

# BLACK ROCK FOREST NEWS

Fall 2014

Black Rock Forest Consortium

Volume XXIV, No. 3

## Another Successful Summer Science Camp

Once again, Black Rock Forest Consortium's summer science camp was a big hit with students and parents, and it also received high marks on a study of student engagement conducted by a research team from Teachers College. High school and middle school students each came to the Forest for a week, and high school students, for a second year, visited the University of Florida's Seahorse Key Marine Laboratory for a week. The concept of the camp is understanding nature through observation and investigation. Students work directly with scientists, graduate students and faculty from college and university members of the Consortium, who serve as content specialists and develop and teach the classes in collaboration with teachers from K-12 schools.

Student comments included "I had a fear of insects before this class but now it's all gone from the fieldwork" and "Getting to see all these animals and bugs up close was pretty amazing. Most kids from New York City can't experience this." Par-

ents were enthusiastic too. "I had to buy [my daughter] a new snake," said one, while another added that "These kinds of experiences can have a life-changing impact. My daughter has always loved science but loves it even more now," and one described it as "the perfect combination of intellectual stimulation and out-of-city adventure."

This year, the Consortium was able to broaden the scope of the classes offered by collaborating with the Hudson Valley Writing Project on a course called Writing on America's River. It renewed the most popular classes from last year and added one on trees. Instructors came from the American Museum of Natural History, Barnard College, and Columbia University, among other institutions.

Thanks to scholarships provided by the Dyson Foundation, Time Warner Cable, the Ralph E. Ogden Foundation, the Cornwall Lions Club, the local Iron Worker's Union, and individual donors, 49 of the 110 students were able to participate

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## AMNH Makes Diverse Use of the Forest

Engaging in both research and education, scientists and other staff from the American Museum of Natural History, a founding member of the Consortium, made diverse use of the Forest over the summer. Students in the Museum's Richard Gilder Graduate School took a parasitology course, high school students trained in field methods, teachers in the Master of Arts in Teaching program returned for a second year to study earth science in the field, teachers from the Urban Advantage program enjoyed two days of team building and outdoors experiences, and graduate students explored insect diversity.

### Learning Field Methods

In May, Dr. Mark Siddall, a museum curator and professor in its graduate school, took four graduate students to the Forest for a week to study field parasitology. The students designed their own project investigating the relationship between the genotypes and genetic diversity of a host organism, the red-spotted newt (*Notophthalmus viridescens*), and those of two kinds of parasites found in the newts' intestinal tracts, nematodes (roundworms) and trematodes (flatworms). They collected the newts in three different and separated ponds in the Forest, taking tissues for genotyping and sampling the parasites for identification. Analyzing mitochondrial and microsatellite genomic data should allow the students to determine whether the genetic diversity of the host newts is related to the genetic diversity of their parasites, Dr. Siddall explained.

As part of its education efforts, which stretch from pre-K through graduate school and adult programs, the Museum offers a Science Research Mentoring Pro-

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Students in the World of Insects course add to their insect collections and learn about new insects.



## Report from the Executive Director

Nobody wants to be involved in an accident with a deer but it happens 1.5 million times each year in the United States. People also do not want ecosystems to be severely degraded by browsing of abnormally high densities of deer, leading to their malnutrition and starvation, but that also is happening in many areas. Improved road features to permit safe wildlife passage are needed but will not solve the underlying issue. Landscape-scale management to reduce overabundant deer populations can help solve both issues while also reducing Lyme disease and agriculture, forestry, and landscaping damage. No single management solution is appropriate for all cases. But nationwide problems are best addressed by broad knowledge sharing and cooperation, and most can play a helpful role.

