
BLACK ROCK FOREST NEWS

Fall 2006

The Black Rock Forest Consortium

Volume XVI, No. 3

Hikes, Displays, Talks, and Awards Are Consortium Day Highlights

This year's Consortium Day was the most lively and event-filled one so far. Highlights included the dedication of the solar panel array and the presentation of the Stillman Award to Fran Dunwell of the [New York State Department of Environmental Conservation \(DEC\)](#).

On June 11, some 150 representatives of Consortium institutions and other friends of Black Rock Forest gathered to celebrate a year of achievements. Special guests included Scot Medbury, president of the [Brooklyn Botanic Garden](#); Richard Randazzo, Supervisor of Cornwall; and William Hazeltine, founder and head of Human Genome Services.

Highlights

After William T. Golden, chairman of the Consortium, cut a ribbon in front of the new Solar Pavilion, Paul Tapogna from [FXFowle Architects](#) and Executive Director Dr. William Schuster hailed the completion of the Forest's new 24-kilowatt solar panel array. With 40 photovoltaic panels on the south-facing roof of the Center for Science and Education, eight on the roof over the steps to the parking lot, and 32 on the roof of the Solar Pavilion, the system should provide nearly 29,000 kilowatt-hours of power per year (see "Solar Energy Starts to Provide Electricity for Forest," [Winter 2006](#)).

"We need to recognize the great team of professionals we worked with on this truly long-term project," Dr. Schuster said, "including [FXFowle](#) on architectural design, [Northern Power, Inc.](#), on array design and installation, and [Storm King Contracting](#) on the construction. Thanks especially to grant support from the New York State Energy Research and Design Authority ([NYSERDA](#)), our project demonstrates that solar power does make sense in the northeast, saving money over the long run while not pol-

luting or using up fossil fuels. All of the components are designed to provide benefits for many, many years, and we have also gained two new functional structures."

Each year, the Consortium presents its E. G. Stillman Award, named after Forest founder Dr. Ernest G. Stillman, to people who

have provided environmental leadership and support for Black Rock Forest and its Hudson Highlands region. In presenting this year's award to Fran Dunwell, who serves as the [Hudson River Estuary Coordinator](#) for the DEC, where she oversees the programs to conserve the fish, wildlife, scenery, habitats, parks, and water resources of the Hudson River watershed, Dr. Schuster noted that

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Student Research

Grad Students and More in the Forest

This summer, Black Rock Forest was abuzz with student research activities: graduate students conducting thesis research, post-docs, undergraduates helping with ongoing Forest studies and working on their own projects, and even high school interns.

Their efforts add to an impressive record of graduate student research in the Forest, with some 25 doctoral and masters theses based entirely or in part on Black Rock completed since the founding of the Consortium in 1989. Since 1991, current and former graduate students have been the first author of more than 100 published papers and conference abstracts (and have contributed, of course, to many more). Their publications have appeared in a diversity of journals, including [Ecology](#), [New Phytologist](#), [Biogeochemistry](#), [Journal of Zoology](#), and [Atmospheric Environment](#).

This year's summer students hail from [Columbia University](#), [Bar-nard College](#), [Fordham University](#), [Hunter College](#), [Cornwall High School](#), and [Riverdale](#). They worked on Black Rock's major studies on the future of oak forests, urban-rural gradients, and the impact of the hemlock woolly adelgid, as well as on age-related decline of red oaks, mercury in the Forest ecosystem, and other projects.

The Oak Forest Project

Two Columbia grad students, Ellen Trimarco and Jason Sircey, both studying for masters degrees in conservation biology with Dr. Shahid Naeem of Columbia's [Department of Ecology, Evolution, and Environmental Biology \(E3B\)](#), are

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Executive Director Bill Schuster at Solar Pavilion dedication, with Consortium Chairman William T. Golden (left) and architect Paul Tapogna (right).

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.

