



Holmes Educational State Forest



Field Trip Information

1299 Crab Creek Rd. Hendersonville, NC 28739
828-692-0100 holmesef.ncfs@ncagr.gov <http://www.ncesf.org/holmes.html>

Environmental Education at HESF

Programs are conducted outdoors, each lasting approximately 30 minutes unless otherwise stated. Teachers or group leaders choose from a selection of program topics that cover all aspects of the forest environment including soil, plants, water, wildlife, and forest management. Our classes are designed to help students understand that forests are complex ecosystems that can be managed for many uses.

Educator Workshops

Our staff periodically schedule environmental education workshops, for formal and/or non-formal educators, such as Investigating Your Environment, Project Learning Tree, Tree Identification for Educators, and various other EE Certification Criteria II workshops. Please contact the office for further information on CEUs and/or EE credits.

Other Available Resources

Educational/Informational Videos, Envirothon forestry training, Career Days, School Science Nights, 4-H forestry training, Boy Scout merit badge, Girl Scout badges, Project Learning Tree's Tree Trunk, Tumbling Longleaf Ecosystem Activity.

Reservations

A minimum of ten students is encouraged to make a program reservation. April, May, and October classes fill up months in advance, please call as soon as possible (828-692-0100) or email us at holmesef.ncfs@ncagr.gov with the following information:

- 1.) *Desired date*
- 2.) *Total number of students and grade*
- 3.) *Arrival Time*
- 4.) *Desired Programs*
- 5.) *Any special needs/requests*

HESF can accommodate larger groups if needed. **Groups over 40** participants will typically have two ranger-led or three ranger-led programs (only if a 3rd ranger is available) **and** at least 1 to 4 teacher-led activities to complete a 3 to 6 program rotation. **Programs last approximately 30 minutes each unless otherwise stated.**

Group size	Number of program rotations	Time Commitment
10-20 students	1 or 2 rotations (1 or 2 ranger-led programs*)	~1.5 hours not including lunch/restroom breaks
21-60	3 rotations (2 ranger-led programs* and 1 teacher-led activity**)	~2 hours not including lunch/restroom breaks
61-80	3-4 rotations (2 ranger-led programs* and 1-2 teacher-led activities**)	~2 to 2.5 hours not including lunch/breaks
81-100	4-5 rotations (2 ranger-led programs* and 2-3 teacher-led activities**)	~ 2.5 to 3 hours not including lunch/breaks
100 or more	5-6 rotations (2 ranger-led programs* and 3-4 teacher-led activities**)	~3 to 4 hours not including lunch/breaks

***For a list of ranger-led programs, turn to pages 2-4**

****For a list of possible teacher-led activities, turn to pages 4-5 or use time to take snack/restroom breaks.**



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Forest Season and Operating Hours

March 1 through October 31 – Forest is open Tuesday-Friday 9am-5pm and Saturday-Sunday 11am-6pm. Closed Mondays.

November 1 through end of February – Forest is open Tuesday through Friday 9am-5pm. Closed Mondays, weekends, and state holidays.

Off-site visits

Reservations may be available for off-site visits in your classroom or a public meeting space, please call for details.

Fees

All classes are free of charge. The covered picnic shelter will be available for your use during your visit for no additional charge.

Arrival, Cancellations and/or Delays

Rangers make every effort to provide the quality educational experience you desire. Our rangers will be ready to present your scheduled classes as soon as your group arrives at the forest. We know you will make every effort to arrive on time; however, we also know unexpected situations can occur. If your arrival will be delayed, please notify the forest as soon as possible. To make your visit an enjoyable and productive experience, some adjustments of your agenda, including deletions of classes, may be necessary if your group arrives late. ***Please note: If you need to cancel or are delayed, call or text the ranger on duty. The ranger on duty's phone number will be provided in your confirmation letter. Adjustments maybe necessary and discussed upon arrival.***

Weather Policy

We still conduct classes when it's raining, but if there are thunderstorms, classes may be cancelled due to the safety of all participants. If it's raining during your visit, programs will be adjusted and conducted in the covered shelter (which seats up to 60 people).

Clothing Suggestions

All classes are conducted outdoors, and students and adults should dress appropriately.

