

The Mountain Bridge Wilderness Area is a Project Green area. As part of "Leave No Trace", all park visitors are asked to pack out whatever they bring in. Visiting schools are asked to bring trash bags to take back all of the trash produced from lunch and snacks.

Option: To allow students to participate in a real "Leave No Trace" experience, have students pack their lunches in their backpacks (book bags) and carry their own lunch and their own trash out!

### Reservations and Program Information

For reservations, contact:

Tim Lee

Park Interpreter

Phone: (864) 836-6115

Fax: (864) 836-3081

[tlee@scprt.com](mailto:tlee@scprt.com)

### Program Info:

Program offered September - mid November and March - May

1 - 25 students.....\$20

26 - 40 students.....\$40

41 - 60 students.....\$60

### What to Bring

#### Students:

- rain gear (raincoat, pants, etc.)
- one pair dry socks
- change of dry clothes
- jacket

Jones Gap



Teachers:

- first aid kit
- name tags
- trash bags for garbage

**Program Description**

The Mountain Bridge Wilderness Area contains more than 10,000 acres in northeastern South Carolina. This area of the Blue Ridge Escarpment ends in an abrupt drop of 2,000 feet to the foothills below, where the state’s Piedmont Region begins. This escarpment creates spectacular waterfalls, and provides a protective environment for rare and endangered plant and animal species.

The Middle Saluda River provides a habitat for a diversity of cold-water organisms including native brook trout, salamanders, crayfish and other cold-water animals. Students discover how these organisms interact as they explore the river, turning over rocks in their study of a cold-water habitat.

Students also hike and learn about different plant and animal species of the forest. Through hands-on activities, students learn how interactions among these organisms define a mountain forest community.

**Goals**

Foster an understanding and appreciation of the natural resources found in the mountains of South Carolina.

Make connections between the natural world and themselves.

Encourage creative thinking using a problem-solving approach.

Encourage stewardship of South Carolina’s natural resources.

**Typical Discover Carolina Program Schedule**

9:30 AM

Arrival at park (unload lunches and use the rest rooms)

10:00 AM

Introduction

10:30 AM – 12:00 Noon

Morning Classes

12:00 Noon – 12:30 PM

Lunch

12:30 PM – 2:00 PM

Afternoon Classes

2:00 PM

Depart

**Discover Carolina Checklist -- Things to Consider Before Your Visit**

Prior to Visit:

- \_\_\_ Send out chaperone agreements
- \_\_\_ Complete pre-visit site activities
- \_\_\_ Create student name tags
- \_\_\_ Collect signed chaperone agreements
- \_\_\_ Confirm bus
- \_\_\_ Discuss park etiquette and safety
- \_\_\_ Contact interpreter if you have any special needs

Day of Visit:

- \_\_\_ First aid kit
- \_\_\_ Contained lunches
- \_\_\_ Name tags
- \_\_\_ Water bottles
- \_\_\_ Ample # of chaperones
- \_\_\_ Students are dressed for the weather
- \_\_\_ Evaluation needs



# Jones Gap State Park: *Forest Ecology Pre-Site*

*Content Area:*  
Science

*Grade Level:*  
4

*Time to Complete:*  
1 hour

*Title of Program:*  
Layers of the Forest

## South Carolina State Standards Addressed

### I.A.1.a

Use the senses and simple tools to gather information about objects or events such as size, shape, color, texture, sound, position and change (qualitative observations).

### I.A.2.a

Compare, sort and group concrete objects according to two attributes.

### I.A.4.a

Use drawings, tables, graphs, written and oral language to describe objects and explain ideas and actions.

### I.A.5.a

Explain or interpret an observation based on data and prior knowledge.

## Program Description

Students will label the layers of the forest and list organisms in the layer they are usually found in. Inferences as to why organisms are found in different layers will also be written.

## Focus Questions For Students

Are all plants and animals found in the same layer of the forest?

How many layers are there in most forests?

What are some of the plants and animals found in each layer?

Why do plants and animals live in a certain layer of the forest?

## Culminating Assessment

Students will label the layers of the forest.

Students will place animals in appropriate layer.

## Material/Equipment/Resources

- Forest Ecology Worksheet: <http://www.discovercarolina.com/html/s05nature05b01a.html>
- Video: *Naturescene* (SCETV) videotape: "Jones Gap"

## Teacher Preparation

Read background information and be prepared to introduce layers of the forest and discuss possible reasons for why plants and animals are located in certain areas.

