
BLACK ROCK FOREST NEWS

Winter 2008

The Black Rock Forest Consortium

Volume XVIII, No. 1

The “Green Ride” Raises \$48,000 for Forest Education Programs

Take 18 intrepid bicycle riders, 250 miles along the Hudson and up and over mountains and through rolling farmland, three beautiful fall days, and professional organization and volunteer support, and what do you get? The first annual [Green Ride](#) fundraiser and some \$48,000 for Black Rock Forest education programs.

Setting off bright and early from Fort Tryon Park in upper Manhattan on the first day of the Columbus Day weekend, October 6, the riders included Forest Executive Director Dr. William Schuster and Treasurer Bill Kelly, two teachers from the [School at Columbia](#), two [Spence School](#) teachers, a [Newburgh](#) school teacher, a [Barnard](#) professor, a former [Columbia](#) professor, an architect from [FXFowle](#) (the firm that designed the Forest’s buildings), the Forest’s historian, three Forest-lovers from Cornwall, and other friends.

They first rode across the George Washington Bridge and up Route 9W, stopping to enjoy the annual Open House Day at [Lamont-Doherty Earth Observatory](#) in Palisades, New York, and then continued up to Bear Mountain Park (with spectacular riding along the Hudson River), past West Point, and around Storm King Mountain to the Forest for the night. The second day was the longest and most strenuous:

some 100 miles up and over the Shawangunk Mountains and Minnewaska State Park (with stunning views of the Catskill High Peaks) and then back to the Forest through farms and rolling country roads. The final day brought the riders back to New York City along a slightly different route, ending with a wonderful greeting party in Fort Tryon Park.

How the Ride Worked

The Green Ride began in 2006 when Carolyn Blackburn, whose son attends the [Amistad Dual Language School](#) (PS/IS 311, a Consortium member), was trying to raise funds to keep the school involved in the Forest’s School in the Forest program. One fall day, at her local dog run, she started talking with her neighbor Marty Rosen, the creator of the successful Empire State AIDS Ride, and sought her help. And so the idea of a major fundraising ride, the only ride to benefit the environment in the Hudson Valley region, was born. Each rider had to raise at least \$1800 in donations from friends and family to participate in the ride.

During the ride, Marty Rosen and her team of more than a dozen staff and volunteers provided support for



Tina Kelly on the road!

New Members

Hunter College, NYU Join Consortium

The Consortium welcomes two additional members: new member [Hunter College](#), part of the [City University of New York](#) (CUNY), and returning member [New York University](#) (NYU), specifically its [Steinhardt School of Culture, Education, and Human Development](#) and its [School of Arts and Sciences](#). Both have jumped right into Forest activities, with research, education, and teacher training.

Hunter scientist Dr. Allan Frei has been working on mercury and climate studies in the Forest as a guest researcher for some time (see “Mercury Research Takes Off in Forest,” [Spring 2007](#)), along with two students and [John Jay College](#) collaborator Dr. Anthony Carpi. Now that Hunter is a full Consortium member, Dr. Frei hopes to expand student involvement in the Forest, including bringing students majoring in environmental studies, physical geography, and earth science teaching to the Forest for field work and courses.

“This is a golden opportunity for Hunter students,” he says. “Many of them are born and raised in the city and have not had the resources or education to explore even the regional surroundings, let alone travel farther and wider. Our membership gives them the opportunity to explore environmental studies in a way that was previously unavailable to them.”

Dr. Deborah Gardner, Director of the [Hunter College Teacher Academy](#), notes that Hunter has already made three visits to the Forest: an overnight trip for 22 Teacher Academy students, mostly incoming freshmen, which she and colleague Naomi Nwosu led, concentrating on

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Black Rock Forest Consortium

Black Rock Forest News is published three times a year by the Black Rock Forest Consortium.

The Black Rock Forest Consortium is an alliance of public and private schools, colleges, universities, and scientific and cultural institutions engaged in research, education, and conservation in the 3835-acre Black Rock Forest in New York's Hudson Highlands.

