

JONES GAP

STATE PARK

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



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!

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

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

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

Reservations and Program Information

For reservations, contact:

Tim Lee

Park Interpreter

Phone: (864) 836-6115

Fax: (864) 836-3081

tlee@scprt.com

Program Info:

Program offered September - mid November and March - May

1 - 25 students.....\$40

26 - 40 students.....\$80

41 - 60 students.....\$120

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 north-western 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:
6

Time to Complete:
1 hour

Title of Program:
Trees of The Mountain Bridge

South Carolina State Standards Addressed

6-1.3 – Classify organisms, objects and materials according to their physical characteristics by using a dichotomous key.

Program Description

Students will classify trees of the mountains of South Carolina using a dichotomous key.

Focus Questions For Students

1. What is a dichotomous key and how do we use them?
2. What kingdom do trees belong to?
3. Why are certain species of trees and other living organisms that live in South Carolina found only in our mountains?

Culminating Assessment

Students will identify and classify trees based on leaf shape and structure using a dichotomous key.

Material/Equipment/Resources

- [Trees of The Mountain Bridge Key](#)
- Leaf Collection

Teacher Preparation

1. Read background information and be prepared to introduce students to dichotomous keys and how they are used to classify objects.
2. Set up leaf collections (provided with kit).
3. Make a copy for each group of Trees of The Mountain Bridge Wilderness Area.

Background Information

Dichotomous keys are very effective tools used in the identification and classification of objects. All keys work the same way, so once you can use one type you can use them all! The basic concept is based on yes and no questions.

Procedures

1. Introduce or review with students how scientist use dichotomous keys to identify and classify objects (eg. plants, animals, fungus, rocks, etc.)
2. Distribute keys and leaf collections to each group of students.
3. Practice using the key with the entire class for one or two of the leaves.
4. Students will identify and classify the remaining leaves in the collection.



Species List of Forest Layers Activity

Teacher's Key



Jones Gap: Pre-Site

Canopy and Understory Species:

White Oak
Carolina Hemlock
Northern Red Oak
Hickory
Tulip Poplar
Sweet Gum
Black Locust
Striped Maple
Sycamore
Eastern Hemlock
American Beech
White Pine
Chestnut Oak
Fraser Magnolia
Red Maple

Shrub Layer Species:

Mountain Laurel
Rhododendron minus
Rhododendron maximum
Maple-leafed Viburnum

Herb Layer Species:

Snake Root
Goldenrod
Hydrangea
Kudzu
Beech Drops
Christmas Fern

Animals:

Web Worms
Weaver Spider
Luna moth Caterpillar
Twig Girdler Beetle
Leaf Miner



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

Content Area:

Science

Grade Level:

6

Time to Complete:

1 hour

Title of Program:

Layers of the Forest

South Carolina State Standards Addressed

6-1.2 – Differentiate between observations and inference during analysis and interpretation of data.

6-2.8 – Explain how plants respond to external stimuli (including dormancy and the forms of tropism known as phototropism, gravitropism, hydrotropism and thigmotropism).

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

1. Are all plants and animals found in the same layer of the forest?
2. How many layers are there in most forests?
3. What are some of the plants and animals found in each layer?
4. 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 plants and animals in appropriate layer.

Material/Equipment/Resources

- [Forest Layer Worksheet](#)
- Video (Naturescene, SC videotape: "Jones Gap")

Teacher Preparation

1. 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.
2. Obtain a copy of video.
3. Make copies of Forest Layers worksheet.

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 plant 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*.

Procedures

1. Students will be given copies of the Forest Layers worksheet.
2. Students will watch the video, looking and listening for plants found in a mountain cove forest, and record them in the appropriate forest layer.
3. 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.



Vocabulary List: Forest Ecology



Adaptation - An inherited characteristic or behavior that helps an organism survive in their 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 life 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.

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.

Vertebrate - An animal with a backbone.

Jones Gap: Pre-Site



Forest Ecology References



Informational Books For Teachers

[Ecology of Eastern Forest: Peterson Field Guides](#); Kircher/Morrison

[Audubon Nature Guides: Eastern Forests](#)

[The Book of Forest and Thicket](#); John Eastman

Activity Guides

1. Project Wild
2. Project Learning Tree
 - Name That Tree: Activity 68 (Tree Identification)
 - Tree Factory: Activity 63 (tree parts and their functions)
3. Aquatic Wild
 - Riparian Retreat

Children's Books

[One Small Square: Woods](#); Donald M. Silver

[How The Forest Grew](#); William Jaspersohn

Websites (May 2010)

[http://newmedia.scetv.org/nature scene/](http://newmedia.scetv.org/nature%20scene/)
<http://cricket.biol.sc.edu/herb>
<http://www.state.sc.us/forest/edupub.htm>

For additional sites use the following "search" words: eastern forest, dendrology, forest habitat, forest animals, and forest ecosystems.



Species List of Forest Layers Activity

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White Oak
Carolina Hemlock
Northern Red Oak
Hickory
Tulip Poplar
Sweet Gum
Black Locust
Striped Maple
Sycamore
Eastern Hemlock
American Beech
White Pine
Chestnut Oak
Frasier Magnolia
Red Maple

Animals:

Web Worms
Weaver Spider
Luna moth Caterpillar
Twig Girdler Beetle
Leaf Miner

Shrub Layer Species:

Mountain Laurel
Rhododendron minus
Rhododendron maximum
Maple-leafed Viburnum

Herb Layer Species:

Snake Root
Goldenrod
Hydrangea
Kudzu
Beech Drops
Christmas Fern

Jones Gap: Pre-Site



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

Jones Gap: *On-Site*

Content Area:
Science

Grade Level:
6

Time to Complete:
1.5 hours

Title of Program:
Forest Ecology

South Carolina State Standards Addressed

6-1.3 – Classify organisms, objects and materials according to their physical characteristics by using a dichotomous key.

6-2.4– Summarize the basic functions of the structures of a flowering plant for defense, survival and reproduction.

6-2.8 – Explain how plants respond to external stimuli (including dormancy and the forms of tropism known as phototropism, gravitropism, hydrotropism and thigmotropism.

Program Description

Students will hike along one of the trails in the Mountain Bridge Wilderness Area, identify and record plants, fungus, 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

1. What is a forest?

2. What types of plants, fungus and animals would you expect to live in the forest?
3. How are plants, fungus and animals identified?
4. Are all plants, fungus and animals found at the same level (layer) in the forest?
5. What are the structural differences between flowering and non-flowering plant and how they reproduce?

Culminating Assessment

Post-visit activities

Material/Equipment/Resources

At Jones Gap State Park:

- Forest Ecology Worksheet

At school:

- Pre-visit activities

Teacher Preparation

1. Call for reservation.
2. Read background information and be prepared to discuss ecology of a mountain cove forest.
3. Complete Pre-visit procedures.
4. 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 to 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 Hornbeam 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 Bear, White-tailed Deer, raccoons and skunks are examples of mammals. Several 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. Discuss with students the amount of light reaching the forest floor and how the plants would respond to this external stimuli.
3. Choose an area to have the students observe the herb layer. Ask them to identify two or three plants using a dichotomous key. Compare and contrast flowering and non-flowering plants and how each strategy is used for reproduction.
4. Further along the trail, ask students to record observations of the understory layer of the forest and classify key species, such as, Dogwood or Sourwood trees using a dichotomous key.
5. 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.