Consortium Institutions

[American Museum of Natural History](#)
[Barnard College](#)
[Brooklyn Botanic Garden](#)
[Browning School](#)
[The Calhoun School](#)
[Central Park Conservancy](#)
[Columbia University](#)
[Cornwall Central School District](#)
[The Dalton School](#)
[Friends Seminary](#)
[Marine Biological Laboratory at Woods Hole—The Ecosystems Center](#)
[Metropolitan Montessori School](#)
[Newburgh Enlarged City School District](#)
[New York City Public School 220](#)
[New York City Public School 311](#)
[New York – New Jersey Trail Conference](#)
[The School at Columbia University](#)
[The Spence School](#)
[Storm King School](#)
[Trevor Day School](#)

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 Jack Caldwell, Operations Manager
 Joyce M. Baron, Education Coordinator
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Consortium Officers

William T. Golden, Chairman
 Frank Moretti, Ph.D., President
 Sibyl R. Golden, Vice-Chair
 William M. Kelly, Treasurer
 Christie Van Kehrberg, Secretary

Consortium Address

129 Continental Road
 Cornwall NY 12518-2119
 Phone: (845) 534-4517
 Fax: (845) 534-6975
 Web: www.blackrockforest.org

Black Rock Forest News

Sibyl R. Golden, Editor
 Terry Murray, Photo Editor
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Report from the Executive Director

A recent study of “biological corridors” (Damschen *et al.*, 2006, [Science](#) 313:1284-1286) may have implications for how we can manage fragmented natural habitats to preserve native biological diversity. The study documented that the creation of corridors (connections between regions that permit relatively complete movement and interchange of most organisms) between fragments of habitat can enhance plant diversity.

It showed that patches of open habitat surrounded by longleaf pine forests but connected by a 25-meter-wide corridor contained 20 percent more native herbaceous plant species than isolated patches. Further, over five years, the isolated patches rapidly lost plant species. Increased numbers of pollinating and seed-dispersing insects and other animals using the corridors may underlie the results. The study is especially newsworthy because, while corridors have been shown to benefit some larger animal species, we think of plants as being slow to respond to changes because of their sedentary nature.

While our eastern forests have been heavily fragmented, linear mountain ranges such as our New York—New Jersey Highlands have significant ecological connectivity, acting as large-scale corridors. Black Rock Forest's 4000 acres are contiguous with about 100,000 acres of adjoining forest. This contiguity allows this area to retain carnivores, hawks and eagles, mink and otter, and owls and forest interior songbirds. Fragmenting factors such as highways and settlements do exist, undoubtedly impacting some species, but less so in the ridges of the Highlands than in adjoining developed areas.

Fragmenting contiguous ecological communities into smaller, unconnected pieces commonly results from human activities such as development, road construction, and land use conversion. A consequence is often reduced native biological diversity. Species with large home ranges and those that need to migrate may not have the resources needed to survive in fragments. Fragmentation reduces the populations of some organisms, making them prone to disruption and extinction. Prey organisms may become concentrated and

more easily captured. Fragmentation can reduce or eliminate gene exchange among neighboring populations. Altered species composition can result in lowered productivity, altered chemical cycles, and/or lost ecosystem services for humans.

It has long been hypothesized that maintaining or re-establishing contiguous areas of suitable habitat between fragments should prevent or reverse some of these trends, and corridors have become commonly used. But the full effects have seldom been rigorously and experimentally tested and concerns, such as the possibility that corridors might spread disease, have been expressed; more studies are needed and are underway. Nevertheless, available evidence suggests that we may be able to enhance the preservation of some valuable and rare species by establishing appropriate corridors.

The Consortium works to promote ecological connectivity within our Forest and region, as do land preservation and trail organizations. Foot trails represent a small-scale form of fragmentation, but [Jean Rothe's work in Black Rock Forest](#) indicates the effect is not detrimental, at least to songbird populations.

Our relatively contiguous forested corridor in the Highlands does not represent a continuous, bidirectional migration corridor for all species. Our network of protected areas may still be too small, with too much fragmentation and too few high-quality habitats to sustain all of our native biota over time. The Wildlands Project (www.twp.org) seeks to create large-scale biotic corridors across much of North America. What would a Wildlands project for our tri-state region look like? Is it possible?