The Black Rock Forest Consortium is a not-for-profit 501(c)(3) organization supported by membership dues, grants, and gifts.

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Black Rock Forest News

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Report from the Executive Director

By observing nature, we can learn important lessons about energy. One lesson is that lower energy consumption by organisms often correlates with longevity. In many animals, a restricted energy diet results in longer lifespan. The oldest organisms on earth, such as bristlecone pine trees, typically exhibit very low basic metabolic energy demands. A related lesson is that the amount of energy available in excess of basic "operating demands" is highly correlated with success. Organisms must use energy first to meet their basic metabolic "operating costs." Only when surplus energy is available can growth and reproduction occur.

Conserving energy and using it efficiently are thus keys to success in nature. Unfortunately, humans are still learning some energy lessons the hard way. Our reliance on burning the deposits of three fossil hydrocarbons (coal, oil, and gas) produces pollution (emissions and wastes), alters our environment (increased atmospheric carbon dioxide (CO₂) and climate change), and can even lead to geopolitical strife and war. Instead of conserving energy, we too often overspend on the basics. For example, buildings are responsible for an incredible 40% or more of the total energy use in most countries.

Black Rock Forest Consortium has become increasingly invested in learning about and using beneficial energetics where buildings and their operations are concerned. We are dedicated to the principles of *designing (or, in some cases, retrofitting) buildings that use less energy initially and over their lifetimes.*

In [building the Science Center and Forest Lodge](#) between 1999 and 2003, we made extensive use of local wood and stone. This greatly reduced both costs and energy compared to the expense of commercial products that are packaged, stored, marketed, and shipped, often multiple times. The design of our structures, carefully determined through iterations of DOE-2 (a computer program that models and analyzes building energy use) to select efficient combinations of components, materials, shapes and sizes, reduced our overall energy consumption by about 50% compared to typical buildings of the same size.

We have also found it useful to *explore and use new technologies*, such as our ground-source geothermal heat pumps which produce more energy than they consume. These help keep our direct carbon emissions nearly at zero. It is also clear that *producing energy locally from renewable resources* is highly efficient. With our solar panel arrays and geothermal heat pumps, the Black Rock Forest campus is not quite at the net-zero energy point, but we aim to get closer to that point as we explore opportunities for on-site wind and water power generation (see "Forest Demonstrates Renewable Energy Options," [on the facing page](#)).

Due to scaling issues it can often be very sensible to *share energy saving technologies* among multiple structures. For us, it has been a great cost- and energy-saving strategy to use a single well field for our geothermal heating and cooling, sharing the costs between our two buildings. Because of our isolation from neighbors, we cannot share our geothermal system with others. However, we do share the excess energy produced by our photovoltaic array during long sunny days with others connected to the grid.

We offer green building tours and consultations at the Forest in order to influence larger regional projects that have outstanding opportunities to gain advantage and save energy and costs through shared installations such as large, energetically efficient geothermal heat pump systems.

Some of the most effective reductions in energy consumption can come from *conservation*. This is why we continually seek to use more efficient equipment and to make slight alterations to operations over time. In the past two years, our efforts to operate our buildings more efficiently have reduced our already low energy consumption by approximately 20%. Like natural organisms, we aim for longevity. We expect that those who will still be successful 100 years or more in the future will be primarily the descendants of those who have the most beneficial energetic ratios today. ■

— Dr. William Schuster

Forest Demonstrates Renewable Energy Options

Black Rock Forest is increasingly becoming a center for the use and exploration of renewable “green” energy. Starting with geothermal heating and energy-efficient building techniques for the [Center for Science and Education](#) and the [Forest Lodge](#), and continuing with the addition of an 80-panel [solar array](#) and aggressive energy conservation actions, the Forest is now investigating demonstration wind energy and microhydro projects.

