

Forest Lodge, Stillman Award, Highlights of Consortium Day

Just one year after the ceremonial groundbreaking for the new Black Rock Forest Lodge on Consortium Day in 2003, about 150 representatives of Consortium member institutions and other friends of Black Rock Forest celebrated its ceremonial opening on this year's Consortium Day, June 13, 2004. The day of festivities continued with the presentation of the Stillman award to Peter Stern, refreshments, and the usual camaraderie among the participants.

Special guests included Cornwall Town Supervisor Richard Randazzo; Cornwall Mayor Ed Moulton; former Forest Director Jack Karnig; the new Head of the [Storm King School](#), Helen "Steevie" Chinitz, and its Board Chair Peter Duggan; Jackie Grant, Executive Director of the neighboring [Museum of the Hudson Highlands](#); David Collens, Executive Director of the [Storm King Art Center](#); and David Redden of [Scenic Hudson](#), a previous Stillman awardee.

Opening Ceremonies

With Executive Director Dr. William Schuster, Consortium president Dr. Frank Moretti, architect Sylvia Smith of [Fox & Fowle](#), and builder Alan Zuckerman of Verticon looking on – and with the help of young friend Tommy McGee – William T. Golden, chairman of the Consortium, cut the bright red ribbon and visitors streamed into the central common

space of the almost-finished Forest Lodge. There, gazing out through its large windows at the green expanse of the Forest and the mountains beyond, they toasted the opening with glasses of champagne and listened to Sylvia Smith and her colleague Paul Tapogna discuss the building's architectural highlights.

Like the adjacent, award-winning Science and Education Center, also designed by Fox & Fowle, the new Lodge includes "green" and "smart" features, such as geothermal heating and cooling, composting toilets, high-efficiency lighting, operable windows



Cutting the ribbon for the new Forest Lodge.

and fans for ventilation, "sandwiched" roof panels and staggered wall studs for high thermal efficiency, building orientation to capture sunlight, and sustainable materials, including wood and stone from the Forest itself. The building's 9000 square feet, on two levels, can accommodate up to 60 overnight visitors at a time, at least 50 people for dining, and up to 100 people for meetings (for more details, including how to reserve space in the Lodge, see "Visiting the New Forest Lodge: A How-To Guide," [page 3](#)).

Stillman Award

The group then moved to a tent behind the Science Center for food, conversation, and the award cere-

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Hemlock Adelgid

New Study Looks at Ecosystem Impacts

As the hemlock wooly adelgid (*Adelges tsugae*) continues to devastate stands of Eastern hemlocks (*Tsuga canadensis*) throughout the eastern United States, new research in Black Rock Forest, funded by the ongoing generous support of the Arthur Ross Foundation, focuses on the impact of hemlock mortality (and other forest disturbances) on forest composition, structure, and ecosystem properties. Other studies are investigating the effect of adelgid infestation on the growth of hemlocks and surrounding trees, through a study of tree rings, and on native fungal communities and nitrogen cycling. Researchers also continue to track both hemlock mortality and the success of reforestation trials.

An aphid-like insect no bigger than the head of a pin, the hemlock wooly adelgid feeds on the needles of hemlock trees. As an exotic (non-native) species, introduced to the northeastern United States from Asia by intercontinental commerce, it has no native predators and hemlocks have never evolved defenses against it. And, since hemlocks function as a keystone species, their loss will have impacts on many aspects of our regional ecosystem. Their dense evergreen foliage creates a unique habitat underneath, affecting such vital factors as light levels, temperatures, precipitation throughput, wind, and chemical conditions in the soil and litter, thereby influencing the distribution of other plant and animal species.

Ecosystem Impacts

For the new study on the impact of canopy-level changes, the Forest

(continued on page 4)

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 3785-acre Black Rock Forest in New York's Hudson Highlands.

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Report from the Executive Director

Through much of the 20th century, a major focus of ecological research was on basic research in “pristine” systems with minimal human influence. Many felt we could best learn about nature by studying it in the absence of man. But a perusal of modern ecological and environmental research (for example, the studies taking place at Black Rock Forest; see page 6) reveals that a majority is now related to human interactions with forest components and processes. This change has occurred as people now realize that nearly all of the planet’s ecological systems are impacted by human activities. Humans do not just have “effects” on these systems but are part of them, and this fact has helped lead to a paradigm shift. A recent Ecological Society of America report, “Ecological Science and Sustainability for a Crowded Planet” (www.esa.org/ecovisions) documents this trend and the underlying reasons for it, and recommends a new plan of action.