The results from one study in the South Carolina pinelands do not answer all conservation questions. But for this one ecosystem, science has again shown us a way toward a better ecological future. For living organisms, connections are important: habitat connections, connections between theory and practice, connections between people and our natural world. It is always gratifying to have an idea that seems good and logical eventually proven to be correct. ■

— Dr. William Schuster

Dan Steiner, and How the Consortium Was Born

by William T. Golden, Chairman, Black Rock Forest Preserve and Consortium

But for Daniel Steiner, who died recently at age 72, there would be no Black Rock Forest Consortium.

One day in 1981, I received a phone call from my friend Dan Steiner, the long-time Vice President and General Counsel of Harvard University. "Bill," he said, "We at Harvard have an opportunity and a dilemma. You'll remember we talked back in 1973 about the 3600-acre Black Rock Forest in Cornwall, New York, which was given to Harvard as a bequest by Dr. Ernest Stillman in 1949. As we also have long had the Harvard Forest in Petersham, Massachusetts, much nearer to Cambridge, we have made virtually no use of Black Rock, but it is burdened by substantial maintenance costs." He described some of the features and history of the Forest.

"I know of your interest in forests, Bill" Dan continued, "and your in-

volvement in the Catskills, and that you have hiked in Black Rock. What do you think we should do?"

I suggested, "Why don't you consider organizing a group of scientific and educational institutions to purchase the Forest from Harvard and operate it as a consortium in a manner comparable to the Association of Universities for Research in Astronomy (AURA) and the University Corporation for Atmospheric Research (UCAR) which have been very successful. There's plenty of forest for a dozen or more such institutions for research, education, and relaxation."

Dan perked up. "That's a very attractive idea, both financially and organizationally. What institutions are you thinking of? And would they be interested?"

I told him I'd think about institutions within a two- or three-hour drive from the Forest, inquire about

their interest if he'd like me to, and let him know in a week or so.

It turned out that most of the institutions I contacted were interested in a consortium and prepared to share operating costs, but had no funds to purchase the Forest. After numerous talks over the next few years and the active support of local residents (including Steve and Smokey Duggan, Esty and Hellie Stowell, and Franny Reese), surprisingly, I purchased the Forest from Harvard in 1989, putting it in the not-for-profit Black Rock Forest Preserve, which in turn leases the Forest to the not-for-profit Black Rock Forest Consortium. Harvard then contributed the purchase price as an endowment for the Forest, to which I also contributed.

And so, having been conceived in a phone call from Dan Steiner to me, the Black Rock Forest Consortium was born. ■

Consortium Day (continued from page 1)

Ms. Dunwell previously was a Richard King Mellon Fellow at Yale University where she received her masters degree and conducted research for her award-winning 1991 book, *The Hudson River Highlands*. He described her as "one of the most — if not the most — devoted leaders of the improvement and celebration of the Hudson River Valley for the past 15 years."

At the conclusion of the program, Dr. Shahid Naeem, chairman of the [Department of Ecology, Evolution, and Environmental Biology](#) at Columbia University, gave a brief talk on the value of biodiversity. His research at Cedar Creek in Minnesota and elsewhere has shown that diverse mixtures of species are often better able to survive environmental challenges, such as droughts, and often recover better from disturbances. He sees the research program at Black Rock Forest poised to make lasting contributions to ecological understanding.

Paul Mankiewicz, executive director of the [Gaia Institute](#), spoke about green building in our region, and both the Consortium and John Blenninger, on behalf of the [New York – New Jersey Trail Conference](#), presented awards to Don Erbe, a devoted trail maintainer in Black Rock for 15 years (see "Trail Maintainers," p. 6).

Fun for All

Other activities included a presentation on painted turtle research, education, and conservation by Sue Mitchell, a teacher in the [Cornwall school system](#); a hike and "critter collection" at the Upper Reservoir led by Consortium educators Joyce and Norman Baron; a demonstration of "solar fun and learning" by Operations Manager Jack Caldwell; Forest Manager John Brady's traditional brook trout release; and a talk on Black Rock's research on the future of oak forests by Dr. Schuster and Columbia graduate student Jason Sircely.

Fran Dunwell and Bill Schuster with the 2006 E. G. Stillman Award.



