

# COVE HARDWOOD WILDFLOWERS

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**Theme:** Wildflower Identification

**Grade Level:** Kindergarten

**Best Time to Plan Trip:** Spring (mid to late April is best)

## UNIT RATIONALE

Great Smoky Mountains National Park is home to hundreds of species of wildflowers, making it one of the most diverse locations in the Eastern United States. Every year in April, thousands of visitors converge on the park to attend the annual spring wildflower pilgrimage. This is also an opportunity for students to experience local flora through their senses. The Cove Hardwood Nature Trail is an excellent place to introduce students to Southern Appalachian wildflowers. This 3/4 mile loop trail starts in second growth forest and reaches a primeval forest. To complete the entire trail, a full hour is needed. For the purposes of this teacher-led trip, we suggest completing only a portion of it, then returning to the beginning by back tracking. The variety of wildflowers combined with convenient parking and facilities make this location the perfect spot for students to learn about the unique plants of the Smokies.

## STATE EDUCATION STANDARDS

Tennessee:

### Science

Embedded Inquiry

- Observe the world of familiar objects using the senses and tools (GLE 0007.Inq.1)
- Recognize that many things are made up of parts (GLE 0007.1.1)

Interdependence

- Recognize that some things are living and that some things are not (GLE 0007.2.1)

Flow of Matter and Energy

- Recognize that living things require water, food and air (GLE 0007.3.1)

Heredity

- Observe how plants and animals change as they grow (GLE 0007.4.1)
- Observe that offspring resemble their parents (GLE 0007.4.2)

Biodiversity and Change

- Compare the basic features of plants and animals (GLE 0007.5.1)

The Earth

- Identify non-living materials found on the surface of the earth

### English

Develop critical listening skills essential for comprehension, problem solving and task completion (GLE 0001.2.1)

Develop critical speaking skills essential for effective communication (GLE 0001.2.2)

//2009 standards//

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## STATE EDUCATION STANDARDS

North Carolina

### Science

Competency Goal 3: The learner will make observations and build an understanding of the properties of common objects.

3.03 Describe how objects look, feel, smell, taste, and sound using their own senses.

3.04 Observe that objects can be described and sorted by their properties.

Competency Goal 4: The learner will use appropriate tools and measurements to increase their ability to describe their world.

4.01 Describe how tools can be used to make comparisons.

//2004 standards//

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# PLANNING A SUCCESSFUL TRIP TO COVE HARDWOOD WILDFLOWERS

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## SCHEDULE FOR A DAY OF ACTIVITIES IN GREAT SMOKY MOUNTAINS NATIONAL PARK

Morning: Arrive at Cove Hardwood Nature Trail

20 minute large group introduction

Two 40 minute stations:

Station 1. Flower Facts/ Scavenger Hunt

Station 2. Flower Find

Stay for picnic lunch or return to school

•Safety is of the utmost importance, especially in a National Park. Be sure to read the safety information provided on the following page. You may wish to take the page with you on your trip or send it to your chaperones prior to the on-site experience.

## Planning a Successful Trip

•The Cove Hardwood Nature Trail is located 15 minutes from downtown Gatlinburg, TN. To reach the parking area, travel 5 miles from the Park entrance in Gatlinburg to the Chimneys Picnic area on Highway 441 south. Turn right into the picnic area and look for the large parking area on the right, located between the rest rooms and the Cove Hardwood Nature Trail.

•There is no cost to use this site. Parking is limited, so an early arrival is suggested. Occasionally, other school groups will be at this location for an educational experience. Contact the National Park at 865-436-1713 to see if any such groups have notified park rangers.

•Arrange to have a teacher or a parent volunteer to lead each of the three activities. Additional adults will be needed to work with sub sets of students and to follow the end of the group on the nature trail.

# COVE HARDWOOD WILDFLOWERS SAFETY CONSIDERATIONS AND OTHER IMPORTANT INFORMATION

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## •Park Rules and Regulations

Great Smoky Mountains National Park is a federally protected public use area. Certain activities are prohibited by visitors. Be sure to read the rules and regulations of the National Park found in the appendix of this lesson. For further information or questions, you may contact the National Park at 865-436-1713. Please use common sense and appropriate planning whenever you participate in outdoor activities.