There are many cases where sustainable deer densities have been maintained through management. In much of northern Wisconsin, high deer densities prevent forest regeneration and reduce native biodiversity. But on lands of the Menominee tribe, deer densities are much lower than surrounding areas due to active management to preserve a variety of native ecosystems, including continuation of long-established deer harvesting practices. In the forest around Quabbin Reservoir in western Massachusetts, deer densities of up to 70 per square mile once prevented forest regrowth and threatened drinking water quality for 2.5 million people. A management program was implemented to balance deer herd densities with forest regeneration, including annual deer hunts, which have now been reduced as the goals have changed from reduction to population maintenance. In confined locations such as Fire Island, NY, and Fripp Island, SC, fertility control methods have significantly lowered deer birth rates, reducing populations to about half of their original size. This has succeeded at an only partially enclosed property in Maryland.

A recent study showed that significantly reducing deer densities in two small Connecticut towns greatly reduced both tick densities and reported cases of Lyme disease. In other areas, reduction of deer populations has been directly coincident with

fewer deer-vehicle collisions. In Black Rock Forest, we have documented substantial new tree regeneration concomitant with reduced deer densities.

Helpful steps that people and organizations can take include working cooperatively to better identify problem areas and to provide the data needed to guide smart decisions. Different areas can support different deer densities, and objectives also differ from place to place; thus factors such as deer-vehicle collisions, plant regeneration, deer health, and native biodiversity need to be studied as well. Individuals, communities, and nonprofit organizations can join to accomplish deer surveys, sharing the efforts and costs. Academia, government agencies, and private companies might form partnerships across large landscapes to use forward-looking infrared (FLIR) technologies to pinpoint problem areas and monitor control efforts.

In some states, regulatory frameworks need to be updated. Policies that helped deer populations recover now in some places perpetuate unnaturally high densities. Changes in hunting permitting and season length have helped bring some overabundant deer populations to more sustainable levels.

It would be beneficial for more people to eat more venison. We currently eat a very small amount of venison but donation programs have fed many poor people while also reducing deer herds. Sale of wild venison has been illegal since the early 20th century, but studies are underway to explore how a commercial venison market might be sensibly established. Research and trials to make fertility control practical in more of the most intractable situations should also be supported.

Our Consortium is happy to share information about our integrated forest ecosystem management strategies, such as promoting top carnivores and maintaining large continuous areas of mature forest, which will over time help prevent deer overabundance. The future of many species, including our own, depends on healthy forests and ecosystems, and we need to work together to meet our continuing stewardship responsibilities.

— Dr. William Schuster

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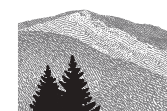
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## Citizen Science at Black Rock Forest

by Sam Keany and Mary Leou

Citizens doing science — not the stuff of the academe! There is a rich history of “citizen science” and the term, as an umbrella, covers a range of activities engaging the public outside academic or industrial institutions in scientific research through active participation in the local environment. Information technology is allowing all people to take part in collective scientific research. People without formal science training are becoming more engaged in gathering and analyzing data.

Citizen science is used in a number of ways to study the environment: from phenology to water quality to bioassessment. Citizen science can be used with K-12 students to teach them about the local environment and connect them to real-world science investigations, supporting STEM learning standards. Many

Consortium members already engage in a variety of citizen science projects. The Forest itself has occasionally been used as a site for citizen science.

However, at Black Rock Forest there is great potential for citizen scientists to make big contributions in the gathering and analysis of data. Citizen science simultaneously supports the research and education goals of the Consortium. A new project monitoring tree growth with wireless dendrometers is being designed to allow students and researchers to gather data streamed through a portal on the Black Rock Forest website. This will provide Consortium members with rich opportunities to participate in our own citizen science project.

Additionally we hope to provide a series of citizen science professional development workshops for educators that support the goals of the Consortium. The Consortium has also recently joined the

Citizen Science Association, which promises to be a valuable resource for Consortium efforts reaching a wider audience.

The value of these programs cannot be overstated. They tap into individual interests of the general public, engage the services of groups in analyzing large data sets, and sharpen their observation and systems thinking skills. The explosion in handheld technology and online data-logging, applied to on-the-ground observations, has energized the entire citizen science enterprise. We look forward to bringing citizen science initiatives into Black Rock Forest, making it a repository for data collection, sharing, and learning. 🌱

*Mr. Keany is chair of the science department at the Browning School and Dr. Leou is a professor of environmental education at NYU's Steinhardt School of Culture, Education, and Human Development.*

## Teamwork Tackles Two Invasive Species

Thanks to teamwork involving a variety of Consortium members and local groups, two potentially dangerous invasive plant species were removed from the Forest this fall: mile-a-minute weed (*Persicaria perfoliata*) and the Japanese angelica tree (*Aralia elata*). Invasive species threaten native biological diversity because they can grow rapidly and expand aggressively.

