Holmes Educational State Forest
2023 Field Trip Information Guide

1299 Crab Creek Rd. Hendersonville, NC 28739
828-692-0100 holmesesf.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, weather, and forest management. Our classes are designed to help students understand that forests are complex ecosystems that can be managed for many uses.

Program Days

Programs are conducted year-round, Tuesday, Wednesday, and Thursday, 9am to 4pm. **All classes are free of charge** and the covered picnic shelter will be available for your use during your visit.

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 and may be scheduled for a later date. If it's raining during your visit, programs will be adjusted and conducted in the covered shelter (which seats up to 60 people).

***Please note the following. If your group has 40+ students and it rains, we might not be able to present programs that day due to the size limitation of the shelter.*

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 holmesesf.ncfs@ncagr.gov with the following information:

Desired date
Total number of students and grade
Arrival Time and Departure Time
Your on-site contact for the day that will be traveling with the group and their phone number
Desired Programs
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.*
If you have 40+ students, you might consider bringing part of your group in the morning and then another group in the afternoon ***or*** *on two different days.*

Group size	Number of program rotations	Time Commitment not including lunch/restroom breaks
10-40 students	1 or 2 rotations (1 or 2 ranger-led programs*)	~1.5 hours
41-60	3 rotations (2 ranger-led programs* and 1 teacher-led activity**)	~2 hours
61-80	4 rotations (2 ranger-led programs* and 2 teacher-led activities**)	~2 to 2.5 hours
81-100	5 rotations (2 ranger-led programs* and 3 teacher-led activities**)	~ 2.5 to 3 hours
100+	6 rotations (2 ranger-led programs* and 4 teacher-led activities**)	~3 to 4 hours

**For a list of ranger-led programs, turn to pages 2-4*
For a list of possible teacher-led activities, turn to pages 4* ***or *use the time to take snack/restroom breaks.*

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

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 email.*

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 focuses on the carbon cycle, photosynthesis, respiration, carbon sinks, and calculating the amount of carbon found in trees. 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, compasses, and sling psychrometers to collect current weather data (temperature, humidity, wind speed and wind direction) 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. ***(Available the months of March, April, and May)***
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 sticks, clinometers, linear tape measures, increment borers, and diameter tapes.
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. ***(Available the months of July, August and are weather dependent)***
Navigating with a Compass I: Students will learn the parts of a compass, cardinal points, bearings, and practice how to navigate using information acquired throughout the lesson. K.G.1.2, K.G.1.3, 1.G.1.3, 2.G.1.1, 2.G.1.2
Navigating with a Compass II: (*1-hour program*) Students will expand on compass basics and practice how to navigate using pacing and direction to locate targets on a compass course.

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 use different items to mimic insect sounds and participant 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 probe, soil hand auger, 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 movement-based activity. NC.4.G.3, K.P.2.1

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 movement-based 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 adaptions 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.L1.3, 1.G.2.1, 2.G.2.2

Teacher-led Activity Options/Self-guided Activities
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
Square-foot Safari (*Observation, nature study, data recording, creativity)* Spend some quiet, reflective time in the forest. Sampling squares, nature journal for data collecting, clipboards, pencils, colored pencils, and field guides are provided.
Nature Observation Scavenger Hunt: (*Observations, investigation*) Rangers can provide supplies for a movement-based scavenger hunt. Your kit will include your scavenger hunt challenge, pencils, and clipboards
Self-guided Talking Tree Tail: (*Recreation, observation, nature study*) a self-guided ½ mile walk that includes 6 trees that talk about their natural history and characteristics and/or their historical significance. Each tree has three different stories. The trail is well marked.
Tree ID Scavenger Hunt: (*like Tree ID but ranger is absent*) Lecture material, directions, pencils, clipboard, 7-10 trees to investigate

Citizen Science Explorations
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**.