## •Dressing for the Weather

Please remind your students to wear appropriate footwear and clothing for an extended outdoor program. Short pants, flip flops, or sandals are not recommended. Temperatures in the mountains can be 10-15 degrees colder than at your school. You may wish to alter portions of the program should inclement weather appear. Appendix B, found at the end of this lesson plan, may be sent home with students as a reminder.

## •Restrooms and Water

There are seasonal rest rooms and water fountains at the Chimneys Picnic Area. Never drink untreated water from a stream or spring source.

## •Packing Lunches

You may eat lunches at the picnic tables of Chimneys Picnic Area (suggested) or any other area deemed safe by the teacher. For ease of planning and for safety, students should NOT carry food with them on the trail (water bottles are acceptable). We suggest lunches be packed in a large container to be kept on the bus and distributed at an appropriate location.

## •Group Size

The site can accommodate any size group, but for the sake of safety and logistics and bus parking, it is recommended for no more than one bus load of

students with the appropriate number of adults and chaperones.

## •Cell Phones and Emergency Contacts

At this location, cell phones are not always reliable. Be sure to stick to your agenda. If an unexpected problem occurs, a phone is available at Sugarlands Visitor Center and cell phones will pick up reception again in the downtown Gatlinburg area. In case of emergency call 911. For non-emergencies, call Park Rangers at 865-436-1294 or contact a park employee.

## •Special Considerations

Ask for assistance from parents and volunteers who have may have a special interest in wildflowers. Many people are amateur botanists. When conducting the on-site program, you might choose not to walk the entire trail because it will take more than one hour. Chaperones should be physically able to walk this moderately strenuous trail.

## •Poison Ivy

Please be aware of the presence of Poison Ivy throughout the park, particularly in the spring, summer and fall. Poison ivy is a three leaved plant which can grow on the ground as well as on “hairy” vines up trees. To avoid chances of an allergic reaction, stay on trails and avoid direct contact with vegetation. If contact occurs or is a concern, wash affected parts in cold soapy water immediately.

# PRE-TEST

Pre Score: \_\_\_\_\_

Post Score: \_\_\_\_\_

Name \_\_\_\_\_

## Wildflowers Kindergarten

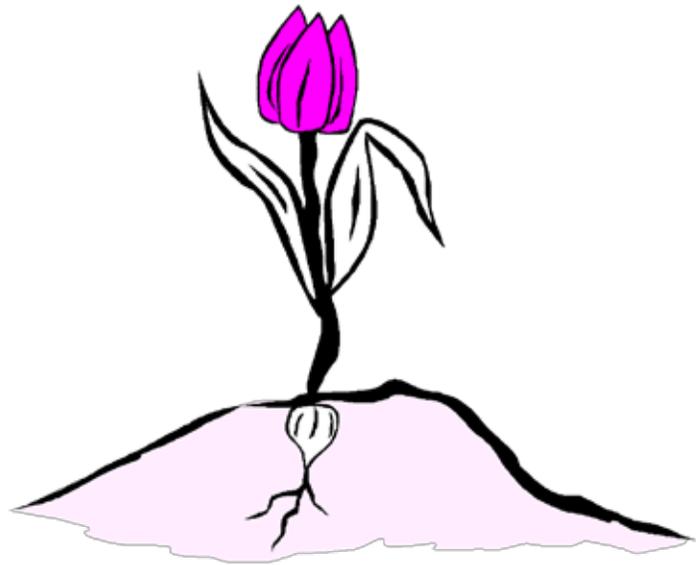
1. Draw a line from the word to the plant part it matches.