Although mile-a-minute weed, a native of Asia, has become widespread in the lower Hudson Valley, in some places covering whole hillsides, it had never been found in the Forest until this summer. “We made a management decision to keep an eye out for it and eradicate it if it ever became established in the Forest,” said Dr. William Schuster, the Consortium’s executive director. This summer, a group of educators and students from the American Museum of Natural History (see “AMNH,” p. 1) found a couple of patches of it on Golden Ridge, and sent the GPS coordinates to Dr. Schuster. He then contacted Linda Rohelder of the New York — New Jersey Trail Conference, who heads up the Lower Hudson Partnership for Regional



Storm King School student removing an invasive plant. (Photo courtesy of Jason Kaplan and the Cornwall Local)

Invasive Species Management (PRISM) to find out the best way to eradicate the weed at this time of year, learning that the most important action is collecting and destroying all the seeds, as it is an annual plant. The Cornwall Boy Scouts had already planned a trip to the Forest and, under Forest Manager John Brady’s direction, they pulled up all the mile-a-minute weed and collected all the seeds into bags; Consortium staff then burned the seeds.

Control of the angelica tree also depends on preventing it from reproducing,

not only by seed but also by runners from the roots. About 75 small trees had become established near the summit of Black Rock Mountain, but the largest were flowering and going to fruit. Jim Uhlig, a biology teacher at the Storm King School, is interested in providing real-world science

and conservation projects for his students. He brought a group of high school students to the Forest to pull out the small trees, cut off and bag the fruits (for later destruction), and cut the larger trees so Consortium staff could later kill the roots. Consortium staff will continue to monitor these sites in case any seeds or fruits were missed.

“There will be other opportunities for student groups to help us eradicate these and other invasive species,” Dr. Schuster noted, “and they can contact us if they are interested.” 🌱

**Summer Science Camp** (cont. from p. 1)

in the Summer Science Camp. In Florida, the Levy County School District provided funding to allow two local students to join the class at Seahorse Key.

For sleepaway campers at Black Rock Forest, there were exciting evening programs that combined fun with education. Lodge supervisors oversaw the students at night, complemented by a Consortium staffer certified as an Emergency Medical Technician.

**Studying Student Engagement**

Since the Consortium is committed to providing the most effective hands-on science experiences for its members and for Summer Science Camp students, it was delighted with the results of a study conducted over the summer by researchers from Teachers College, led by Adriana Maria Carvalho Joazeiro de Baker, a consultant in environmental education. Using the Baker-Rodrigo Observation Method Protocol (BROMP), the researchers observed 60 hours of classes at the Forest, evaluating six of the Science Camp courses. The technique is designed to study student engagement, a prerequisite for learning, by making affective and behavioral observations. For affect, trained observers determine whether a student exhibits boredom, delight, engaged concentration, frustration, or confusion; for behavior, whether a student is on-task, off-task, or engaged in conversation. This is the first time BROMP has been used in a field station setting.

While she is still analyzing her results, Ms. Joazeiro de Carvalho found that many of the classes had high levels of student engagement from the start, while in others the students became more engaged as they got involved in collaborative learning activities. In one class, where the students were initially less engaged, the researchers worked with the instructor on techniques for increasing engagement. "We were able to significantly reduce boredom and off-task behavior after just two hours of observation and 90 minutes of working with the instructor," she said. "BROMP can provide rapid feedback to instructors about which approaches work best, and we can use it to help instructors make their activities more engaging to students for existing classes, as well as in the design of new classes." She notes that every type of instruction at the Forest, classroom instruction and field instruction, individual work, small group work, and whole group



Students from the Amazing World of Trees course sand tree cookies for a dendrochronology lesson later in the week.

work, can be engaging; the differences are in the details of instruction.

