



# BLACK ROCK FOREST CONSORTIUM



2017 SUMMER  
SCIENCE  
DAY CAMP

STUDENTS AGE 11 TO 15  
JULY 10-14 AND JULY 17-21  
CORNWALL, NEW YORK



BLACK ROCK  
FOREST  
CONSORTIUM

65 Reservoir Road  
Cornwall, NY 12518

# Authentic science experiences... taught by science professionals!

**Black Rock Forest Consortium** welcomes **middle school (ages 11-15)** students in summer 2017 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](http://www.blackrockforest.org).

**About the Director:** Dr. William Schuster, Black Rock Forest Consortium'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 Consortium 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](http://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.

**Registration begins Friday  
February 3, 2017**

Visit [www.blackrockforest.org](http://www.blackrockforest.org) or call (845) 534-4517 to reserve space.

## Choose from a variety of options:

- 2 half day classes
- 1 full day class
- 1 half day class

Basic Weekly Fee    Half Day    \$240

Full Day    \$480

CLASS TITLE	Week 1: July 10-14		Week 2: July 17-21		Price per week
	Morning 8:30am - 12:30pm	Afternoon 1:30 pm - 5:30 pm	Morning 8:30 am - 12:30pm	Afternoon 1:30 pm - 5:30 pm	
Biodiversity Go!	Full Day	✓	Full Day	✓	\$480
Cold Blooded Creatures	✓	✓	✓	✓	\$240
Discovery, Inquiry and Writing		✓		✓	\$240
Engineering from Nature	✓	✓			\$240
Flying High Ornithology*	✓		✓		\$290
Investigations in Beauty	✓	✓	✓	✓	\$240
Make Nature: DIY Electronics			✓	✓	\$240
Nature Writing*	✓		✓		\$290
World of Insects	✓	✓	✓	✓	\$240

\* Includes 1 day kayak rental

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## Health Certification

The Black Rock Forest Consortium 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**.



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## Biodiversity Go!

### From Blueberries to Bluebirds

*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.

**July 10-14 Full Day, \$480**

**July 17-21 Full Day, \$480**



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## Cold Blooded Creatures

### A Course in Field Herpetology

*Dr. Brendan Reid, Gerstner Postdoctoral Fellow, American Museum of Natural History, Department of Herpetology and Ms Arianna Kuhn, PhD candidate, City University of New York Graduate Center and 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, etc.), 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.

**July 10-14 Morning or Afternoon Session, \$240**

**July 17-21 Morning or Afternoon Session, \$240**



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## Make Nature: Hands-On Scientific Observation with DIY Electronics

### Build Your Own Forest Field Station

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

Are trees bigger during the day or night? How long does it take for a tree to respond to rainfall? 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 17-21 Morning or Afternoon Session, \$240**



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## Discovery, Inquiry, and Writing

### What it means to be an Authentic Explorer

*Robert Balch teaches English at Beacon High School, and he is a fellow of the National Writing Project. He has extensive experience hiking and backpacking throughout the Hudson Valley, the Catskills, and in the Adirondacks*

The beautiful, natural surroundings of Black Rock Forest are 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 10-14 Afternoon Session only, \$240**

**July 17-21 Afternoon Session only, \$240**

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## Engineering from Nature

*Sam Keany, Physics Teacher, Chair of Science and Dean of Students at The Browning School and Vice-President of Black Rock Forest Consortium*

This one-week course will explore aspects of engineering viewed through the lens of bio-mimicry. Evolution has spent millions of years developing very effective wings, paddles and jets for a wide range of insect propulsion. Increasingly, engineers look to living systems for inspiration and to borrow design ideas. In this course, students will examine the motion and mechanical behavior of a range of macro-invertebrates caught in the Black Rock Forest ponds and forest areas. Careful observations by eye and aided by video-capture will be recorded. Using their observations as inspiration, students will design and build vehicle propulsion systems for on-site testing. This course will develop students' design abilities through sketching, planning, choosing materials, constructing proto-types and testing original vehicles in a workshop setting.

**July 10-14 Morning or Afternoon Session, \$240**

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## Flying High Ornithology

*Sara Pace, MA Conservation Biology, Columbia University, Consulting Biologist*

The sights and sounds of songbirds provide an excellent introduction to the world of ornithology. Students will experience birding in a variety of habitats, including a kayaking adventure on the Hudson River to observe an abundance of wet-land birds! Students will also learn about the importance and diversity of birds, participate in interactive conservation activities, learn how birds have influenced human culture and how to collect real scientific data. Students will keep scientific field journals as they document the birds they see and hear throughout the week. All participants will leave with an understanding of avian behavior and knowledge of the birds of Black Rock Forest. Binoculars, birding field guides, and journals will be provided.

**July 10-14 Morning Session only, \$290\***

**July 17-21 Morning Session only, \$290\***

\*Includes \$50 Kayak rental fee



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## Investigations in Beauty, Mystery, and Science

### You and Your Camera

*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.**

**July 10-14 Morning or Afternoon Session, \$240**

**July 17-21 Morning or Afternoon Session, \$240**

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## Nature Writing in the Forest and on the River

*Rob Balch, English Teacher, Beacon Middle and High School; Teacher Consultant, Hudson Valley Writing Project at SUNY New Paltz*

Join us and gain inspiration from our Black Rock Forest hikes and on our special Hudson River kayak expedition. We will look at the Forest and the River through a nature writer's lens, imagining the impact of these special places on people and people's impact on these places. We will have fun trying all kinds of writing, starting several short pieces as we engage the writer's craft, using skills of observation, description, sensory awareness, and drawing. We will hone one piece of writing to include in our group anthology. This program involves collaboration with the Hudson Valley Writing Project at SUNY New Paltz (HVWP).

**July 10-14 Morning Session only, \$290\***

**July 17-21 Morning Session only, \$290\***

\*Includes \$50 Kayak rental fee

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## 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.

**July 10-14 Morning or Afternoon Session, \$240**

**July 17-21 Morning or Afternoon Session, \$240**