Roots

Petals

Stem

Leaves



2. Circle all the things a plant needs to grow.



Sun



Farmer



Soil



Milk



Water



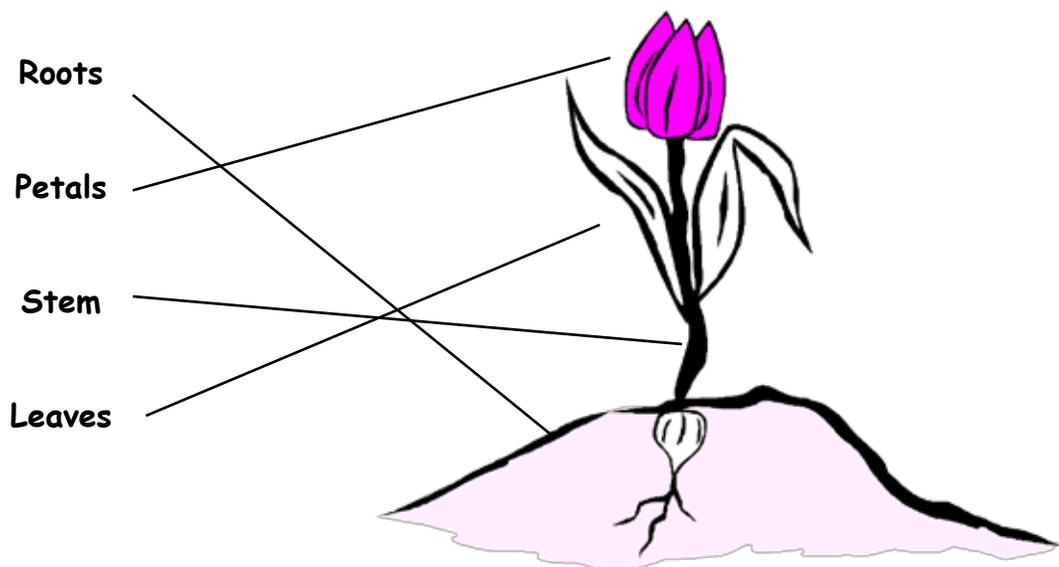
Flower Pot

# PRE-TEST TEACHER KEY

(Teachers: Administer this test once before teaching the pre-visit activities and once after the post site activities for comparable results of comprehension and retention )

## Wildflowers Kindergarten

1. Draw a line from the word to the plant part it matches.



2. Circle all the things a plant needs to grow.



Sun



Farmer



Soil



Milk



Water



Flower Pot

artwork obtained copyright free from [www.office.microsoft.com](http://www.office.microsoft.com)

# PRE-SITE ACTIVITY

## WHAT DOES A BOTANIST DO?

---

**Duration:** 30 minutes

**Class Size:** any

**Materials:** coloring page (included)

### Background Information for the Class:

Much of the beauty we see around us- in our homes, and our classrooms- comes from the natural world. Colorful flowers and the patterns or designs each have are reflected in the colors of our favorite crayon or favorite color sweater.

Great Smoky Mountains National Park is a special place where over 1,500 different types of flowers grow throughout the year. People come from all over the world to take pictures and create art by drawing the beauty of the mountains in watercolors and other paints. Such beauty must be protected for everyone to enjoy. This is the reason why it is against the law to pick wildflowers and plants. Park rangers help to protect the flowers, but they can only take care of them if you follow the rules. While on your field trip, *do not pick the flowers*. Flowers provide food to animals- like an eastern cottontail rabbit, or shelter for small creatures- like the spittle bug which lays its eggs in a frothy mass on various plants.

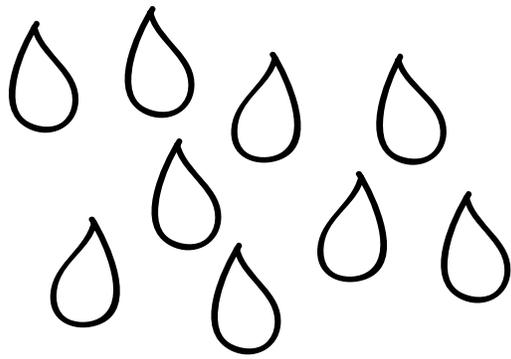
Some park rangers and other scientists study flowers to find out how they grow and develop. These people are called **botanists**. Botanists have learned the names of many plants and the words that describe parts of plants. To help protect the plants, botanists must know what each plant needs to grow.

### Activity Directions:

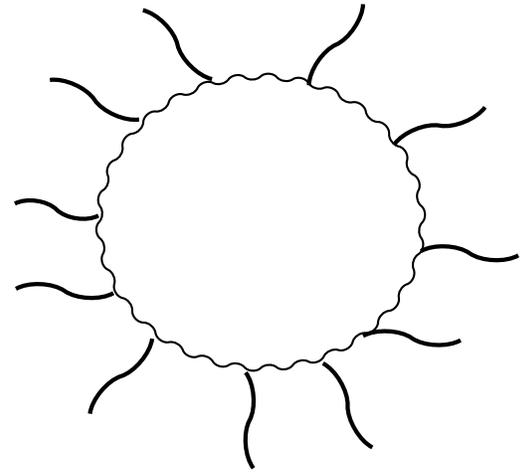
Students will use the provided coloring sheet. After coloring their flower, assist students in connecting the parts of the flower to the appropriate word.