As of mid-January, the Forest’s 24-kW photovoltaic array has been producing solar energy for the Science Center for two years, some 50,000 kW hours in all, or more than one-third of the building’s energy use (see “One Year of Solar Energy for Forest Buildings,” [Winter 2007](#), for more details about the system). “On long sunny days from May through August,” notes Forest Executive Director Dr. William Schuster, “the system provides more than 100% of the energy used in the Science Center during daylight hours and we return energy to the grid.” With repairs, it is now performing at close to 100% of capacity, and Dr. Schuster anticipates that it will produce near its

maximum of 32,000 kWh this year and in decades to come.

Despite the Science Center’s extremely energy-efficient design (it uses less than half the energy required by typical buildings of the same size), increasing usage has led to increasing energy needs. However, Forest staff have made numerous changes to further conserve energy, including reducing the number of computers, peripherals, refrigerators, and freezers; turning off major power-consuming components such as the elevator, unless needed; finely tuning the program controlling building temperature; and adjusting doors, windows, and shades to further control temperature. “Our total energy use declined over the past two years,” says Dr. Schuster, “despite increasing use of our facilities.”

The Forest is now exploring two new renewable energy options – wind and water – to further reduce the need to buy electricity and to continue its role as a major resource for students and builders interested in green building options.

For wind, the Consortium has joined a grant proposal to the New

[York State Energy Research and Development Authority](#) (NYSERDA) to demonstrate a novel wind turbine design called Aerotecture ([www.aerotecture.com](#)). Unlike many wind turbines, these are designed to be quiet, graceful, and safe for birds and bats. The Forest’s turbines would be located in the area with the most reliable winds, the hillside just west of the Solar Pavilion, and will probably be connected to the Science Center’s power supply. “This will complement the photovoltaic array, especially at night and during stormy periods,” explains Dr. Schuster.”

The Consortium is investigating small-scale water power, often called microhydro, since energy is generated anywhere water falls downhill – as it does in numerous places in the Forest. Microhydro is economical to install, compared to solar or wind power systems, because it requires mainly a conduit, a turbine, and an alternator or generator. The Forest is looking at systems that would not affect total flow or biota, and will probably connect the system to the Forest Lodge, which is not connected to, and does not benefit from, the solar array. ■

New Members *(continued from page 1)*

giving these prospective teachers the experience of conducting real research; a three-day trip, led by teacher Eric Eisenstadt, for 19 students and four teachers from the [Manhattan Hunter Science High School](#), an early college school, that focused on leadership and team building, observation and science education, environmental education, and expanding the students’ horizons; and a two-day retreat for six faculty members and 14 students concentrating in animal behavior and conservation as part of a master’s program in psychology, led by Professors Sheila Chase and Diana Reiss, that led to an exploration of ideas for future research on Forest animals and human uses of, and attitudes about, forests and nature.

Dr. Gardner is enthusiastic about the benefits of the Forest for Hunter students, from enhancing science education to developing a strong sense of community and increasing student engagement. “Being a member of the Consortium will help build

Hunter College’s capacity for excellence in science education and research,” she said. “Experiences at the Forest may be particularly valuable for our undergraduates by providing links between science and policy (e.g., global warming and environmental contamination) and by providing a mechanism for targeting and nurturing minority scholars early in their careers. This unique “living laboratory” is of deep interest and value to our students.”

NYU’s reentry into the Consortium is very timely, as the university has recently introduced an [Environmental Studies](#) program. The program “aims to provide students with the breadth of understanding and the skills necessary for resolving environmental questions and creating a sustainable future on scales ranging from local to global” and will draw upon faculty from many departments and schools at NYU.

At the same time, NYU’s [Steinhardt School](#) is eager to start collaborating with the Forest. Dr. Mary Leou, a professor of teaching

and learning and director of the NYU [Wallerstein Collaborative for Urban Environmental Education](#), describes some of the activities she envisions. “We would like to develop coursework for teachers as part of professional opportunities, create a field course for graduate students in fulfillment of their ecology requirements, conduct research on environmental education using the Forest as a context for learning, and use the Forest to develop collaborations between educators and scientists.”

