National Park Service
U.S. Department of the Interior

Great Smoky Mountains National Park

FREE & FUN High School Programs

** These opportunities for high school Earth Science, Biology, and AP classes challenge students with hands-on learning experiences in the park's cultural and natural resources, including critical issues affecting these resources.*

** Some programs are more suitable for groups up to 50 students than others - call to discuss.*

** Programs are 1.5 hours in length. Most schools pick two programs.*

** All programs are free*

** Bus assistance money may be available*

Program Description | **North Carolina Essential Standards**

Salamanders

Students will generate a hypothesis to guide their examination as they participate in on-going monitoring studies of salamanders. High school groups can choose aquatic or terrestrial. Using identification guides, they will identify their finds and learn about how air quality is impacting the iconic salamanders of the Smokies.

Locations:

* **Purchase Knob,** near Maggie Valley
* **Mingus Mill,** near Oconaluftee Visitor Center

Earth/Environmental Science
Clarifying objectives EEn.2.2.1, 2.2.2, 2.5.5, 2.7.2-2.7.3
Biology
Clarifying objectives Bio.2.1.1, Bio.2.2.2, Bio.2.1.4, Bio.2.2.1, Bio.2.2.2, Bio.3.5.2
AP Biology
Competency goals 1.01-1.04, 6.02, 6.03, 6.05
AP Environmental
Competency goals 1.0-1.04, 2.04-2.05, 4.04, 5.01-5.03, 6.01, 7.03-7.04

Water Quality

Students will create a hypothesis on the health of a river system. Procedures for testing the hypothesis include chemical water quality tests and benthic macroinvertebrate search in small working groups, both using scientific methods.

Locations:

* **Purchase Knob,** near Maggie Valley
* **Mingus Mill,** near Oconaluftee Visitor Center
* **Deep Creek Picnic Shelter**, near Bryson City.

Earth/Environmental Science
Clarifying objectives EEn.2.2.1, 2.2.2, 2.4.1, 2.4.2, 2.7.3, 2.7.3
Biology
Clarifying objectives Bio.2.1.1, 2.2.1, 2.2.2
AP Biology
Competency goals 1.01-1.04, 6.05, 7.01-7.03
AP Environmental
Competency goals 1.01-1.04, 2.02,2.05, 4.01, 4.04, 4.06, 5.01-5.03, 5.05, 7.03, 7.04

Tardigrades

Students will explore the biodiversity of microscopic organisms including tardigrades (water bears). Students will be introduced to the process of collecting lichens and isolating resident tardigrades and other microscopic organisms.

Locations:

* **Purchase Knob,** near Maggie Valley
* **Oconaluftee Visitor Center**

Earth/Environmental Science
Clarifying objectives EEn.2.7.2, 2.7.3
Biology
Clarifying objectives Bio.1.12, 2.2.1, 2.2.2
AP Biology
Competency goals 1.01-1.04, 2.02,2.03,2.05, 7.01,7.02
AP Environmental
Competency goals 1.01-1.04, 2.05,3.02,5.01, 5.02,6.03,7.04

(Turn over for more!)

Program Description	North Carolina State Standards
Air Quality Interactions Classroom ***Ground Level Ozone Garden*** Students collect data for on-going monitoring studies estimating the amount of damage to plants from exposure to ground level ozone. ***Location*** * **Purchase Knob,** near Maggie Valley **Lichens** Students collect data for on-going monitoring studies on lichens; some specieas are senstive to sulfur in the air. ***Locations*** * **Purchase Knob,** near Maggie Valley * **Clingmans Dome** ***Snails*** Students monitor snail populations which possibly are impacted by acid deposition. ***Locations*** * **Purchase Knob,** near Maggie Valley * **Clingmans Dome**	**Earth/Environmental Science** Clarifying objectives EEn.2.2.1, 2.2.2, 2.5.1, 2.5.5, 2.7.1-2.7.3, 2.8.4 **Biology** Clarifying objectives Bio.1.1.1, 1.1.2, 2.1.1-2.1.4, 2.2.1, 2.2.2 **AP Biology** Competency goals 1.01-1.04, 3.02,6.02-6.05,7.01-7.03 **AP Environmental Science** Competency goals 1.01-1.04, 2.04-2.05, 4.04, 4.06, 5.01-5.03, 5.05, 6.01, 7.03, 7.04
Terrestrial Invertebrate Exploration Students inventory the macroinvertebrates of the deciduous forest using scientific methods. In small teams, recognize the interdependence of abiotic and biotic factors and focus on population dynamics. ***Locations*** * **Purchase Knob**, near Maggie Valley * **Oconaluftee Visitor Center**, near Cherokee	**Earth/Environmental Science** Clarifying objectives EEn.2.2.1, 2.5.5, 2.7.1-2.7.3 **Biology** Clarifying objectives Bio.2.1.1-2.1.4,2.2.1,2.2.2 **AP Biology** Competency goals 1.01-1.04,6.02-6.05,7.01 **AP Environmental** Competency goals 1.01,2.05,5.01,6.01
Phenology Students collect tree phenology data for on-going monitoring study. Students will learn about tree identification, carbon sequestration, & phenology. ***Locations*** * **Purchase Knob**, near Maggie Valley * **Mingus Mill**, near Oconaluftee Visitor Center	**Earth/Environmental Science** Clarifying objectives EEn.2.2.1, 2.2.2, 2.5.1, 2.5.5, 2.6.1-2.6.4, 2.7.1-2.7.3, 2.8.4 **Biology** Clarifying objectives Bio.2.1.1, 2.1.4, 2.2.1-2.2.2, 3.5.2 **AP Biology** Competency goals 1.01-1.04,6.02, 6.05, 7.01-7.03 **AP Environmental** Competency goals 1.01-1.04,2.05,5.01,5.02, 6.03,7.04

Each program was developed in cooperation with North Carolina school teachers and are correlated with state and national curriculum standards for the specific grade level with an emphasis on science.

For additional information or to sign your class up, call today!
828-926-6251 or
Susan_Sachs@nps.gov

Most programs have on-line databases that can be accessed back at school to allow for student-led inquiry as they compare their data to that of other groups.