## Background Information

A cove forest is an ecosystem which has a high degree of plant and animal diversity. These are particularly evident in the Blue Ridge region of South Carolina, but also occur with a lesser degree of diversity in the Piedmont region. The organisms making up the community of a cove forest are divided into different layers. Each layer of the forest contains forms of life that are adapted for that particular layer. Plants and animals may be classified according to the



forest layer in which they live. Those that live in the highest layer of the forest are the canopy species and include the tallest trees in the forest. The primary canopy species are the American beech and tulip poplar. Plants and animals that live in the area just below the canopy are known as understory species, such as flowering dogwoods and redbuds. Shrub-layer species consist of plants with woody stems and the animals which live in them. Mountain laurel, rhododendron and sweet shrub are examples of shrub-layer plants. Soft, non-woody stemmed plants and the animals found close to the ground are herb-layer species. Examples are ferns, mayapple and trillium species. The lowest layer in the forest is the forest floor.

Obtain a copy of video: *Naturescene* (SCETV) videotape: "Jones Gap"

Make copies of Forest Ecology Worksheet:  
<http://www.discovercarolina.com/html/s05nature05b01a.html>

### Procedures

Students will be given copies of the Forest Ecology Worksheet:  
(<http://www.discovercarolina.com/html/s05nature05b01a.html>)

Students will watch the video, looking and listening for plants found in a mountain cove forest, and record them in the appropriate forest layer.

Students will write possible explanations why plants and animals are found in certain layers in the forest. Examples are birds in understory and canopy layer as they are adapted for flight.

### Teacher Resources

Books For Teachers:

[The Book of Forest and Thicket;](#)  
John Eastman  
[Audubon Nature Guides: Eastern Forests](#)

Activity Guides:

Project Wild  
Project Learning Tree

Children's Books:

[One Small Square: Woods;](#) Donald M. Silver  
[How The Forest Grew;](#) William Jaspersohn

Web Sites:

[http://newmedia.scetv.org/nature scene/](http://newmedia.scetv.org/nature%20scene/)

<http://cricket.biol.sc.edu/herb>

<http://www.fw.vt.edu/dendrology/syllabus>

<http://www.treeguide.com/treeguide/index.htm>

For additional sites use the following "search" words:

eastern forest  
dendrology  
forest habitat  
forest animals  
forest ecosystems





# Vocabulary List



**Adaptation:** An inherited characteristic or behavior that helps an organism survive in its environment.

**Canopy:** The highest layer in the forest, made up of the tall trees.

**Deciduous:** Plants that lose all their leaves and are not green all year.

**Decomposer:** Organisms that break down living material (plants and animals) and recycle their nutrients.

**Diversity:** The variety of species present in an ecosystem.



**Ecology:** The study of relationships between living organisms and their environment.

**Environment:** The external conditions and influences affecting living organisms.

**Evergreen:** Plants that don't lose all their leaves and stay green all year long.

**Forest:** A stand of trees along with many other types of plants over a large area that supports other life forms.

**Herb:** Plants with soft, non-woody stems, like wildflowers and ferns.

**Herb Layer:** The lowest layer of forest, made up of herbs.



**Invertebrate:** An animal without a backbone.





# Vocabulary List



Interdependence: Dependent on one another.

Shrub Layer: The layer of forest made up of low, woody plants.

Species: A population of related individuals that resemble one another and that are able to breed among themselves.

Understory: The layer of forest made up of shorter trees.



# Jones Gap State Park: *Forest Ecology On-Site*

*Content Area:*  
Science

*Grade Level:*  
4

*Time to Complete:*  
1.5 hours

*Title of Program:*  
Forest Ecology

## South Carolina State Standards Addressed

(R) I.A.1.a - Use the senses and simple tools to gather information about objects or events such as size, shape, color, texture, sound, position and change (qualitative observations).

(R) I.A.2.a - Compare, sort and group concrete objects according to two attributes.

(R) I.A.4.a - Use drawings, tables, graphs, written and oral language to describe objects and explain ideas and actions.

(R) I.A.6.a - Use prior knowledge and observations to identify and explain in advance what will happen.

(T) II.A.1.a - Identify the characteristics of different environments, such as forests, wetlands, grasslands, deserts, and in polar, temperate and tropical regions.

(T) II.A.1.b - Describe the diversity of life forms (vertebrate and invertebrate animals and plants) supported by each environment.

(T) II.A.1.c - Investigate the relationship between the basic needs of different organisms and whether or not a particular environment meets those needs.

(T) II.A.2.b - Analyze specific behaviors influenced by external cues in the environment (e.g., temperature, light and precipitation).

(T) II.A.3.a - Identify and describe characteristics and behaviors that are inherited (e.g., color of flowers and animal instincts).

(T) II.A.3.c - Distinguish major groups of organisms based on significant characteristics (e.g., body covering, number of legs, body parts and type of skeleton).

## Program Description

Students will hike along one of the trails in the Mountain Bridge Wilderness Area and record plants, animals and observations about the five layers of the forest. Natural processes such as decomposition and erosion will be observed and discussed.