Ongoing displays featured brook trout rearing and release (Doreen Gleason from the [Cornwall Schools](#) and Linda Apuzzo and Donna Qualey from the [Newburgh Schools](#)); amphibians (Columbia grad student Linda Trimarco and Barnard College students Morgan Parkes and Heather Love); green buildings ([Woodland Montessori School](#)); light-weight soil for green roofs (Paul Manckiewicz, [Gaia Institute](#)); the [School in the Forest](#) (Joyce and Norman Baron); research on carbon storage (Zach Wolf, Columbia University undergrad), turtles (David Karrmann, formerly of the [American Museum of Natural History](#)), and invasive plants (Jenn Nagel, former Columbia University grad student); real-time environmental information (Matt Munson, Forest Data Manager); and solar panel production (Jack Caldwell).

As always, the day included delicious food (from Market-on-Hudson) and, most importantly, fun, learning, and camaraderie. "It was a pleasure for this many friends and Forest enthusiasts and their families to join together," said Dr. Schuster, "to hear visionary environmental leaders such as Fran Dunwell, Shahid Naeem, and Paul Mankiewicz and to celebrate the successes of the Black Rock Forest Consortium." ■

Student Research Spotlight: Deer Browsing on Logged, Girdled Plots

by Morgan Parkes

During May, June, and July, I did research for my senior thesis in environmental policy for [Barnard College](#) on the north slope of Black Rock Mountain. Dr. William Schuster, the Black Rock Forest Director, and Dr. Peter Bower, a professor and my academic advisor at Barnard, sponsored my work this summer.

I am studying the ecosystem effects of logging and girdling oak trees, using the study plots created for Black Rock's "Future of Oak Forests" research project [Ed. Note: See "What Will Happen to Our Forests if the Oaks Die," [Spring 2006](#)]. Girdling simulates death by pathogens, such as chestnut blight, Dutch elm disease, or sudden oak death, since the trees remain standing on the plot as they die.

I want to know how both these processes will affect deer browse within the Forest. The forest understory and the future of northeastern forests are threatened by deer browse because,

with deer overpopulation, many seedlings are consumed before they can grow into healthy, mature trees.

I hypothesized that deer browse would be greatest on the logged plot, less on the girdled plot, and least on the control plot (the plots that have been left as is). The logged plot now has the most light, allowing for more seedling regeneration, while the control plot has the least amount of light coming in through the forest canopy, and the girdled plot is somewhere in between the two. Because the logged plot will have the most seedling regeneration, I believe it will become a "hot spot," so to speak, for deer.

I began collecting data in late July on the three plots. Each plot has a section that is fenced to enclose it so that deer cannot get in. This section of the plot serves as another control. I sampled seedlings in 1-m² plots along a transect in the central subplots of the control, logged, and girdled plots on both the fenced and

unfenced sides of each. In all, I sampled 20 plots: I counted the seedlings, determined their species and age, and assessed browse intensity (how many times a plant looks as if it has been browsed).

I am now analyzing my data, and have found that the most browse is on the girdled plot. I suspect that this may be because the effects of logging include altered pathways for the deer. It is much harder for a deer to maneuver through the bramble and fallen logs of the logged plot than on the clean slopes of the girdled plot. I hope to continue my research throughout the coming year, looking at the impact of deer browse in the sample plots over the fall and winter, and will also make trips to Black Rock Forest with my class on Field Methods taught by Dr. Bower. ■

Morgan Parkes is a Barnard senior with a dual major in environmental policy and economics.

Students (continued from page 1)

working on theses related to the oak project, which seeks to predict, in advance, some of the cascades of impacts of the catastrophic loss of this key species group on our northeastern forests (see "What Will Happen to Our Forests if the Oaks Die?," [Spring 2006](#)). The overall research team includes Executive Director Dr. William Schuster, Dr. Kevin Griffin of [LaMont-Doherty](#), Dr. Jerry Melillo of the [Ecosystems Center of the Marine Biological Laboratory](#), Dr. Maria Uriarte, also of Columbia's E3B department, and other colleagues, along with Dr. Naeem. They plan to experimentally mimic the natural loss of oaks on a series of 18 plots in the mature North Slope oak forest on Black Rock Mountain; this larger study is awaiting funding, but a pilot project is underway on four plots adjacent to the main study area.