“Forest membership will benefit NYU students and faculty in many ways,” she adds. “It will connect teachers and children to nature, ecology, and stewardship and will allow us to develop graduate and undergraduate internships in environmental studies and to collaborate on grants, programs, symposia, and research. Further, it will enable us to use the Forest as a unique science-rich institution that can provide content knowledge as well as field methods for future generations of teachers, scientists, and environmentalists.” ■

William T. Golden, Founder of the Black Rock Forest Consortium

All of us associated with the Black Rock Forest mourn the loss of the [founder of our Consortium](#). A truly great man and the most wonderful of friends, [William T. Golden](#) died on October 7 at age 97, peacefully and with his family at his side.

Bill Golden's life was marked by remarkable ideas and their bountiful results. One idea was "to make a lot of money on Wall Street and then do interesting things." We are fortunate that Black Rock was one of those "interesting" things! In 1989, Bill purchased the Black Rock Forest and established the original Consortium of 15 institutions. Since then, more than 400 publications, including 25 masters and doctoral theses, have been produced from research at the Forest. Consortium membership has grown to 21 organizations, and education programs now serve more than 10,000 students each year.

Bill also meant a great deal to much of the rest of the world. For almost 60 years, he played a unique

and pivotal role at the intersection of science and society. He served as board member or trustee of nearly 100 organizations, among them the Carnegie Institution of Washington, the American Association for the Advancement of Science, and the American Museum of Natural History.

In 1950, Bill was appointed to make recommendations to President Harry S. Truman about science and technology advice for the government. "I got the idea that there should be a science adviser to the president," Bill recalled. "Truman approved the plan immediately." As assistant to a commissioner of the Atomic Energy Commission, he was sent to listen to Albert Einstein's ideas about the role of world government in heading off nuclear war. As co-chair of the Carnegie Commission on Science, Technology and Government, he initiated a series of twice-yearly meetings of science advisers from the G7 nations, and was the only private citizen invited to attend. He was a major influence during the

formation of the National Science Foundation and won a 30-year campaign to install a science adviser in the State Department. At age 70, Bill received a Master's degree in biological sciences from Columbia University.

Bill was a man of insight and wisdom, great warmth, outstanding wit and humor, and rock-solid commitment. We were blessed by his presence at every Black Rock board meeting and every Consortium Day. He said "I just liked to tinker with things and hope that it would be useful." The hundreds of thousands of people who have enjoyed Black Rock Forest and benefited from its programs certainly have found his "tinkering" to be useful indeed. The Forest is a living tribute to Bill's magical abilities and extraordinary ideas for the advancement of science and society. We deeply miss having Bill with us. But his memory will always be with us as we work to extend one of his many, great legacies in the Black Rock Forest. ■

— Dr. William Schuster

Student Research Spotlight: Coarse Woody Debris

by Christopher Burdette

Amongst the towering oaks and ever-elusive animals of Black Rock Forest is an equally interesting and integral forest element: dead wood. Termed coarse woody debris (CWD) within the scientific community, it consists of both standing dead trees (snags) and material that has fallen to the ground; it is defined as wood pieces larger than 10 cm in diameter and more than 1 m in length.

CWD is added to ecosystems by numerous mechanisms, including wind, fire, insect attack, pathogens, competition, and geomorphic processes. During decomposition, logs and other forms of CWD reduce erosion and affect soil development, store nutrients and water, provide a source of energy and nutrient flow, serve as seedbeds, and provide habitat for decomposers and heterotrophs (organisms that need organic substances to grow).

Last summer, I investigated the abundance, distribution, and mass loss of CWD in 18 sites on the North Slope of Black Rock Mountain. This

area was selectively thinned for firewood twice in the mid-20th century. Our investigation found CWD volumes were at the low end of the scale (40 m³/ha) compared to similarly aged northeastern forests, which range from 28 to 166 m³/ha. We then calculated the amount of carbon stored in this source at 8.9 Mg/ha, which was also low compared to published findings from similarly aged and composed northeastern forests.