**The Classes**

Thirty-nine high school students participated in the program at the Forest, with 29 staying overnight and 10 day students. With the exception of the Biodiversity Blitz, a full-day course taught by Barnard College professor Dr. Terryanne Maenza-Gmelch, the students could choose one class in the morning and one in the afternoon. Their options included World of Insects, taught by Dr. Julian Stark, a research associate at the American Museum of Natural History and a professor at Queensborough Community College; Surveying Turtles, taught by Ed Myers, a doctoral student at the City University of New York; and Flying High Ornithology, taught by Sara Pace, a recent graduate of Columbia University. The instructors were assisted by teachers from the School at Columbia, the Newburgh Enlarged City School District, and the Wappingers Falls School District.

At the end of June, twelve high school students traveled to Florida to the Seahorse Key Marine Laboratory in the Cedar Keys National Wildlife Refuge. The students explored the marine environments of mangrove swamps, salt marshes, ocean habitats, and a lagoon with daily labs and fieldwork, and they designed their own research projects. They were instructed by Marine Laboratory scientists, with the assistance of Annie Kushner, a teacher at the Urban Assembly School for Applied Math and Science, and

Jack Caldwell, the Consortium's operations manager and a former teacher.

Science Camp was especially popular with middle school students; 59 of them participated, with 27 sleepaway campers and 32 day campers. Many of them came from the Hudson Valley area.

They had a choice of morning and afternoon classes, except for the all-day Biodiversity Blitz, which artist Linda Stillman joined for a day. Their other options were Surveying Turtles; Writing on America's River, a course offered in collaboration with the Hudson Valley Writing Project and taught by two English teachers; The Art of Scientific Observation, offered in collaboration with the Storm King Art Center and taught there by Hara Woltz, a landscape architect and scientist from Columbia University, and Victoria Lichtendorf, the Art Center's education director; Flying High Ornithology; and The Amazing World of Trees, taught by the Consortium's executive director, Dr. William Schuster, in collaboration with Jack Caldwell and Katie Pavlis, the Consortium's research associate/environmental educator. Participating teachers came from Newburgh and Wappingers Falls.

"We are fortunate to have such a wealth of scientists to develop and lead these courses and are grateful for the assistance of many fine classroom teachers," said Dr. Schuster. "We knew that the classes were very engaging, but it is helpful to have that quantified by the BROMP protocol and in a way that can make classes even better." 🐾





### AMNH Makes Diverse Use of the Forest

(continued from page 1)

gram for high school students who can commit to working with Museum scientists for at least four hours a week during the school year, participating in monthly advisory meetings, and attending a three-week summer science program. The students learn lab skills and contribute to scientific research conducted at the Museum. Supported by the Doris Duke Charitable Foundation, the trip to the Forest for training in field methods was part of the summer science program. Dr. Christopher Raxworthy, a curator of herpetology and the associate dean of science for exhibition and education, was there for part of the week-long program and said that while he was there the students caught large snapping turtles, saw timber rattlesnakes, observed amphibians during night hikes, used telescopes for star gazing, and made scientific illustrations.

For two September weekends, Dr. David Grimaldi, a curator in the Museum's Division of Invertebrate Zoology and a professor in its graduate school, took masters students in his Columbia University insect biodiversity class to the Forest. The purpose of the trip was to introduce the students to methods of sampling terrestrial arthropods and to gather specimens for their collections. "We sampled from streams and the ponds, and by sweeping through vegetation, hand netting, beating vegetation, setting up special traps, sifting forest leaf litter, lots of different methods," Dr. Grimaldi explained. The students also learned to prepare the specimens and identify them. Although September is not the best time for collecting insects, the students found more than 230 species of arthropods in 15 orders and 90 families, which Dr. Grimaldi described as "impressive." He added that the students all enjoyed being in the Forest "immensely" and that the experience builds their relationships with each other.