For the overall oak study, Mr. Sircely is collecting data on understory plant cover and diversity, canopy cover, productivity (plant biomass production), and soil microbial biomass and diversity. Ms. Trimarco is collecting macroinvertebrate and salamander species data, and together they are gathering moisture,

pH, and decomposition data in the main study plots. For their individual thesis projects, they are also collecting data in 80 smaller plots, each 1 m², which Mr. Sircely established within the larger plots.

Ms. Trimarco is investigating how the interaction between salamanders and their invertebrate prey affects decomposition and carbon storage on this smaller scale; she hypothesizes that, because salamander species eat a diversity of invertebrates, they slow the rate of decomposition caused by these prey species and thus help maintain forests as carbon sinks. "The eastern United States has the highest salamander diversity in the world," she notes, "and deciduous forests function as carbon sinks, making Black Rock Forest an ideal location for a study like mine."

Mr. Sircely is interested in understanding how the loss of species reduces the ability of ecosystems to function as they have historically, and is specifically investigating how the diversity of plants and microbes (bacteria and fungi) affects ecosystem processes such as productivity, decomposition, pH (acidity), and the soil's capacity to exchange cations (positively charged ions), which deter-

mines how resistant the ecosystem is to changes in pH. He has established study plots that cover a range of plant diversity, and is measuring soil microbe diversity, microbial biomass, pH, and cation exchange.

Dr. Chengyuan Yu, a recent Columbia Ph.D. who researched much of his dissertation in Black Rock Forest (working with Dr. Kevin Griffin of Lamont-Doherty), is finishing his studies related to the Forest and supporting the oak forests and urbanization studies before departing to a post-doctoral appointment in Australia.

Hemlocks: Below Ground

Dr. J. D. Lewis, of [Fordham University](#), and some of his colleagues have been guest researchers in Black Rock Forest since 1999, studying the impact of the hemlock woolly adelgid (*Adelges tsugae*) on hemlock (*Tsuga canadensis*) defoliation and mortality, and below ground on ectomycorrhizae, fungal symbionts growing between root cells that help the trees acquire nutrients, tolerate drought, and resist pathogens (see "Hemlock Adelgid," [Fall 2004](#), and "Research Symposium," [Fall 2005](#)).

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Students (continued from page 4)

This summer, Dr. Abby Sirulnik, a postdoc in his lab, examined what happens to the mycorrhizal fungal communities when host trees die, whether they are hemlocks infested with the woolly adelgid or oaks girdled as part of the oak forest project.

Urban-Rural Gradients

Two of Dr. Lewis's grad students, Gretchen Gary and Lucy Rubino, worked on the urban-to-rural gradient study. This multiyear project, designed to find new ways to quantify the "ecological footprint" of cities on the areas around them, includes sites ranging from intensely urban New York City to a completely rural area in the Catskill Mountains, with intermediate sites such as Black Rock Forest and Lamont-Doherty in between. It will examine urban-to-rural gradients in environmental variables such as day- and night-time temperatures, growing season length, solar radiation, chemical deposition, and ozone and carbon dioxide concentrations, and will investigate their individual and interacting influences on native plant growth and, eventually, on forest ecosystem function (see "Impact of Cities on Plant Growth," [Winter 2006](#)). The grad students investigated how plant phenology (the relationship of periodic phenomena to climate) is altered by urbanization, specifically whether plants germinate and flower earlier in urban areas than in rural areas because of warmer urban temperatures.

Dr. Lewis also has undergraduates who worked in the Forest this summer. Tara Glover, from St. Francis College in Brooklyn, and Isaac Mickens, from Fort Valley State University in Georgia, worked on the urbanization project; Laura Ward from the University of Missouri worked on the mycorrhizal fungi research. "Black Rock, with its great facilities and natural resources, has been a terrific opportunity," Dr. Lewis says. "Particularly because Fordham is not a Consortium member, I appreciate the support the Forest's staff have given us."