Red and chestnut oaks (*Quercus rubra* and *Q. prinus*) represented 72% of the volume of CWD found, and sugar and red maples (*Acer saccharum* and *A. rubrum*) approximately 18%, with other species representing less than 10%.

We also looked at the distribution and range of decay. Classes are used to categorize the degree of decay, ranging from decay class I in which CWD is largely intact and resembles a living tree to decay class V in which the material is thoroughly decomposed and easily breaks down into the soil. Decay class III, in which the

material has no bark but still retains its shape, was the most abundant across all species, indicating that a specific event, either natural or historical, led to the high prevalence of this class.

There were sufficient snags of all size classes to support cavity-nesting wildlife, according to forest management guidelines. Low CWD amounts limit ecosystem function on a carbon storage and strict volume per hectare basis, thus constraining the ability of CWD to reduce erosion and promote seedbeds.

This research reflects the current state of our knowledge on this important resource, and also provides a baseline study for comparison and evaluation of forest health as changes occur in Black Rock Forest. ■

Christopher Burdette is a senior in the [Department of Ecology, Evolution, and Environmental Biology \(E3B\)](#) at Columbia. He worked with Drs. Kevin Griffin (Lamont-Doherty Earth Observatory), Matt Palmer (E3B), and Bill Schuster (Black Rock Forest).

Green Ride

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the riders. "I have never felt as well cared for in my life," said Dr. Martin Stute, a Barnard professor. Carolyn Blackburn and her husband and son were among the volunteers. "We helped with signage, cooked, washed dishes – anything and everything *short* of riding," she explained. Other volunteers included Joe Cunningham, husband of Forest Development Director Emily Cunningham, who played guitar and sang the first night in the Forest Lodge (Dr. Stute played guitar the second night).

Cornwall businesses provided prizes for the volunteers, Amistad School volunteers organized the end-of-the-ride reception, and Kevin Trotta of the Global Sports Alliance (GSA) raised money, volunteered, and arranged for coverage of the Ride on the GSA web site.

Highlights of the Ride

Rider after rider mentioned the other riders as the best part of the event. "What was most memorable was having such great camaraderie with such wonderful people," said Dr. James Danoff-Burg, noting that he was "equal parts a conservation ecologist and endurance athlete." And Dr. Neil Maher, a Rutgers historian, said "I never expected to bond with other riders like I did. After three days of biking together, sweating together, eating together on the road, and gathering back at Black Rock in the evening, a connection with these people developed quickly." "The best part was the people," said volunteer Carolyn Blackburn, "each brought something completely unique to the Ride."

Neil Maher, Bill Schuster, and Joe Sipos atop Storm King Mountain, the high point



The end of the ride! Fort Tryon Park.

"That a busy working mother of two elementary school students was able not only to complete the challenge of the ride," said Lisbeth Uribe, who rode with her School at Columbia colleague Courtney Barden, "but also to thoroughly enjoy the experience, is a testament to the wonderful support and camaraderie provided by the event organizers, volunteers, and bikers."

Riders also mentioned the experience of being outdoors in a wonderful setting. "The natural beauty of the Hudson River and the Hudson Valley more generally was eye-popping," according to Dr. Danoff-Burg. "I came back with a renewed appreciation of the beauty of our state," said Dr. Stute. Carolyn Blackburn noted that "it was an amazing experience: the weather was fabulous, the routing terrific, and the setting perfect."

Helping support the Forest and its education programs was another important feature for riders. "By raising money for Black Rock's education programs," explained Dr. Maher, "the Green Riders helped shape the future of both the Forest and the region." Dr. Danoff-Burg said that "helping the Forest and its conservation mission while cycling through the areas I love was an unparalleled opportunity."

"We have to give credit and thanks to the supporters who made this a success by sponsoring riders and to the volunteers who played many critical roles," noted Dr. Schuster. "The Green Ride is a model environmental fundraising event, an amazing bike journey, and a great time!"