### Teaching Teachers

For a second year, graduate students in the Museum's Master of Arts in Teaching program for middle school earth science teachers spent a week in the Forest in July. Students in the program, which is funded in part by the New York State Department of Education and the National Science Foundation, as well as by Museum donors, commit to teaching in a high-needs school in New York for at least



Gilder Graduate School students in the Field Parasitology course.



A pickerel frog. (photo: Jay Holmes)



Photomicrograph of a brown lacewing collected in the Insect Diversity course (photo: David Grimaldi).

four years; the program is designed to address the shortage of qualified science teachers in the state. The students take classes at the Museum and have residencies at partner schools before earning their degree from the New York State Board of Regents.

This summer, 17 students from the current class participated in the program at the Forest, accompanied by two returning students who had graduated and a visiting graduate student. They collected and studied Precambrian rocks of the Hudson Highlands, which form outcrops in the Forest, and explored these rocks in Harriman and Bear Mountain State Parks as well. Some students used the rocks for their lab-based research projects. The students were taught by curators from the Museum's Department of Earth and Planetary Sciences, Dr. James Webster, Dr. George Harlow, and Dr. Denton Ebel, and by postdoctoral teaching fellows.

Now celebrating its tenth year, the Urban Advantage program is a partnership between the New York City Department

of Education and eight cultural organizations within the city, including the Museum, that supports long-term science investigations by middle school students through professional development, field trips and vouchers for students, families, and teachers, and equipment and supplies for schools. The other cultural organizations are the Brooklyn Botanical Garden, the New York Botanical Garden, the New York Hall of Science, the Queens Botanical Garden, the Staten Island Zoo, and the Wildlife Conservation Society's New York Aquarium and Bronx Zoo.

The summer trip to the Forest was designed to plan for the next academic year: some 23 lead teachers who help the Museum design and facilitate professional development workshop attended, as well as about 20 Urban Advantage coordinators from the participating cultural organizations. The trip involved a combination of professional development, planning, and team-building and community building through hikes and other activities. 🐞

## RESEARCH STUDIES IN THE BLACK ROCK FOREST 2014

The Black Rock Forest Consortium is committed to encouraging collaboration among member institutions and also between researchers and students.

**Nitrogen Fixation and Nutrient Cycling Experiments in Black Rock Forest.** Duncan Menge (Columbia University). *Contact: dm2972@columbia.edu*

**Resolving Advection Issues in Eddy-Flux Measurements in Complex Terrain.** Chuixiang Yi, Xiyan Xu, Eric Kutter, and George Hendrey (Queens College). *Contact: Chuixiang Yi (Chuixiang.Yi@qc.cuny.edu)*

**Are Garlic Mustard Effects on Soil Processes and Microbial Communities Reversible?** Kristina Stinson (Harvard Forest) and Serita Frey (University of New Hampshire). *Contact: Kristina Stinson (kstinson@harvard.edu)*

**Mercury Concentrations and Exposure Levels in Terrestrial Food Webs: Pathways for Mercury Bioaccumulation in Insectivorous Songbird Communities in New York State.** David Evers (Biodiversity Research Institute). *Contact: devers@bri.com*

**Linking Holocene Vegetation and Carbon Accumulation with Hydrological Change Using Macrofossils, C/N, Stable Isotopes, and Biomarkers from Sutherland Pond/Fen and Tamarack Pond.** Dorothy Peteet (Lamont-Doherty Earth Observatory of Columbia University). *Contact: peteet@ldeo.columbia.edu*

**Analysis of Avian Diversity in Relation to Vegetation Composition and Structure in the Black Rock Forest-Schunnemunk Mountain Wildlife Corridor.** Sarah Gilly and Terryanne Maenza-Gmelch (Barnard College). *Contact: Terryanne Maenza-Gmelch (tm263@columbia.edu)*

**Scaling of Variability in Populations, Individuals, and Ecosystems: Taylor's Law and Beyond.** Joel E. Cohen and Meng Xu (Rockefeller University), and William Schuster (Black Rock Forest). *Contact: Joel Cohen (jcohen@rockefeller.edu)*