Mercury

Two undergraduates from [Hunter College](#) (part of the City University of

New York, or CUNY) worked on a project, organized by Dr. Anthony Carpi of [John Jay College](#) (also part of CUNY) and Dr. Allan Frei of Hunter, designed to understand the land/air interface of the mercury cycle in soil and snow cover in Black Rock Forest. The students, Kylie Ferguson and Lacy Folga, measured mercury emissions from the soil to the atmosphere to determine how different environmental parameters, such as temperature, ultraviolet radiation, and soil moisture, influence these emissions. "It has been wonderful to share my experience with other students," says Ms. Ferguson.

Drs. Frei and Carpi, who, as guest researchers, pay a facilities fee to work in the Forest (as does Dr. Lewis), are also providing the funding to establish Black Rock as a site in



Grad student Jason Sircely taking soil cores.

the national [Mercury Deposition Network](#) (it is already a site in the [National Atmospheric Deposition Program](#)). They also collaborate with Dr. Jessie Cherry, who earned her Ph.D. at Lamont-Doherty, on her ongoing snow research at the Forest, including measuring mercury in the snow cover (see "Research Symposium," [Fall 2005](#), and "Small Grants," [Spring 2006](#)).

"We are now becoming something of a regional center for mercury studies," says Dr. Schuster, adding that "Dr. David Evers, of the [Biodiversity Research Institute](#), whose findings of high levels of mercury in all 178 woodland birds he tested was reported in the *New York Times* in July, has conducted some of his research in the Forest. Quantities of mercury sufficient to impact ecosystems enter the atmosphere as a result of fossil fuel burning, and then are regionally

deposited on the land, especially on leaf litter, where the mercury is picked up by insects and becomes concentrated in many insect-eating birds, such as the wood thrush."

Undergrads and Interns

Several Columbia and Barnard undergraduates worked at the Forest over the summer. Morgan Parkes, a Barnard senior, examined deer browsing patterns (see "Student Research Spotlight," p. 4); Zach Wolf, a Columbia junior, helped with the oak project and is developing thesis research on the relationship between stream macroinvertebrate biodiversity and forest types; and Heather Love, a Barnard student who received an internship through Dr. Peter Bower, supported various Forest activities. Mark Wenzel, a State University of New York at Albany undergrad, volunteered at the Forest to gain research experience.

Two high school interns worked at the Forest this summer. Angel Park, a Cornwall High School graduate who is entering Amherst College, was sponsored by the Garden Club of Orange and Dutchess Counties. She helped graduate students with field work, mounted herbarium specimens, and helped organize the Forest's library. Steven Redden, a Riverdale junior, participated in the oak research by tagging and measuring trees, and assisted Morgan Parkes and Ellen Trimarco.

The Impact of Students

"It is tremendous how productive the work of graduate students in the Forest has been over the years," notes Dr. Schuster. "We have been fortunate to have many outstanding students who have returned the favor by advancing our understanding of the ecosystem and publishing their results. The Ernst Stiefel Foundation has been of critical support through its sponsorship of our Small Grants program, which often provides support for student work in specific research studies. And Columbia and Barnard, in particular, have sent us good students every year, often supported by institutional funds. The students help each other, support much of the work of the field station, and enhance the sense of community in the Forest over the summer." ■

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 and Anthony Carpi ([City University of New York](#)) 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](#)), and J. D. Lewis ([Fordham University](#)). *Contact Kevin Griffin.*

Plasticity of Plant Reproductive Traits in Manipulated Ecosystems: Pilot Studies of Red Oak Reproductive Output and Offspring Quality. Hilary S. Callahan ([Barnard College](#)). *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 (griff @ ldeo.columbia.edu) 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.*

Long-Term Black Rock Forest Meteorological and Snow-Related Research. Jason Smerdon, Gavin Gong ([Lamont-Doherty Earth Observatory](#)) 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.*

Long-Term Study (75 Years) of Tree Population Dynamics and Carbon Storage. William Schuster ([Black Rock Forest](#)). *Contact: William Schuster.*

The Effect of Leaf Longevity on the Carbon Gain and Growth of Japanese Barberry (*Berberis thunbergii*). Kevin Griffin and Chengyuan Xu ([Lamont-Doherty Earth Observatory of Columbia University](#)). *Contact: Kevin Griffin.*

Long-Term Studies of Painted Turtle Population Dynamics and Dispersal. Christopher Raxworthy ([American Museum of Natural History](#)) and Susan Mitchell ([Cornwall Central School District](#)).