## Focus Questions For Students

What is a forest?

What types of plants and animals would you expect to live in the forest?

Are all plants and animals found at the same level (layer) in the forest?

What are the main requirements for a mountain cove forest habitat?

How are plants and animals adapted for life in the forest?

Why are forests important in nature?

Jones Gap: *On-Site*



## Culminating Assessment

Post-visit activities

## Material/Equipment/Resources

At Jones Gap State Park:

- Forest Ecology Worksheet

At school:

- Pre-visit activities

## Teacher Preparation

Call for reservation.

Read background information and be prepared to discuss ecology of a mountain cove forest.

Complete pre-visit procedures.

Complete post-visit activities.

## Background Information

A mountain cove forest is an ecosystem that has a high degree of plant and animal diversity. These are particularly evident in the Blue Ridge region of South Carolina, but will also occur with a lesser degree of diversity in the Piedmont region. The biodiversity found in these areas is the result of temperature and moisture condition, soil type, and an abundant supply of nutrients provided by decomposing plant matter. The organisms making up the community of a cove forest also benefit from the protection provided by the cove from the wind and temperature extremes of weather. South-facing coves are particularly sheltered from cold air masses coming from the north during winter.

The plant community of a cove forest is made up of layers. This stratification allows a variety of plants and animals to utilize sunlight and space efficiently. The tallest trees make up the canopy layer. The primary canopy trees are the American beech and tuliptree (tulip poplar). Shade-tolerant trees of shorter height make up the understory layer. Flowering dogwood and horn-

beam are examples of the understory layer. Shrubs are also abundant in these forests. Sweet shrub, dog-hobble, and a number of rhododendrons are examples of the shrub layer. The herbaceous and fern layer is the richest in diversity with many species competing for light on the forest floor. Examples are mayapple, yellowroot, jack-in-the-pulpit, New York fern, and maidenhair fern. Many of the herbaceous plants take advantage of full sun before the deciduous trees of the canopy and understory leaf out and bloom in the early spring. The obvious richness of the canopy, understory, shrub, and herbaceous layers of the cove forest is the best field mark for this forest.

Cove forests also provide habitat for a diversity of animals. A unique feature to forests of the Southern Appalachians is the diversity of salamanders, with 27 species and many more subspecies representing the greatest diversity of salamanders in North America. Black bears, white-tailed deer, raccoons and skunks are examples of mammals. Bird species are also found in cove forests, including wild turkeys, owls, hawks, woodpeckers, and hundreds of songbirds that nest in the forest.

## Procedures

1. At trailhead, pause to give students rules and make reference to what might be seen on the hike. Remind them that a forest is much more than trees (other plants, fungus, animals, etc.)
2. Choose a location to stop and have students sit a short distance off the trail. Ask students to make observations about the forest floor.
3. Each student will take a soil sample and describe what he or she sees in the soil, such as if the soil is wet or dry and the color and smell of the sample. Ask students if they know how soil is made in the forest. Discuss with the students the role of decom-



posers in a forest ecosystem (the “FBI”: Fungus, Bacteria and Insects).

4. Use the same area to have the students observe the herb layer. Ask them to draw and describe the plants that are found in this area of the forest.

5. Further along the trail, ask students to record observations of the understory layer of the forest. Point out key species, such as dogwood or sourwood trees.

6. Finally, choose a location with a good view of the highest area of the forest canopy. Ask students to make observations about species of trees and animals that are observed or discussed.