On to 2008!

"If each year we were joined by 17 more riders," Dr. Maher calculated, "within a decade the Green Ride would be raising more than half a million dollars for the Hudson Valley environment."

The second Green Ride is scheduled for October 11-13, 2008 (Columbus Day weekend). Learn more at www.thegreenride.org, and . . . start training! ■

Walter Millman, Education Champion

"Everyone associated with the Black Rock Forest mourns the death of Walter Millman at age 75 on November 10," says Forest Executive Director Dr. William Schuster.

As director of the [Newburgh Schools](#) Magnet Program in the 1980s and 1990s, Walter Millman was directly responsible for the school district's entry into the Consortium. He served on the Consortium board for more than a decade.

"Walter was a wise counsel to the Consortium in its early development," notes Dr. Schuster, "and saw that dozens of Newburgh teachers and thousands of Newburgh students enjoyed and benefited from a range of academic activities in the Forest. He spent a lifetime champi-

oning national and local efforts to promote diversity and innovation in public schools, first as a teacher, then as a principal, and eventually as Associate Superintendent of the school district. He always had a friendly word, but also innovative and often challenging ideas to proffer, offered with a bright twinkle in his eye."

Walter Millman loved the Forest and often walked in it with his dog, Fred. The Consortium presented him with a special award at Consortium Day in 2007, and also honored him by naming a short trail to a beautiful spot at the edge of Arthur's Pond Walter's Way.

"We will all miss and fondly remember Walter," says Dr. Schuster. ■

Current Research at the Forest

The Black Rock Forest Consortium is committed to encouraging collaboration among member institutions and also between researchers and students. To help members learn what other members are doing and explore opportunities for collaboration, we here present a list of current research projects at the Forest, along with contact information. ■

Oak Forest Sustainability and Response to Canopy Disturbance. William Schuster (Black Rock Forest), Shahid Naeem and Maria Uriarte (Columbia University), Kevin Griffin (Lamont-Doherty Earth Observatory of Columbia University), and Jerry Melillo (The Ecosystems Center, Marine Biological Laboratory). *Contact William Schuster.*

Cycling of Mercury in Terrestrial Environments. Allan Frei (Hunter College, City University of New York), Anthony Carpi (John Jay College, City University of New York), David Evers (Biodiversity Research Institute), and Roger Claybrook (US Mercury Deposition Network). *Contact Anthony Carpi.*

Native Plant Performance along an Urbanization Gradient. Kevin Griffin (Lamont-Doherty Earth Observatory of Columbia University), William Schuster (Black Rock Forest), Matthew Brown (Central Park Conservancy), and J. D. Lewis (Fordham University). *Contact Kevin Griffin.*

Functional Ecology of Complex Plastic Traits in Forest Trees: Pilot Studies of Reproductive and Root Traits. Hilary S. Callahan (Barnard College) and Louise Comas (Pennsylvania State University). *Contact: Hilary S. Callahan.*

Carbon and Nitrogen Cycling in the Cascade Brook Watershed of Black Rock Forest. Kevin Griffin and H. James Simpson (Lamont-Doherty Earth Observatory of Columbia University). *Contact: Kevin Griffin or H. James Simpson.*

Long-Term Carbon Storage in Wetlands. Dorothy Peteet (Lamont-Doherty Earth Observatory of Columbia University) and Terryanne Maenza-Gmelch (Barnard College). *Contact: Dorothy Peteet.*

Land-Atmosphere Coupling at Black Rock Forest: The Role of Snow, Vegetation, and Soil Thermodynamics. Gavin Gong (Department of Earth and Environmental Engineering, Columbia University), Jason Smerdon (Lamont-Doherty Earth Observatory of Columbia University), and Jessie Cherry (University of Alaska). *Contact: Jason Smerdon.*

Effects of Host Defoliation and Distribution on Spatial Patterns in Ectomycorrhizal Fungi. J. D. Lewis (Fordham University). *Contact: J. D. Lewis.*