The Potential Role of Physiology in the Age-Related Decline of Red Oak Productivity at Black Rock Forest. Kevin L. Griffin ([Lamont-Doherty Earth Observatory of Columbia University](#)) and Will Bowman ([Center for Environmental Research and Conservation](#) at Columbia University). *Contact Kevin Griffin.*

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

Trail Maintainers

Almost every day, students, hikers, and scientists enjoy the peace and beauty of Black Rock Forest's 25 miles of trails, probably without considering why the trails aren't overgrown by plants, littered with tree branches, and unmarked. The answer is simple: volunteers from the [New York – New Jersey Trail Conference](#), a Consortium member. Led by John Blenninger, some 12 trail maintainers currently work in the Forest.

At this year's Consortium Day (see p. 1), both John Blenninger and the Consortium presented awards to Don Erbe, who is stepping down, at age 79, after 15 years devoted to the Secor, Chatfield, and Ledge trails. A Cornwall resident and Consortium supporter, he is also an intrepid skier and hiking leader, having led some 83 excursions to US national parks and five foreign countries for the [Appalachian Mountain Club](#).

Don Erbe worked on his trails at least twice each spring and twice each fall. Using the trail maintainer's tool kit of a bowsaw, clippers, and weed whacker, he removed downed branches, cleared new growth that obscured blazes, whacked plants growing in the middle of the trails, and cut out roots. Every five years or so, he reblazed the trails. After every visit, he filed a report with his supervisor, John Blenninger, whom he describes, affectionately, as a "taskmaster."

"It is wonderful to have the Trail Conference's volunteer trail crews," says Executive Director Dr. William Schuster. "They have very specific procedures, such as the exact size, shape, and color of blazes to use and the exact width and height of trail corridor to keep clear. John Blenninger gives them all training before they go out, maintains some of the longer trails himself, and fills vacancies when they arise. If clearing a trail requires power tools, they bring it to our attention."

And, while a new volunteer, Richard Green, is taking over the Secor, Chatfield, and Ledge trails, Don Erbe can probably still be found, at least in the summer, on "his" trails – that's where he found a "secret source" of blueberries! ■

Join Us! Become a Friend of Black Rock Forest!

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☐ I would like to volunteer to help with the following:

All contributions are tax-deductible as the Black Rock Forest Consortium is a 501(c)(3) organization.

Forest News in Brief

Paul Winter Reception to Benefit the Forest. Black Rock Forest and The Arts Alliance of the Lower Hudson Valley (www.TheArtsAlliance.net) will host a reception and Meet the Artist event for internationally renowned musician Paul Winter (www.livingmusic.com) in the Black Rock Forest Lodge on Saturday October 21 from 4:30 to 6 PM. At 7:30 PM, Paul Winter will present a concert at the Storm King School. Tickets for the reception and concert are \$75, \$40 for the reception alone, and \$35 for the concert alone (\$25 for students and seniors), and should be purchased in advance from The Arts Alliance (by [e-mail](mailto:info@theartsalliance.net), or 845-534-5284). The concert is the featured event of a series of events entitled "Art About Water: The Moodna Creek Watershed," produced by The Arts Alliance in collaboration with the Moodna Watershed Coalition. The reception will benefit the Black Rock Forest Consortium; the other events will benefit educational and arts programs in Orange County.

Wolf Cry Singers Performance and Silent Auction on October 7. In another "Art About Water" event, the Wolf Cry Singers (www.wolfcrysingers.com), a woman's hand drum group, will drum and chant traditional and contemporary Native American songs at the Upper Reservoir on Saturday October 7 from 2 to 4 PM (rain date Sunday at 12 PM). From 2 to 6 PM, a silent auction will be held in the Forest Lodge as a fundraiser for the Consortium. Works of art created during the Outdoor Art Event (see below), as well as other art, will be on display and available for purchase. The Wolf Cry Singers will perform one

more time in the Lodge at the end of the event, and snacks will be available from 4 to 6 PM.