### Resources and References

Page 8 artwork by Lisa Horstman, Great Smoky Mountains Association.



Rain



Sun

Petals

Leaves

Stem

Soil

Roots



# ON-SITE ACTIVITY

## INTRODUCTION / FLOWER NAME GAME

---

**Duration:** 10 minutes

**Class Size:** Entire group

**Materials:** background information (provided)

**Background Information for the Class:**

Welcome to the Cove Hardwood Nature Trail.

This trail is a great place to study flowers.

Ask the class: What makes it so great?

A cove is a sheltered valley with deep, rich soils. This most diverse park forest type includes Yellow Birch, Beech, Buckeye, Basswood, Carolina Silverbell, Yellow Poplar, Sugar Maple, Magnolia, Hickory and Eastern Hemlock. Record size trees exist in this forest type of Great Smoky Mountains National Park.

This particular area that we will be exploring was once the location of a nearby homestead. The steep slopes held corn and potato harvests grown by one of 75 families living in this Sugarlands Valley in the early 1900's. The National Park is not the home address of any family today, but clues in the forest such as rock piles and fences remind us of a community from days gone by.

The Chimneys picnic area is a beautiful place to have our field trip in today. There will be other visitors to the park, so be respectful of others who may be using the area. As previously discussed, we are here to enjoy the beauty of the flowers and we must not pick any or alter the forest in any way.

Teachers Note: Picking flowers is a violation of federal law and can lead to fines or imprisonment.

**Teachers and chaperones must never leave a child unattended at any point during the day, either on the trail activities or at lunch.**

**Duration:** 10 minutes

**Class Size:** Entire class

**Materials:** artificial flowers or photos of flowers

**Background Information for the Class:**

Tell students that they will be searching for different kinds of wildflowers. Botanists give names to wildflowers to help us tell them apart and communicate with others. Read some descriptive names of flowers to students such as Tall Bellflower, Black-eyed Susan, Dutchman's Britches, Goats-beard, Goldenrod, and Bloodroot. Explain to the students how they got their names. Use descriptive words to create flower names.

**Directions for this Activity:**

Show students some artificial flowers or pictures of real flowers. Ask the students to make up a name for the flower. Assist them with good descriptive words. Tell them what the real name of the flower is after they come up with their names.

Discuss why it is illegal & unethical to pick or take wildflowers from the park. Ask students the following questions:

- 1) Will the whole plant live even if I just pick a part of it?
- 2) Will the plant be as beautiful as it is now after I pick it?
- 3) Can I learn something from the plant if I just observe it?
- 4) Will other people be disappointed if the flower is missing from the trail?
- 5) If I pick the flower, am I destroying the home of another living creature?

Resources and References

Great Smoky Mountains National Park Guide.  
Reprint 2004.

# On-Site Activity

## Flower Facts

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**Duration:** 10 minutes

**Class Size:** half of the entire group

**Materials:** laminated green art paper leaves

### 1. What are flowers? (15 minutes)

Build a wildflower with students acting as the flower components (petals, leaves, stems, and roots). This demonstration will help students learn the basic parts of a flower.

#### **Stem**

Choose one student to be the stem. Ask students what a stem does (structural support, transport water, food, & minerals). Have the student playing the stem come up with adjectives that describes his job i.e. “Big and strong!” (while showing muscles). Remind the group that each time you say the word ‘Stem’, all students will say “Big and Strong!”.

#### **Leaves**

Choose 3-4 students to be the leaves. Ask students what leaves do (make food). Have students hold paper leaves and stand around the stem. Each time you say the word ‘Leaves’, all students will say “We make food!”.

#### **Roots**

Choose 3-4 students to be the roots. Ask students what roots do (soak up water & nutrients from the soil). Each time you say the word ‘Roots’, these students will make the sound of sucking through a straw.

#### **Petals**

Choose 3-4 students to be petals. Ask students what petals do (attract pollinators). Each time you say the word ‘Petals’, all students will say “Come to me Bumblebee!”

