

2019

BLACK ROCK FOREST SUMMER SCIENCE DAY CAMP



STUDENTS AGE 11 TO 15
JULY 15-19
CORNWALL, NEW YORK



Scholarships Available

Authentic science experiences... taught by science professionals!

Black Rock Forest welcomes **middle school (ages 11-15)** students in summer 2019 for authentic, week-long learning experiences in nature, working directly with scientists. Our focus is on understanding nature through scientific observation and investigation, and our classes allow students to explore areas of interest without the pressure of a grade. Classes are developed and taught by subject experts and provide an opportunity to explore college and career possibilities in the natural sciences while having fun in Black Rock Forest, a private 4,000 acre preserve in **Cornwall, NY**.

About us: Black Rock Forest Consortium, founded in 1989, is a non-profit research, education, and conservation organization with membership of 21 prominent universities, schools, and research institutions from the Hudson Valley and the New York metro area. We are located in Cornwall, NY, just north of West Point. Our facilities include two award-winning green buildings, the Science & Education Center and the Forest Lodge. For more information, please visit www.blackrockforest.org.

About the Director: Dr. William Schuster, Black Rock Forest's Executive Director, is the director of the Summer Science Camp program. Schuster holds a PhD in Biology from University of Colorado, an MS in Ecology from Pennsylvania State University and a BA in Biology from Columbia University. Dr. Schuster has been Executive Director of the Black Rock Forest since 1992 and has designed, implemented and overseen a wide variety of education programming for use in the forest and classrooms.

Anyone can sign up. Register online at www.blackrockforest.org or call us at (845) 534-4517. Choose a full day or half-day camp experience. Please be aware that space is limited, and classes will be filled on a first-come, first-served basis.

Cover photos: Arianna Kuhn

**Registration begins Friday
February 1, 2019**

Visit www.blackrockforest.org or call (845) 534-4517 to reserve a space.

Black Rock Forest **Summer Science Day Camp**

- Choose from a variety of options**
- 2 half day classes
 - 1 full day class
 - 1 half day class

CLASS TITLE	July 15-19		Price per week
	Morning 8:30am - 12:30pm	Afternoon 1:30 pm - 5:30 pm	
Biodiversity Blitz	Full Day		\$480
Cold Blooded Creatures	✓	✓	\$240
Discovery, Inquiry and Writing	✓		\$240
Deeper Investigations in Writing*		✓	\$240
Nature Photography	✓	✓	\$240
Make Nature: DIY Electronics	✓	✓	\$240
World of Insects	✓	✓	\$240
Scientific Illustration	✓	✓	\$240



We have **need based scholarships available** thanks to generous support from the Dyson Foundation. For inquiries regarding your eligibility and the availability of scholarships please contact Assistant Program Manager Aaron Culotta (aculotta@blackrockforest.org).

* For students who have already taken "Nature Writing in the Forest and on the River" or "Discovery, Inquiry and Writing"



Health Certification

The Black Rock Forest Summer Science Camp is certified by the Orange County Department of Health. An Emergency Medical Technician is on site the entire time camp is in session. Other medical resources and facilities nearby include Storm King School's infirmary (5 minute drive) and Cornwall St Luke's Hospital (10 minute drive).

Transportation Available

Transportation to and from the forest will be provided with drop off and pick up in the Town of Cornwall and Newburgh. Please call our office (845) 534-4517 to discuss these and other potential pick-up sites. **Lunch is not provided for campers**, therefore campers enrolling in a full day of camp should bring their own lunch.

Biodiversity Blitz

From Ambystoma to Zygoptera

*Dr. Terryanne Maenza-Gmelch,
Senior Lecturer, Barnard College*

Explore the forest to examine as many species as you can: reptiles, amphibians, insects, birds, plants, mammals, fungi and more. Interesting creatures can turn up in unexpected places. Last summer over 300 species were identified and observed and we hope to beat that number this summer! We will hike in wetlands, stream ravines, ridge tops, meadows and the forest while examining the amazing biodiversity in this part of planet Earth. Students will participate in ongoing scientific research at the forest: surveying birds by sight and sound along an elevation transect; capturing, measuring, weighing, and releasing painted turtles for the turtle project; and identifying and counting invertebrates in a deer exclusion experiment. Students will also engage in daily art projects and cook with wild edible forest fruits and ingredients from our local farm. Participants will leave with an understanding and appreciation of the forest ecosystem, training in plant and animal survey methods, and a clear vision of the benefits of biodiversity and how to protect it on a personal and global scale. *Photo: Terryanne Maenza-Gmelch*