Ranger-Led Programs

Counting Carbon STEM Activity: (1-hour program) A Project Learning Tree program focused on tree growth, the carbon cycle and a tree's potential to store carbon. Students will measure the potential carbon sequestration in a forest utilizing tools such as a Biltmore stick, clinometer, calculator, and diameter tape. **3.L.2, NC.5.MD.4**

Fire Weather and Behavior: (1-hour program) Students will use tools such as thermometers, anemometers, and sling psychrometers to collect current weather data and determine current fire weather behavior as well as any potential changes. We will discuss the impact that weather has on the fire environment and the difference between a wildfire and prescribed fire. **4.L1.3**

Forest Flowers Guided Hike: (1-hour program) Ranger-led hike that will lead students on a stroll under the forest canopy to identify and locate various flowering plants. We will discuss the role of these plants in the forest ecosystem, their dependence on the sun and observe different stages of the plant life cycle. **(Spring and Summer only)**

Forest Measurements: (1-hour program) An introduction to the tools used to collect data needed for forest management decisions. Forestry is a science-based discipline that requires data sets to determine the correct course of action when managing a forest ecosystem. Tools used include Biltmore stick, clinometer, linear tape measure, increment borer, and diameter tape.



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Mushroom Guided Hike: (1-hour program) Ranger-led hike to introduce students to the world of fungi. Using observation skills, students help search for various fungi and learn about lifecycles and the unique role these organisms play in the forest environment. **(Summer only and weather dependent)**

Navigating with a Compass: (1-hour program) Students will learn the parts of a compass, cardinal points, bearings, pacing, and practice how to navigate using information acquired throughout the lesson. Older students will work in groups to locate targets on a compass course. **K.G.1.2, K.G.1.3, 1.G.1.3, 2.G.1.1, 2.G.1.2**

Observing Heat Transfer in the Matchstick Forest: (1-hour program) Students will understand that heat can transfer through radiation, convection, and conduction. They will also observe fire behavior by watching live demonstration models and compare the effects of slope, weather, and tree arrangement on the rate of fire movement and spread. Students will be able to explain the fire triangle and its importance in managing controlled or uncontrolled fires in the natural environment. **4.P.2.1, 5.P.3.1, 3.G.1.3**

Basic Weather: Students will practice using basic weather observation tools such as thermometers, anemometers, and cloud charts to understand weather changes which occur day to day and throughout the year. **2.E.1.2, 2.E.1.3, 2.E.1.4, 5.E.1.1**

Bug Talk: Students will learn about how animals such as insects use different sounds to communicate about safety, danger, or food sources to survive. We will discuss how vibrating objects such as insect wings produce sound. Students will engage in a role-playing activity to locate sounds produced by their classmates. **2.P.1.1, 2.P.1.2**

Forest Life Activity: Students will learn about the benefits of managing forest resources wisely and how different forest management activities improve a forest's overall health. During a simulation activity, students will learn about the life cycle of a managed forest and the importance of forest regeneration.

Forest Products-What We Get from Trees: The objective of this class is to increase the student's awareness of the many common and uncommon products that come from trees. Included is an interactive matching activity to test the students' newly acquired knowledge.

Forest Soils Investigation I: This program introduces students to what is soil, how it's formed and fundamental soil components including sand, silt and clay, soil horizons and particle size. We will use a soil probe to collect and compare soil samples in the forest. **1.E.2.1, 1.E.2.2, 3.L.2.4**

Forest Soils Investigation II: Building on Forest Soils I, this program introduces more advanced soil properties such as soil pH, specific soil nutrients and plant germination. Students will collect data and determine a soil's productivity for certain plants and trees using a local Soil Survey. Tools used include pH test kit, soil probe, thermometer, and a nitrogen, phosphorus, and potassium kit.