#### **Putting it all Together**

Tell a story about a plant growing using the key words allowing the students to act out the parts of the flower. Quiz the students by having them shout out which flower part you are thinking of when you ask a variety of questions: ‘Who absorbed water from the soil?’ (‘Roots!’), ‘Who brought pollinators

to your flower’ (‘Petals!’), etc...

2. What does a flower need to grow? 5 minutes  
Ask students if they know what flowers need to grow (water, soil, air, space).

Ask students what happens if the water or air is dirty. (Explain to students that all plants in Great Smoky Mountains National are protected. Rangers work hard to assure that plants have a safe place to grow by protecting the soil, water, and air from pollution.)

Ask students how they think all the flowers around them were planted. Did they need a gardener or a farmer or a pot to grow in? (No! Seeds are dispersed by wind, water, & animals. Some seeds need fire or freezing temperatures to help the seeds germinate and grow).

### 3. Who uses flowers? 5 minutes

Ask students why flowers are important:

- Flowers produce seeds and fruits that become nutritious food for insects, birds, and mammals.
- Animals use flowers for homes and resting places.
- People eat flower parts. Ask students for examples of leaves (spinach), stems (asparagus), and roots (carrots) that people eat.
- They are fun to look for and identify.
- Medicines can be made from plants.

# On-Site Activity

## Scavenger Hunt

---

**Duration:** 20 minutes

**Class Size:** half of the entire group

**Materials:** scavenger hunt check list (provided)

### Directions for this Activity:

In small sub-groups, each parent should have a copy of the Wildflower Scavenger Hunt List. In small parent-led groups, have the students try to find all the things on the list. Have the group work together to find all the items on the list finding one item at a time. See if they can find more than one example of the items listed.

Explain that each student will use their senses to get to know a wildflower! Students should be very observant and look for all the items on their Wildflower Scavenger Hunt Card. Hand out cards, hand lenses, and a ruler to each group.

Students should be divided into small parent/teacher led groups. Each group should work together to find one item at a time. They should stay within the immediate trail head area so that they do not disturb the other students or visitors on the trail.

Wildflower Scavenger Hunt Card (See Master on page 14)

Find a flower with 3 petals.

Find a flower with 5 petals.

Find a flower that is more than 3 cm wide.

Find a flower that is less than 3 cm wide.

Find a flower that has a scent.

Find a stem that has only one flower.

Find a stem that has many flowers on it.

Find a flower with insects (pollinators) on it.

Can you count how many legs the insect has?

Find a flower with white petals.

Find a flower with yellow petals.

Find a flower with purple petals.

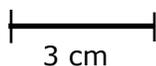
Find a plant growing in the sun.

Find a plant growing in the shade.

Bring students together and discuss what they found.

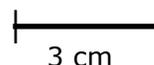
### Flower Find

- Find a flower with 3 petals.
- Find a flower with 5 petals.
- Find a flower that is more than 3 cm wide.
- Find a flower that is less than 3 cm wide.
- Find a flower that has a scent.
- Find a stem that has only one flower.
- Find a stem that has many flowers on it.
- Find a flower with insects (pollinators) on it.
- Can you count how many legs the insect has?
- Find a flower with white petals.
- Find a flower with yellow petals.
- Find a flower with purple petals.
- Find a plant growing in the sun.
- Find a plant growing in the shade.



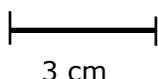
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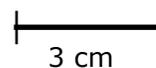
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- Find a flower with yellow petals.
- Find a flower with purple petals.
- Find a plant growing in the sun.
- Find a plant growing in the shade.



# On-Site Activity

## Flower Find

---

**Duration:** 40 minutes

**Class Size:** half of the entire group

**Materials:** illustrated photos of local flowers, hand lenses. **(These materials may be loaned from Great Smoky Mountains National Park by calling 865-436-1713)**

### Background Information for the Class:

Plant species are often spoken of using a number of common names familiar to a small regional population. A Red Trillium is sometimes referred to by a variety of names such as Stinking Benjamin, Stinking Willie, Purple Trillium, Nodding Wake-robin, Birthroot, or Bathroot.

How would students or scientist know what their fellow botanist was referring to if each person called the wildflower something different? To clarify this issue, plant species also have a scientific binomial consisting of a first name and a last name -sort of like the first and last name of people. Scientific names are commonly derived from Greek or Latin and are spelled in the Roman alphabet the same way throughout the world. Therefore, the above mentioned flower- scientifically named *Trillium erectum*- refers to the same flower, regardless of the country or native language in which it is described.