July 15-19 Full Day, \$480



Cold Blooded Creatures

A Course in Field Herpetology

Arianna Kuhn, PhD candidate, City University of New York Graduate Center and Richard Gilder Graduate School at the American Museum of Natural History

Black Rock Forest, with its diverse habitats, is home to 34 different species of reptiles and amphibians. Students will apply field techniques used by biologists to find and catch reptiles and amphibians. In particular we will be setting drift fences in the forest and turtle traps in ponds. Ultimately students will learn how to identify the reptiles and amphibians of the forest using a dichotomous key, as well as learning about their ecology, behavior, and how to collect and analyze data for scientific research. Data that will be collected will include body measurements (e.g. shell measurements of turtles, body length of snakes), sex, location, and other important information at the time of capture. With this information students will be able to address questions about population demographics and habitat selection of the different reptile and amphibian species.

Photo: Arianna Kuhn

July 15-19 Morning or Afternoon Session, \$240



Discovery, Inquiry, and Writing

What it means to be an Authentic Explorer

Rob Balch, English Teacher, Beacon Middle and High School

The beautiful, natural surroundings of Black Rock Forest provide the perfect setting for this exploration and discovery based class, where students will experience what it means to truly discover the natural world around them. In addition to hiking extensively throughout the forest, students will be introduced to the travels and writings of explorers and naturalists Charles Darwin, Lewis and Clark, Henry David Thoreau, John Muir, and others. They will also construct their own nature journals in which to chronicle their experiences, sketches, and other noteworthy moments of observations and inspiration. Students will learn about the environs of Black Rock Forest- the peaks, valleys, streams, and reservoirs- all seeing how these unique, integral elements are part of the larger whole, as they hike, write, read, sketch and reflect their way through the week to come to a better understanding of the wonderful world of nature.

July 15-19 Morning Session only, \$240



Deeper Investigation of Discovery and Writing

Rob Balch, English Teacher, Beacon Middle and High School

Building on the previously offered course Discovery, Inquiry, and Writing, this class will look to expand and explore the deeper nuances of the writing process as it relates to nature. While certainly ample time will still be spent exploring the beautiful surroundings of Black Rock Forest, special attention will be spent on the writing and revision aspect of this work. As with the first level of this course, students will read and study the works of Henry David Thoreau, Charles Darwin, John Muir, and explorers Lewis and Clark. Students will place increased, specific emphasis on the writing process and the more effective articulation of their individual and collective experiences as we trek through the forest, and a large component of our efforts together will be the sharing of student work with others in this class.

July 15-19 Afternoon Session only, \$240



Nature Photography

Investigations in Beauty, Mystery, and Science

*Peter Terezakis MPS, Artist in Residence, New York
University Associate Arts Professor, Tisch School of the Arts*

Informed by its geology, Black Rock Forest's beautiful woodlands, sky, and bodies of water are home to many interconnected forms of life. There are also many historical markers of man's impact on the land which have different stories to tell.

Through demonstration and experimentation, students will learn about the mechanics of human vision, replicate some of the discoveries of optical physics, and how to better use their cameras to discover stories of nature and man which are often hidden in plain sight!

By discussing, experimenting, and observing, students will document their discoveries of nature and create a web-based record of their findings for others to follow.

From a cell phone on up, students must provide their own digital camera.

