

## High School Program

At the High School level, Spirit Creek Educational Forest still offers a wide variety of programs. Each program is designed to meet and incorporate the Benchmarks for Science Literacy and Characteristics of Science of the Georgia Performance Standards and can be tailored to cross over into another Science. For example, our Limnology Program covers standards for Earth Science, Life Science, and Physical Science. Program time blocks range from 1 hour to 2.5 hours.

**Forest, Field, and Stream** – 2 hours  
GPS: SB4a, b, c, e, f

Teams of “scientists” will gather data to find out what an ecosystem is. Simple physical tests in three different environments will be conducted to determine how non-living elements influence the living elements in an ecosystem.

### Limnology Series:

Choose to complete all three parts in an extended day or come on several visits.

**Aquatic Benthos (Invertebrates)** - Students will learn about the watershed boundaries of Spirit Creek. They will collect and identify aquatic life and then use the kinds of life found to make predictions about the physical characteristics of the water. This is a wet, dirty, and extremely fun activity. Take some water samples back to your classroom with a follow up activity on Protozoa.  
**GPS: SB4a,c,d,f**

**Aquatic Chemistry** - How clean is the water of Spirit Creek? Chemical analysis of temperature, pH, nitrates, phosphates, and dissolved oxygen will be taken and evaluated. This will be compared to water released from Gracewood Water Treatment Plant.  
**GPS: SB4a,c,d,f SPS6a, b**

**Aquatic Hydrology** - How does rainfall affect the discharge of Spirit Creek? Students will measure the width of Spirit Creek and the depth every 50 cm. Tennis Balls will then be released and timed. From this data, students will graph the creek depth and calculate the discharge. Data will be collected in the field and calculations are to be done in your classroom. **GPS: SB4a,c,d, SPS8a SP1a, c**

**How Big is Your Tree?** - 60 minutes

Our ancestors used parts of their bodies to measure things. Students will do this to determine the accuracy of this urban myth.

Students will learn to measure a tree's height and circumference by estimation, comparison, geometry, and forestry instruments.

**Living with Fire** – 60 minutes  
GPS: SB4a,b,c,d, e SB5d

Students will learn the components of the fire triangle and the history of fire in the ecosystem. In this activity, students will learn how fire is a natural event in the forest and how it helps plants and other parts of the ecosystem stay healthy. They may observe and measure the amount of plants present in an unburned plot versus a burned plot.

**Nonvascular Plants** - 2 hours  
GPS: SB2e SB4d,e SB5d

This wonderful Autumn activity will have students looking closely at lichens and fungi. Students will learn the characteristics of these organisms and their symbiotic relationships.

**Nothing Succeeds Like Succession**- 1 hour  
GPS: SB4a,c,d, e, f

How does a forest evolve from bare soil to a mature forest? Succession is the change in composition of plants and animals within an ecosystem over time. Students will investigate the different stages of succession to determine the connections between plants and animals and how they can change an ecosystem.

**Orienteering** – 90 minutes

Anyone wishing to partake in outdoor activities may find it useful to be able to read a map and compass. Students will first learn how to measure their stride and then use the compass to locate objects and orient themselves in the forest.

**Population Studies** – 60 minutes  
GPS: SB4a

Populations grow and shrink. How important is it to know how big a community of people, or even trees, is? Students will learn the technique of taking random population samples to estimate the size of an actual population.

**Quadrat Analysis** – 60 minutes  
GPS: SB2f, SB4a, d, e

Do pine trees produce more lumber if they are thinned every third row or every fourth row? Students will develop a hypothesis and then lay out a plot in the forest and measure all the trees within that plot. Through mathematical calculations, students will determine which thinning regime produces the most timber. Orienteering skills are a Prerequisite.

**Vascular Plants** – 1.5 hours  
GPS: SB22 SB4d, e SB5d

Trees, ferns, and celery are all vascular plants. Students will learn the characteristics of vascular plants by studying the different parts of ferns and trees. They will learn the difference between angiosperms and gymnosperms, examine roots, and learn how a tree grows by studying tree cookies.

**What's Beneath your Feet** – 2 hours  
GPS: SB4a, b, c, d, e

By looking at different soil horizons, students will be able to discover how water holding capacity, pH and plant growth effect the ground beneath their feet. Based on data collected, students will analyze the soil for different land uses such as for building or planting.