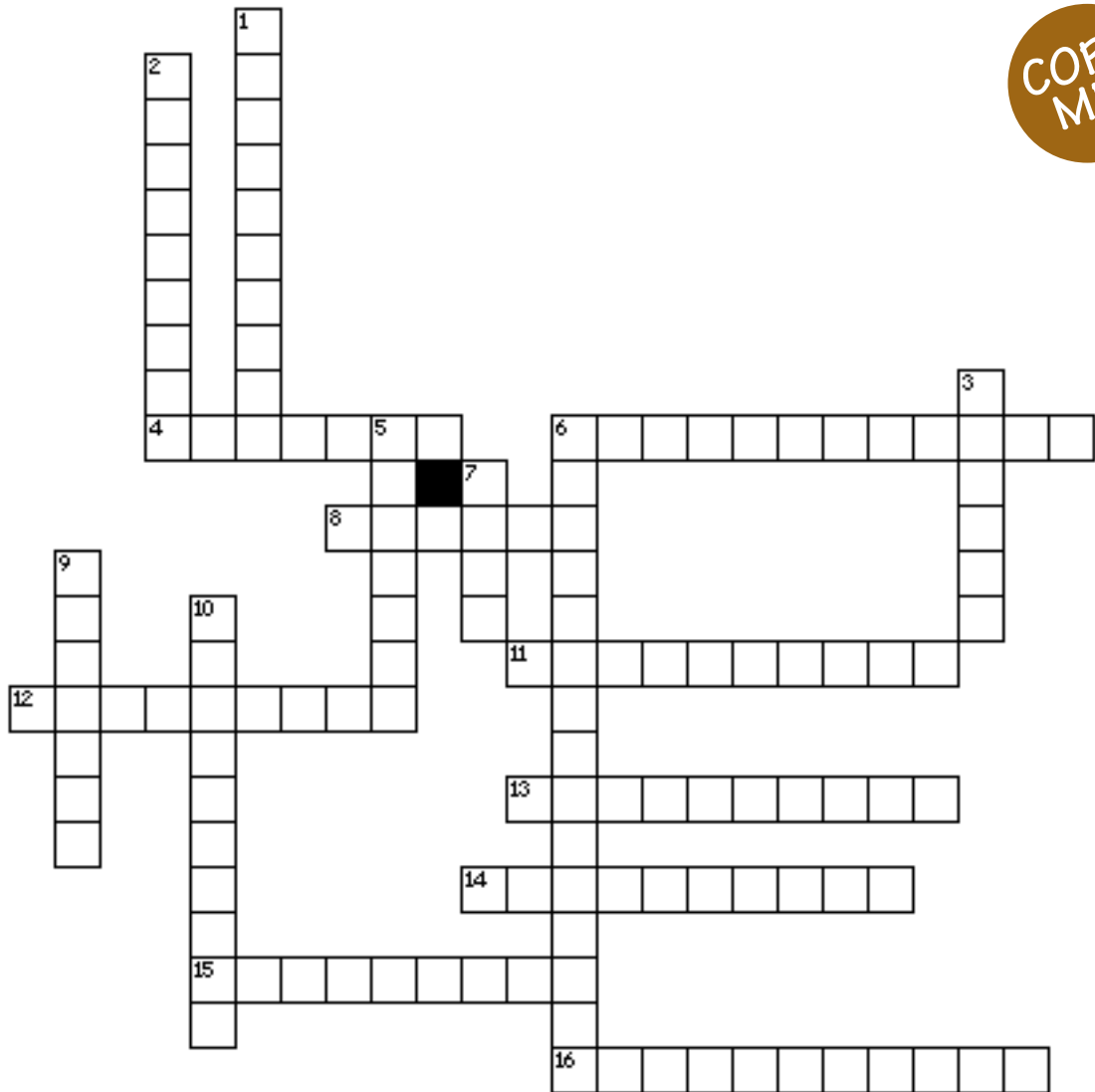
Jones Gap: *On-Site*



# Forest Ecology Crossword



Jones Gap: On-Site



## Across

4. A population of related individuals that resemble one another and that are able to breed among themselves.
6. An animal without a backbone.
8. A stand of trees along with many other plants over a large area that supports other forms of life.
11. An inherited characteristic that helps an organism to survive in its environment.
12. The variety of species present in an ecosystem.
13. Organisms that break down living material (plants and animals) and recycle their nutrients.
14. The layer of forest made up of shorter trees.
15. Plants that don't lose all their leaves at once and stay green all year.
16. The external conditions and influences affecting living organisms.

## Down

1. An animal with a backbone.
2. Plants that lose all their leaves at once and are not green all year.
3. The highest layer in the forest made up of the tallest trees.
5. The study of relationships between living organisms and their environment.
6. Dependent one upon the other.
7. Plants with soft, non-woody stems like wildflowers and ferns.
9. The place where an organism lives.
10. The layer of forest made up low, woody plants.



# Forest Ecology Crossword Answer Key

## Across

4. A population of related individuals that resemble one another and that are able to breed among themselves. *species*

6. An animal without a backbone. *invertebrate*

8. A stand of trees along with many other plants over a large area that supports other forms of life. *forest*

11. An inherited characteristic that helps an organism to survive in its environment. *adaptation*

12. The variety of species present in an ecosystem. *diversity*

13. Organisms that break down living material (plants and animals) and recycle their nutrients. *decomposer*

14. The layer of forest made up of shorter trees. *understory*

15. Plants that don't lose all their leaves at once and stay green all year. *evergreen*

16. The external conditions and influences affecting living organisms. *environment*

## Down

1. An animal with a backbone. *vertebrate*

2. Plants that lose all their leaves at once and are not green all year. *deciduous*

3. The highest layer in the forest made up of the tallest trees. *canopy*

5. The study of relationships between living organisms and their environment. *ecology*

6. Dependent one upon the other. *interdependence*

7. Plants with soft, non-woody stems like wildflowers and ferns. *herb*

9. The place where an organism lives. *habitat*

10. The layer of forest made up low, woody plants. *shrub layer*

Jones Gap: On-Site