Outdoor Art Event in Forest. As part of the "Art about Water" series, the Consortium is hosting an outdoor art event. From September 23 through October 6, visual artists are invited to create art works in the Forest. Jean Linville (www.dancingbranches.com) will provide seven nature easels as part of her interactive "Whispered Wisdom 12518" environmental art installation in the Forest; the remainder of her exhibits will be on display along the Duggan and Reservoir trails, between the Public Parking Lot and the Upper Reservoir, through October 22.

Spence School Joins the Consortium. The [Spence School](http://www.spenceschool.org), an independent K-12 school for girls in New York City, has just joined the Consortium, following a trial visit to the Forest in May. Welcome!

Article on Consortium History in Hudson River Valley Review. An article by Dr. Nicole Buzzetto-More, entitled "The Story of Black Rock: How an Early Sustainable Forest Spawned the American Environmental Movement and Gave Birth to a Unique Consortium that Links Science, Education, and Conservation," has been published in the Spring 2006 issue of *The Hudson River Valley Review: A Journal of Regional Studies*. Dr. Buzzetto-More, who wrote her Teachers College doctoral dissertation on the Consortium's history and educational programs (see "Consortium Bridges Science/Education Gap," [Winter 2005](http://www.blackrockforest.org/winter2005)), is now a professor in the human ecology department at the [University of Maryland, Eastern Shore](http://www.umd.edu). ■

Black Rock Forest Consortium
129 Continental Road
Cornwall NY 12518-2119

Phone: (845) 534-4517
Fax: (845) 534-6975
Web: www.blackrockforest.org

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Report from the Forest Manager

People have long understood the healing and teaching powers of a solitary walk in the woods; encountering a complex natural system encourages the soul. Enterprising teachers have been exposing their students to solo hikes for years.

At Black Rock Forest, the experience has always been an enjoyable challenge. Teachers feed off the energy of students who have been in the woods all day. Instruction, including pond and forest studies, has prepared students for their solo walks. For many, the walk alone in the woods is their first, and their first reaction is: "I ain't doin' that." After some coaxing, everyone will walk the solo walk.

Teachers using solo walks only need a few logistical preparations. The first is time, the second is responsible help from parents, and the third is a trail or wagon road with few, if any, intersections. The teacher begins with a brief talk with the walkers, focusing on their experiences of the day and their behavior as a group. They have been taught how plants and animals live and why they belong in the forest. Now it is time to

experience the forest themselves. This is best discovered solo. The understanding of being an important part of a living forest is a practical and emotional lesson that is best received without the distraction of others and their conversation. Later, conversation among students will help them solidify their thoughts about the walk.

The teacher stays with the group while at least two adults place themselves along the trail and at its end. The teacher then chooses one student to begin the walk. A teacher walks with the student a short way, answering questions the student hesitated to ask among the group. With a little more confidence, away the student goes: no talking, no stopping to wait for or scare friends, walking comfortably, and piquing the sleeping senses.

Two or three minutes later, the next walker is given a number and starts. The solo walkers pass stationed adults who give them words of encouragement and ask their number to keep everyone accounted for.

The teacher is the last to leave and catches up with the group at the end of the solo walk. First discus-

sions often include animals the students didn't see, such as bears, wolves and snakes. The teacher gets down to the reality of the experience by conducting discussions and journal-writing sessions, ultimately preparing the students for their next adventure at Black Rock.

Whether a sunset hike or a night walk, the reactions are wide-ranging. The fearlessness of children under 10 years of age leads them to accept the challenge far more easily than young teenagers, many of whom have developed unsubstantiated fears from ill-conceived movies.

I enjoy the after-walk reactions: raw in form, right to the point. I remember one 8-year-old girl who needed some very determined persuasion to take the night-time hike. As I approached her afterwards, kneeling down to ask how she fared, I was greeted with a punch, square in the nose. As I picked myself off the ground, she said, "It was like you said, but I was scared!" Dawn has done many solo walks since then, but we talk about it at a distance! ■

— John Brady