The Tamarack Pond Core as a Rosetta Stone for Determining the History of the Black Rock Forest Region. Dallas Abbott (Lamont-Doherty Earth Observatory). *Contact: Dallas Abbott.*

Small Mammal Response to Landscape Disturbance. Marina Cords (Department of Ecology, Evolution, and Environmental Biology, Columbia University) and Catherine Burns (WildMetro). *Contact: Catherine Burns.*

Moss-Microarthropod Community Response and Recovery from Environmental Disturbances at Black Rock Forest. Shahid Naeem and Claire Jouseau (Department of Ecology, Evolution, and Environmental Biology, Columbia University). *Contact: Shahid Naeem.*

Insect and Arachnid Diversity of Black Rock Forest. Vladimir I. Ovtsharenko (American Museum of Natural History). *Contact: Vladimir I. Ovtsharenko.* ■

Oak Research Update

Consortium researchers participating in the Forest's multiyear oak forest sustainability study (see "What Will Happen to Our Forests if the Oaks Die?," [Spring 2006](#)) have made some important discoveries. The team includes scientists from [Lamont-Doherty Earth Observatory](#), Columbia's [Department of Ecology, Evolution, and Environmental Biology](#), and the [Ecosystems Center of the Marine Biological Laboratory](#), as well as Forest Executive Director Dr. William Schuster.

First, in examining long-term Forest data, Dr. Schuster uncovered a troubling trend: a tripled rate of oak mortality in some areas. The research aims to investigate the causes, project the impact, and assess the scope of accelerated oak mortality.

Next, scientists examined seedling density and regeneration in the study plots. They estimated current tree seedling density at 11,500 seedlings per hectare. While this should be enough to assure forest regeneration, not a single sapling-size tree (over 1 m tall and less than 2.5 cm in diameter at breast height) is found on any of the experimental plots. In fact, only 3% of the seedlings are taller than 0.5 m, and all of these are found in parts of the plots that have been fenced to exclude deer. "An entire class of trees that is critical to forest regeneration is not found," says Dr. Schuster, "and observations indicate that herbivory is responsible."

Furthermore, species composition is changing. Seedlings of a non-native and frequently invasive species, tree-of-heaven (*Ailanthus altissima*), were found in a disturbed plot near the forest edge. And, in a plot in which oaks were girdled two years ago to simulate pathogen attack, while the seedling density was much higher (71,000 per hectare), tree-of-heaven seedlings were much more abundant. "This suggests that a rapid loss of our most common canopy trees would be followed by abundant seedling establishment," says Dr. Schuster. "These seedlings could eventually produce a new forest, but only if protected from deer browsing. And the new forest would have a higher proportion of non-native, invasive trees." ■

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Forest News in Brief

2008 Small Grants Available. The Consortium has announced its 19th annual [Small Grants](#) program, funded by a generous grant from the Ernst Stiefel Foundation, with awards of up to \$5000 for scientific research and up to \$3000 for education projects conducted in Black Rock Forest. Grants of up to \$8000 may be awarded for research-education partnerships between two institutions and, thanks to funds provided by the [New York-New Jersey Trail Conference](#), research studies on the environmental impact of recreation can receive up to \$10,000. Grants, awarded on a competitive basis, can support purchases of equipment, summer stipends for students, transportation costs, and other needs. Housing facilities are available. Proposals are particularly solicited in five priority areas: research on forest ecosystem sustainability and response to disturbance; studies of plant and ecosystem function along urbanization gradients; research on the environmental impacts of recreation, particularly (but not limited to) the impacts of trails; projects that enhance the utility of the Forest's web site; and production of instructional materials related to the "smart" and "green" features of Forest facilities. [Guidelines](#) and [application materials](#) are available from Consortium institutional representatives and at www.blackrockforest.org/pdf-files/ScientistResources-SmallGrants-thisyear.pdf. Consultation with the Forest Director is suggested. The application deadline is February 1.