Forest Tree Identification: Students will use a "Key" to identify several trees by examining tree type (conifer vs. hardwood), leaf arrangement, shape, and leaf margin characteristics. Additionally, this class observes tree size and shape, bark texture and color, seeds, fruit, and flowers. **K.P.2.1, NC.4.G.3**

How Paper Comes from Trees: This class will introduce the history of paper making. Students will also learn that trees are renewable natural resources. Students will get to "manufacture" their own sheet of paper during the class. **K.G.2.2, 1.G.2.2**

Leaf Relay: Students will carefully observe the tangible characteristics of ten leaves and classify them. They will test their memory of these leaves in a fun relay activity. **NC.4.G.3, K.P.2.1**



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Pollinators: Students will use magnifying glasses to observe and investigate the interrelationships between plants and insects in the pollinator garden. We will also learn about what types of pollinators are in our area and their life cycle. Students will then be able to participate in a relay activity as a honeybees collecting pollen to take back to their hive.

3.L.2, 3.L.2.1, 4.L.1.1

Skins and Skulls: Students will compare or contrast the physical characteristics of animal furs and skulls and discuss the importance of adaptations for survival. Also discussed, the main difference between carnivores, herbivores and omnivores when observing differences in an animal's teeth, eye placement, and other physical characteristics. **4.E.2.1, 4.L.1**

Tree Growth Rings: Students will examine the main parts of a tree (Crown, Trunk, and Roots) and how environmental factors influence growth. Students will observe the utilization of an increment boring tool and learn how to determine the age of a tree through various methods. **3.L.2, 3.L.2.2, 3.L.2.3, 4.L.1.1**

True Story of Smokey Bear: Students will learn the story of Smokey Bear and the meaning of his message: being careful with fire in the forest is everyone's responsibility. Students will also learn the difference between good fire and bad fire. ***Number of available rangers and weather permitting, Smokey Bear can visit students for a photo opportunity. Also, if supplies allow, free Smokey Bear comic books are given to each participant.***

Tree Life Cycle: A Project Learning Tree activity where students learn about a tree's life cycle and its role in an ecosystem through each growth stage. Students will then participant in an activity that simulates the life cycle of a tree. **2.L.2.1, 2.L.2.2, 3.L.2, 5.L.2.2**

Wildfire Control: Students will learn about the fire triangle and factors that contribute to wildfires (weather, topography, fuels, and people). We will have a hands-on discussion of the basic firefighting tools and techniques as well as basic fire prevention and safety. **4.L.1.3, 1.G.2.1, 2.G.2.2**

Teacher-led Activity Options

We will provide step-by-step lesson plans, materials and equipment needed. If preferred, please feel free to plan your own activities or use the time for a bathroom break and/or snacks. Each activity's length of time will need to correspond with the ranger-led program's length of time.

Bat-Moth Game: (*Sounds, echolocation, bats, adaptations*) Lecture material, directions provided

Nature Journaling: (*Observation, nature study, creativity*) Spend some quiet reflective time in the forest. Sampling squares, field guides, clipboards, pencils, crayons, nature journals provided.

Nature Observation Scavenger Hunt: (*Observations, investigation, data recording*) Rangers can provide supplies for a movement-based scavenger hunt. Your kit will include your scavenger hunt challenge, pencils, and clipboards

Talking Tree Trail: (*Recreation, observation, nature study*) Talking Tree Trail and Forestry Center- a self-guided ½ mile walk that includes 7 trees that talk about their natural history and characteristics and/or their historical significance. Each tree has three different discussions and the trail is well marked.

Tree ID Scavenger Hunt: (*similar to Tree ID but ranger is absent*) Lecture material, directions, pencils, clipboard, 7- 10 trees to investigate



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Citizen Science and Other Enrichment Options

Holmes Educational State Forest is an excellent place to engage in self-guided nature exploration through California Academy of Sciences and National Geographic's iNaturalist App/Website and North Carolina Arboretum's ecoExplore program.



ecoExplore is a free web-based program for children, grades K-8, to use while exploring and observing their environment. Observations uploaded to the exoExplore website allow children to connect with scientists and help identify what they have found. During your visit, take pictures and participant in their latest project. Submit your observations to earn badges and points toward prizes. Visit www.ecoexplore.net for more details. We are an **exoExplore hotspot "Holmes Educational State Forest"**.



iNaturalist is a free app/web-based program which provides an online network of naturalists and scientists helping others identify uploaded observations. Join our current project "Holmes Educational State Forest BioBlitz". Visit their website for more information, www.inaturalist.org.