**Physiological Response to Temperature across Nine Tree Species in a Northeastern Temperate Forest.** Angelica Patterson and Kevin Griffin. *Contact: Kevin Griffin (griff@ldeo.columbia.edu)*

**The Future of Oak Forests.** William Schuster (Black Rock Forest), Kevin Griffin (Lamont-Doherty Earth Observatory of Columbia University), Shahid Naeem (Columbia University), Kathleen Weathers and Amanda Elliott Lindsey (Cary Institute for Ecosystem Studies), and Jerry Melillo (The Ecosystems Center, Marine Biological Laboratory). *Contact: William Schuster (wschuster@blackrockforest.org)*

**Consequences of Oak Loss on Microbial Community Composition and Function.** Krista L. McGuire and Ika Djukic (Barnard College). *Contact: Krista McGuire (kmcguire@barnard.edu)*

**Native Plant Performance along an Urbanization Gradient.** Kevin Griffin (Lamont-Doherty Earth Observatory of Columbia University), William Schuster (Black Rock Forest). *Contact: Kevin Griffin (griff@ldeo.columbia.edu)*

**Effects of Tree Girdling and Herbivory on Mesofauna Communities in a Temperate Deciduous Forest.** Natalie Bray (Columbia University) and Kevin Griffin (Lamont-Doherty Earth Observatory). *Contact: Natalie Bray (nab2165@columbia.edu)*

## Early Forest Data Digitized

When Dr. Ernest Stillman created the Black Rock Forest in 1929, he immediately started collecting data about the Forest and its trees. One of his sons, Dr. Calvin Stillman, became a professor of environmental resources at Rutgers University. Now, thanks to the generosity of the Stillman family, much of the early data from the Forest has been digitized; named the Calvin Whitney Stillman Research Archive, these resources are being made available through the Consortium's new website (see "Forest News in Brief," p. 7).

The Stillman Archive includes the first complete inventory of the Forest from 1929, the original flora by Hugh Raup published in 1938, all of the 46 Black Rock Forest Papers and Bulletins published between 1930 and 1975 (including three by Calvin Stillman himself), and all of the data from eight long-term Forest growth plots established in the 1930s and remeasured every five years until 1993 and annually since then. These long-term data are downloadable along with metadata and original field records. They include information about tree species, diameter, and canopy class, as well as detailed location and height data for many of the trees. The data sets will be updated on the website each year.

"We are extremely grateful to the Stillman family for enabling us to digitize these vital early data from the Forest and make them available on our website," said Dr. William Schuster, the Consortium's executive director. "The long-term plot data in which individual trees on fixed plots have been counted and measured for more than 80 years, are an inestimable resource for scientists interested in changes in tree growth patterns over the years, as there are few comparable resources."

The long-term plot information has been used in ways that past Forest researchers, who meticulously gathered and recorded the data, could never have imagined, including testing and extending a well-known pattern in population variability (see "New Use for Data," Fall 2012). "Now that these data will be more easily available," adds Dr. Schuster, "we anticipate scientists making much fuller use of them in single-site, regional, and global studies of tree growth." 🌲

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## Forest News in Brief

### Conservation Easement Protects Forest.

An agreement in late October between the Black Rock Forest Preserve, the Open Space Institute, and New York State also adds land to the Forest and establishes a fund to preserve additional land. More information in the next issue.

### New Institutional Directors on the Consortium Board.

At the October members meeting, the representatives from the Consortium member institutions selected five new representatives to the Consortium's Board of Directors, who will take their places alongside the elected members of the Board for two years. The new institutional directors are Michael Brooks from the Cornwall Central School District, Terri Carta from the Central Park Conservancy, Francesco Filiaci from the Calhoun School, Deborah Gardner from Hunter College, and Lisbeth Uribe from the School at Columbia.

**Fall Family Day.** The Consortium held its first Family Day on October 11, with morning and afternoon activities designed for different age groups. Children,

could make leaf animals and posters, build birdhouses, investigate acorns, study deer ecology, and climb three peaks while learning about forest ecology. Some 25 families participated.