Photo: Terryanne Maenza-Gmelch

July 15-19 Morning or Afternoon Session, \$240



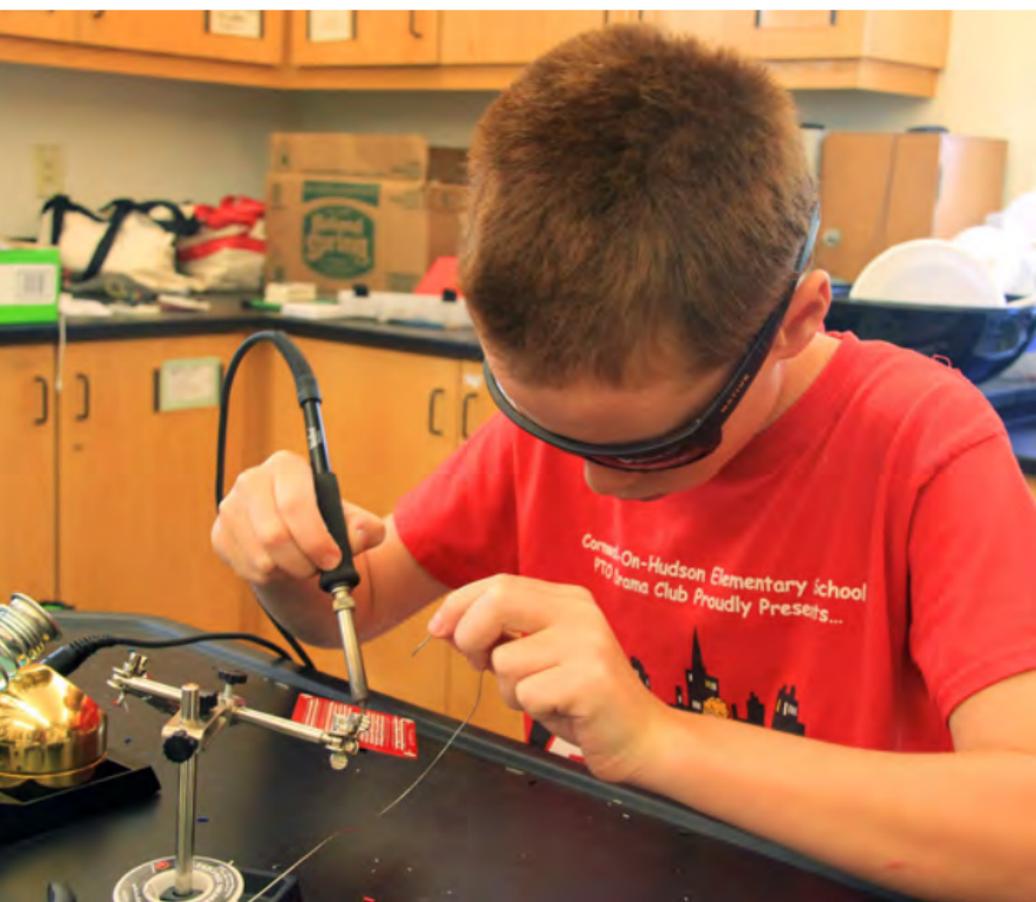
Make Nature: Hands-On Scientific Observation with DIY Electronics

Build Your Own Forest Field Station

Jeremy Hise, Systems Professional and Environmental Biologist, B.A. Columbia University

Are trees bigger during the day or night? How long does it take for a tree to respond to an increase in soil moisture? How does soil respond to rain? Do the air and ground warm and cool at the same rate? There are new and exciting ways to collect scientific data that gives us novel insights into the natural world around us. In this materials lab, students get hands-on experience working with electronics to explore unseen elements of our natural environment. They will work in groups to assemble, test, program and deploy mini field stations within the Black Rock Forest. Students will work with electronics and program devices to take scientific measurements. Students will also use problem solving skills to change and manipulate their computer code so devices work properly. This class gives students the opportunity to develop scientific questions and find the answers using tools they build themselves. This summer students will acquire valuable new skills that allow them to continue their investigations on their own.

July 15-19 Morning or Afternoon Session, \$240



The World of Insects

Infinite Variety on a Common Theme



Dr. Julian Stark, Associate Professor of Biology, CUNY/Queensborough Community College and Research Associate in Invertebrate Zoology, American Museum of Natural History

In this class, students will be introduced to the fascinating world of insects. We will discuss how insects evolved, learn about their bizarre body parts and characteristics, survey the diversity of the different types, and explore how insects interact with other forest animals. The class balances time in the classroom with field investigations and laboratory work to analyze what was found in the field. Students will learn how to collect, preserve, and identify (to Order) specimens, and will make a 10-20 specimen collection box to take home upon the completion of the class. *Photo: Terryanne Maenza-Gmelch*

July 15-19 Morning or Afternoon Session, \$240

Scientific Illustration

Rendering Beauty

Christina Perez, Illustrator and Designer, B.F.A Savannah College of Art and Design

In this class, students will be introduced to the fascinating Black Rock Forest's breathtaking woodlands and abundance of botanical specimens is the optimum space to create, capture and understand the nuances of botanical illustration. In this class, students will be taken back to a time where video and photography were not accessible. This class aims to understand the fundamentals of sketching and how those mechanics are applied to nature/ scientific illustration. Through discussion and exploration, students will sketch to discover rhythms, composition and function. We aim to create 1-2 fully rendered specimens along with a sketch-book of studies and observations.

Illustration: Christina Perez

July 15-19 Morning or Afternoon Session, \$240