Today, students will be searching for flowers based on common names heard in the southeast United States, yet occasionally a student or chaperone will identify it by another common name. It is for this reason that students should be aware of the variance of names used in wildflower identification.

### Activity Directions

Identify Wildflowers on the Trail

Students should be divided into small parent/teacher led groups. Give each student a hand lens

(optional) and a photo of a wildflower likely to be found along the Cove Hardwood Nature Trail. Give each group leader a wildflower guide and additional photos of flowers for students. Ask the students to look for the flower in the photo along the trail. Remind students to look carefully at color, number of petals, and leaves on the flower in the photo since there are many that look alike. After a student finds his flower, leaders should give them another photo of a wildflower to search for.

### Resources and References

Great Smoky Mountains Association Sales/  
Ordering Information (865) 436-0120.

Peterson, Roger Troy, and McKenny, Margaret.  
[A field guide to Wildflowers.](#) Boston:  
Houghton Mifflin, 1968.

White, Peter., et al. [Wildflowers of the Smokies.](#)  
Gatlinburg: Great Smoky Mountains Association,  
2003.

# POST-SITE ACTIVITY

## DOES A FLOWER DRINK?

---

**Duration:** 30 minutes

**Class Size:** any

**Materials:** cups of water colored with dark food coloring, white carnation flower, shallow bowl, paper towel

### Background Information for the Class

Plants require water and nutrients to allow them to grow and produce seeds, fruit and propagate their own species. These needs of plants cannot occur without accompanying processes. Photosynthesis, osmosis, transpiration and cohesion are processes which allow for the creation of energy and the movement of water and nutrients throughout the plant. Of these processes, it is the combination of transpiration and cohesion which moves water through plants. A large percentage of water moving through a plant evaporates through its leaves. This event is called “transpiration”. Water that transpires up and out of leaves creates a “pull”, similar to the pull of liquid through a drinking straw. A drinking straw’s pull is assisted by the user as he sucks liquid through it. A plant doesn’t need the assistance of a drinking straw- instead, water which evaporates from the leaves is the very force that generates the “pull”. Cohesion is the property of water that causes droplets to stick to each other and generates water flow through tubes in the plant stem, taking it to the veins located throughout the petals and leaves. These pathways of travel are located in the Xylem (the woody supportive plant tissue that carries water and dissolved minerals from the roots through the stem and leaves).

### Directions for this Activity

Place a white carnation in a cup full of darkly colored food coloring and water. Observe during the class period and for the following days to note the results. Refer to the background information above to describe the process of what is taking place. You may wish to use an additional flower and carefully

splice the stem into two halves. Place each half stem into a separate cup of food coloring and water (choose two different colors) and observe these results

The process of cohesion can also be illustrated with a shallow bowl of water and a paper towel. After placing one edge of the paper towel in the water, students will be able to witness the cohesion of the towel fibers as they draw up water onto the paper towel beyond the edge of the water bowl. Although this doesn’t take transpiration into account as we would with a plant, it does demonstrate that water molecules attach themselves to other molecules and as a result, they “pull” each other up higher into the paper towel.

### Resources and References

Culver-Rymsza, Karen. University of Rhode Island. MadSci. 10 May. 1997. <<http://www.madsci.org/posts/archives/may97/863446639.Bt.r.html>>

# POST-SITE ACTIVITY

## GROW A GARDEN /SERVICE LEARNING EXTENSION

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**Duration:** unlimited

**Class Size:** recommend as a grade level project

**Materials:** fast growing plants for an indoor option, or other starter seedlings for outdoor option.

As a cumulating activity for students, planting a garden (indoor or outdoor) reviews all of the recent lesson, and provides a service learning element to the curricula.

### Indoor Garden (option 1)

Growing plants inside a classroom takes up very little room and provides each student with a plant to watch and take home. Most set-ups for an indoor garden are: seeds, small seed cups, popsicle sticks for labeling purposes and a fluorescent light. Follow the sunlight and watering directions on the seed packets. Students may wish to keep a journal of drawings as their seed develops. Allowing each child to take home their flower contributes to their own potential garden at home- or they make great gifts to senior citizens or others in nursing homes.