**New Website Launches!** In October, the Consortium launched the first phase of its new website, designed to not only look more modern but also to include features that will be of value to members of the Consortium and that will intrigue other visitors to the site. The home page features real-time weather data from the Forest, information about natural events happening in the Forest each month, an opportunity to "listen to the Forest" with bird and frog calls, news and upcoming events, and rolling banner stories on research, education, and conservation. Delving deeper into the site, researchers and educators can find resources for planning their trips to the Forest, as well as environmental data from the Consortium's monitoring stations, curricula, information about the Forest's sustainable technology, the opportunity to donate to the Consortium, and much more. Future

phases of development will include more biological and environmental data, direct access to publications, and curriculum resources.

**Online Reservations.** With the launch of the new website, all school reservations for Forest visits and activities should be made online. Instructions on the website will lead visitors through the process. Jack Caldwell, the Consortium's operations manager who has been overseeing the development of the online reservation system, worked with faculty from several member institutions to test the system and will continue to work with others as the program begins. Visitors can check whether the dates they want to come to the Forest are open and book facilities or Forest locations; Consortium staff will review the request and e-mail to confirm the booking or request additional information. If an overnight stay is involved, the system will calculate the cost of the trip and help create a room assignment list. Jack Caldwell will make sure all member institutions feel comfortable with the new procedures. 🐾





## BLACK ROCK FOREST CONSORTIUM

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## Report from the Forest Manager

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Hiking the trails of Black Rock Forest reveals storylines of environmental changes over the years on the way to “Visionary Enchantment,” the famous phrase used by Merriwether Lewis in 1804 to describe his first view of the falls of the Missouri River.

Hiking through the once dark, sentinel hemlock groves along the Black Rock Hollow Trail reveals those large evergreens giving way to black birch in most places. Three to twelve feet high, these native seedlings are reshading the forest floor with areas of dense growth. Traversing forests of oak-hickory and maple, the Stillman Trail displays the occasional large blowdown and ice-damaged canopy tree remnants from ice storms and hurricanes. Sprouts can be seen now reclosing the canopy. Areas of upturned roots and decaying stems are sprouting new stems of birch, maple, sassafras, and blueberry, occasionally competing with non-native invasive plants.

Reaching the Forest’s upper elevations, dramatic sightings of newly defoliated red oak are startling. Survivors of the 2008 ice storm, many have now succumbed to a pathogen such as oak wilt or anthracnose, fungi that grow on foliage. While new leaves usually sprout and tree growth continues, apparently the severely weakened trees left were unable to survive the pathogen’s attack. Grasses and low-bush blueberries have already advanced to crowd the understory below these dead trees. The areas of Eagle Cliff and Split Rock appear to be the hardest hit.

In a big year for trail maintenance, John Blenninger of the New York-New Jersey Trail Conference, Black Rock’s most dedicated trail maintainer over the last 30 years, has completed the Hill O’ Pines Trail project. His report states: “vegetation subdued and with all blazes renewed, 115 ¼ work hours.” Enjoy his work by hiking this trail, the Forest’s last horse logging road, to views over the Upper Reservoir and beyond.

The Forest Crew of Ben Brady and Brett Sherman spent the heat of summer pruning many overgrown roads and trails. Primary trails were cut open to former wagon-wheel widths. The pruning assisted the discovery of the first encroachment of the invasive mile-a-minute weed near Split Rock (see “Teamwork Tackles Two Invasive Species,” p. 3). The Forest Crew also established the new Honey Hill Trail, providing a less strenuous trek than nearby Mt. Misery. The new trail begins at Mailley’s Mill Bridge and ascends to the telemetry array atop Honey Hill where an interpretative station will be constructed to explain the Consortium’s environmental sensor network. The trail continues to a wonderful view of Black Rock Mountain and the Hudson Valley, where geologic information is planned to be displayed at another interpretive station. From this point, hikers may return to Mailley’s Bridge by continuing on a hilltop loop or continue on to Aleck Meadow.

— John Brady