Summer High School Internship Program. Black Rock Forest will offer a two-week field ecology research internship program for high school students starting on July 7,

to be led by Dr. Terryanne Maenza-Gmelch of Barnard College. Full details and application materials will be available after January 22.

Forest Featured in New York Times Article. An October 7 *New York Times* article, entitled "Forests in Peril," quoted Forest Executive Director Dr. William Schuster. It discussed the multiple threats facing northeastern forests, many of which are being studied in the Forest by Consortium scientists (see "Oak Study Update," p. 6). It is online at www.nytimes.com/2007/10/07/nyregion/nyregionspecial2/07rCOVER.html.

Visit the Forest in Winter! Space is still available in the Forest Lodge for February and March, but now is the time to reserve to experience the winter world of the Forest, with many activities not available the rest of the year. "The winter season provides different, beautiful views across the mountain terrain, and unusual opportunities for nature art and photography," explains Operations Manager Jack Caldwell. "Bird watching can be especially rewarding with leaves off the trees, especially because a large population of bald eagles winters nearby on the Hudson." When the lakes and ponds freeze, ice skating, ice coring, and ice fishing may be available (Forest staff measures the ice depth to ensure safety), and students can conduct physical and chemical studies of lake ice. If there is snow, they can visit the Forest's snow research facilities, track animals, cross-country ski, and snowshoe. And, notes Mr. Caldwell, "hot chocolate and a fire in the [Stone House](#) fireplace round out a fun set of wintertime activities." ■

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Small Grants Deadline
February 1
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Report from the Forest Manager

Reservoir Road, the entry road to the Center for Science and Education, is a remnant of a once vital thoroughfare over the rugged mountains from Cornwall to West Point. Once known as the Old West Point Road, it was built in 1868 as an improved alternative to the 85-year-old Continental Road.

Along the road's 2.5-mile route through Black Rock Forest, three mountain farms were cultivated during the late 1800s: the Mailley, Barton and Lewis properties. These homesteads are easily discovered by the broken stone walls, hand-dug springs, and stone-framed cellar holes.

The Center for Science and Education is located on the site of the old Mailley Farm. A lasting remnant of his workings is an earthen dam, possibly the site of a grist mill, that is now used as a trailhead for the Forest's many hiking trails.

Mailley's neighbor, south along Old West Point Road, was the Barton Farm, which surrounded the junction of two tributaries flowing from the upper watersheds of Black Rock Brook. This confluence became the

site of the Upper Reservoir, dammed in 1888.

The Old West Point Road to this point was then being called Reservoir Road and was improved and re-routed. The once steep grade climbing over the glacial bench on Whitehorse Mountain was replaced by a rock-carved route below. This new route was to simplify reservoir access and encase the water line which would descend into the riverside village of Cornwall-on-Hudson. The road relocation created easy access to one of the most beautiful views of the Hudson Highlands and Valley in the region.

For a time, a natural spring along the road at Whitehorse Mountain was tapped to create a watering trough for horses about to make the arduous journey over the highlands. Local fishermen also took advantage of the clean cold water to freshen their bait buckets on their way to their favorite fishing pond.

From the Upper Reservoir to Glycerine Hollow, the road still remains in its 19th century location. Its construction shows purpose, as

hand-stacked stone retaining walls stand up to 10 feet high, supporting the contour of the road. There are still a few people who remember riding the road with their fathers to deliver dairy, fruit, or bricks to West Point and Highland Falls.

A winding portion of Old West Point Road descending southerly to the Lewis Farm is known as the "S's." These switchbacks gave access to picnic rocks with a view that was popular during that earlier time.

The Lewis Farm, located on the southern mountainsides of Black Rock Forest, has beautiful views of West Point and the Hudson River. The well-defined fields and foundations that remain give clues of a very active farm.

If the Continental Road was a product of the American Revolution, surely the Old West Point Road was a necessity of an agricultural revolution. Both lost their purpose to the 20th century highways of 9W and Route 218, which are the results of an industrial revolution. ■

— John Brady