### Outdoor Garden (option 2)

Identify an area in your school yard that will not be disturbed by maintenance or playground activities.

With the help of a local garden club, prepare the soil for planting. Assign each class with a different variety of flower to grow and allow them to plant their seeds.

Mark off the areas in the planting bed so that students remember which area was “theirs”. Keep a class or grade level journal as the garden develops. Planting perennials will create a memory garden. Year after year students can see the results of their contribution, even as a new class adds to the garden.

# POST-SITE ACTIVITY

## EXPLORE YOUR NATIONAL PARKS

---

**Duration:** 30 minutes

**Class Size:** any

**Materials:** internet access

### Background Information for the Class

The Great Smoky Mountains are world renowned for their diversity of plant and animal species. This great variety makes the park an exemplary outdoor laboratory for the study of relatively undisturbed native flora, fauna, physical environs and processes of the Southern Appalachians. The park is the largest federally preserved and protected upland area east of the Mississippi River offering park visitors a refuge from the stresses of everyday life.

You and your students can learn more about this special place as well as participate in on-line activities to further your knowledge of the National Park Service and other federally protected lands. Please check out the following web addresses:

### Especially for Kids

To become a web ranger for the National Park Service, go to:

**[www.nps.gov/webrangers](http://www.nps.gov/webrangers)**

To become a Junior Park Ranger at Great Smoky Mountains National Park or other parks, go to:

**[www.nps.gov/learn/juniorranger.htm](http://www.nps.gov/learn/juniorranger.htm)**

### Especially for Teachers

For a comprehensive understanding of the background and development of the National Park Service that is perfect for teachers and others those who need the maximum amount of accurate information in the minimum amount of time, go to:

**<http://wwwParkTraining.org>**

The U.S. Department of Education is pleased to announce the newly remodeled and updated Federal Resources for Education Excellence (FREE) website. It now provides richer, more expansive resources to teachers and students alike. There are over 1,500 resources to take advantage of at FREE, ranging from primary historical documents, lesson plans, science visualizations, math simulations and online challenges, paintings, photos, mapping tools, and more. This easily accessible information is provided by federal organizations and agencies such as the Library of Congress, National Archives, NEH, National Gallery of Art, National Park Service, Smithsonian, NSF, and NASA. Go to: **<http://www.free.ed.gov/>**

# APPENDIX A

## PARK ESSENTIALS TO KNOW BEFORE YOU GO

---

### Traffic and Travel Tips

#### Restrictions on Large Vehicles

Trailers, RVs, and buses are prohibited on some secondary roads in the park, including Balsam Mountain Road, Heintooga Ridge Road, Rich Mountain Road, Roaring Fork Motor Nature Trail, and the road exiting the park at Metcalf Bottoms Picnic Area. Caution is also advised when traveling on Little River Road between the Townsend entrance to the park and Elkmont Campground, and on the road leading into Cataloochee Valley.

### Overheated Engines and Brakes

When traveling uphill on hot days, watch your engine temperature carefully to make sure it is not overheating. If overheating occurs, stop at a pullout to allow your vehicle to cool down before continuing.

When driving downhill on steep mountain roads, it is important that you shift to a lower gear to use the braking power of your engine to prevent your brakes from over heating and failing. If your vehicle has an automatic transmission, use “L” or “2.” (Overheated brakes smoke and give off an acrid smell.) Keep an extra cushion of distance between you and the vehicle in front of you as protection against sudden stops.

### Avoid Collisions with Animals

Watch for animals crossing roads, especially at night. Scores of bears and other animals are killed by motorists every year. Following posted speed limits will reduce your chances of hitting wildlife.

### Use Pullouts if Driving Slowly

As a courtesy to other park visitors, slow moving vehicles should use pullouts to let other cars pass. Pullouts are located every mile or so on most park roads.

### Gas Stations

There are no gas stations or other related services available in the park. Complete services are available in Cherokee, NC, Gatlinburg, TN, and Townsend, TN.

### Emergency Number

In the event of an emergency, call 911. For non-emergency calls to park headquarters, dial (865) 436-1200.

### Pets

Dogs are allowed in campgrounds, picnic areas, and along roads, but must be kept on a leash at all times. The leash must not exceed 6 feet in length. Dogs are only allowed on two short walking paths—the Gatlinburg Trail and the Oconaluftee River Trail. Pets are not allowed on any other park trails. Pet excrement must be immediately collected by the pet handler and disposed of in a trash receptacle. Pets should not be left unattended in vehicles or RVs. Large national parks that have extensive backcountry areas as a rule do not allow dogs on trails. These include parks such as Yellowstone, Yosemite, Grand Canyon, Glacier, Rocky Mountains, and several others. Great Smoky Mountains National Park has prohibited dogs in the backcountry since the park was first established in the 1930s.

### Hiking Safety

You are responsible for your own safety! Travel in Great Smoky Mountains backcountry areas has inherent risks and hikers assume complete responsibility for their own safety. Rescue is not a certainty!

- Carry a current park trail map and know how to read it.
- Carry 2 small flashlights or headlamps—even on a day hike. If you have trouble on the trail, darkness may fall before you can finish your hike.

(continued on next page)

# APPENDIX A CONTINUED

## PARK ESSENTIALS TO KNOW BEFORE YOU GO

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- Take adequate water—minimum 2 quarts per person per day. All water obtained from the backcountry should be treated either by filtering or boiling.
- Carry a small first aid kit.
- Check the current weather forecast and be prepared for quickly changing conditions.
- Wear shoes or boots that provide good ankle support.
- Avoid hypothermia (the dangerous lowering of body temperature) by keeping dry. Avoid cotton clothing. Dress in layers that can be easily removed or added as you heat up or cool down. Always carry a wind-resistant jacket and rain gear—even on sunny days!
- Don't attempt to cross rain-swollen streams; they will recede rapidly after precipitation stops and the wait may save your life! When crossing any stream more than ankle-deep: unbuckle the waist strap of your pack, wear shoes, and use a staff to steady yourself.

### Ice and Wet Leaves

In winter, most trails at high elevation will be covered with ice. Use crampons or other traction devices for your boots. In autumn, loose, slick leaves on the trail cause many hikers to fracture their ankles. Be certain to wear ankle supporting boots.

### Safety Around Wildlife

#### •Encounters With Bears

Bears in the park are wild and their behavior is unpredictable. Although extremely rare, attacks on humans have occurred, inflicting serious injuries and death. Treat bear encounters with extreme caution.

#### •Venomous Snakes

Two species of venomous snakes live in the Smokies, the northern copperhead and timber rattlesnake. Although very few snake bites occur here, visitors should be cautious where they place their hands and feet, especially around old buildings

and stone fences. No fatalities from snakebites have ever been recorded in the park.

#### •Insects

Yellow jacket wasps are the insects of greatest concern. They build nests in the ground along trails and streams and are aggressive when disturbed. Avoid perfume, powder, and scented deodorants which may attract yellow jackets. Stings cause local swelling and can lead to severe allergic reactions in a few sensitive individuals. Such persons should carry epinephrine kits.

#### •Poison Ivy

Please be aware of the presence of Poison Ivy throughout the park, particularly in the spring, summer and fall. Poison ivy is a three leaved plant which can grow on the ground as well as on “hairy” vines up trees. To avoid chances of an allergic reaction, stay on trails and avoid direct contact with vegetation. If contact occurs or is a concern, wash affected parts in cold soapy water immediately.

# Appendix B

## What to Carry/ How to Pack For Your Trip

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The following information is recommended to assist students in packing for their trip.

From experience it has been found that students will often bring too many items on a class trip, or not enough of the right items.

For the **Wildflowers** trip:

Students should wear:

- Sturdy walking shoes. Hiking boots are the best choice and tennis shoes are acceptable, but flip flops or slip on shoes are not appropriate for the walking portion of this trip.
- Long pants are suggested any time you visit the National Park. This is the best precaution against cool temperatures, bee stings and ticks and direct contact with poison ivy.

Students should bring:

- A lunch which including water to drink. A healthy meal to provide them with energy for extended periods of walking and learning.
- Lunches should be kept on the bus until lunchtime. Do not leave lunches unattended once they are out of the bus.

Other reminders:

- Students will not need anything except the materials that the teacher provides. iPods, or other electronic devices (if permitted on the bus) should not be brought off the bus during any part of the program.
- Since students will be carrying materials for the activities, we recommend that a chaperone or teacher be a designated photographer to preserve memories of the trip and to share with family members.

# Appendix C

## Resources and References

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