Ecological systems “sustain” life on earth. Humans depend on them for services and products that we simply cannot do without, including clean air, clean water, food, and medicines, and in turn we have an enormous influence on many of them. The report states that we must explicitly recognize “the tendency of humans to modify their world.” In this process, we sometimes degrade ecosystems to the point where their ability to provide life-sustaining ecological services is compromised: witness air pollution, depleted fish populations, barren mined lands, and the degraded quality of most bodies of fresh water. The report states that “new thinking and new solutions are needed now” because “the earth’s ability to produce goods and services is being degraded further.” It argues that our country and its ecologists have a particular responsibility to contribute to global solutions because of the United States’ “disproportionate consumption of non-renewable natural resources and disproportionate release of globally-transmitted pollutants.”

The field of ecology does not possess all the answers, and the expertise and involvement of many other fields will be critical in ensuring the

sustainability of Earth’s life support systems. The ESA report is refreshingly introspective and self-effacing. It states that ecological science is seldom considered in decisions with major impacts on the environment. The field is young and, while ecologists have compiled an impressive knowledge base, they “do not always advertise its availability or know how to present it to nonscientists in a comprehensible form;” additionally, “sometimes ecologists fail to assert themselves in policy matters.”

The recommendations of the report seek to remedy these problems. They call, for example, for the establishment of an international network of centers for the two-way exchange of information between decision makers and scientists to ensure that environmental research and forecasting address important issues and that the results are used to inform important decisions. Among their several “vision areas,” the most critical is building an informed public. They propose much greater internet outreach, a Web-based e-library on ecological sustainability, and even a major public information campaign with advertisements such as “Have you seen your ecosystem lately?”

Certainly the Black Rock Forest Consortium’s mission of improved environmental understanding and its approach of working through research and education at all levels are consistent with these objectives. We foster research about environmental health and change, manage the ecosystem based on ecological understanding, and work to spread the gathered information. The Consortium is in the process of forming strategic research and education teams to bring increasing focus on the questions that matter most to society. And the direction of much of this work is mirrored at many of our member institutions and other institutions around our region. Further work and progress toward planetary sustainability are likely because of the motivation that we all want our children and their children to have the ecological services they need for a good life and to have a healthy world around them. And that basic human desire is likely to be sustainable. ■

— Dr. William Schuster

Visiting the New Forest Lodge: A How-To Guide

Would you like to relax after a day of research in the field watching the light slowly fade away over the mountains? Would your students like to take night-time hikes and gaze at a star-filled sky? If so, it's time to think about an overnight stay at the new Black Rock Forest Lodge, now open and accepting reservations from Consortium member institutions (and a few other selected, closely aligned organizations). To help visitors have a smooth, safe and productive trip to both the Lodge and the Forest itself, the Black Rock Forest Consortium has hired an operations manager, Jack Caldwell. He will work with representatives from Consortium institutions on program planning, scheduling day and evening activities and events, coordinating dining, cleaning, and nurse-on-call services, group check-in and check-out, and billing.

Facilities

The two-level, 9000-square-foot Lodge can accommodate up to 60 overnight visitors at a time and provide meeting space for groups of up to 100 people. Just steps away, the Center for Science and Education features 9000 square feet of laboratory and classroom space. (Fifteen additional beds remain available at the Old Forest Headquarters building.)

The Main Level consists of two wings, with a total of ten bedrooms of different sizes, capable of housing 48 guests, and four full lavatories with showers. An additional 12 visitors can sleep in bunk beds on the Lower Level which, when finished, will include two more full bathrooms.

The Main Level also includes a large catering kitchen and a 1300-square-foot Commons room for dining and meeting, with large decks on each side and full multimedia and internet capabilities.



A bedroom in the Lodge.

Program Ideas

Consortium members are enthusiastic about the uses of the Lodge. "It opens new possibilities for truly integrating the Forest as a resource in our curriculum," explains Luyen Chou, Associate Head of The School at Columbia University. "It allow us to implement more interesting and robust programs in conjunction with the Forest. The possibility of overnight trips with children and parents offers great opportunities for community building, and for introducing them to the majesty of the Hudson Highlands and the outdoors in general."

Meet Jack Caldwell

Jack Caldwell is no stranger to the Black Rock Forest. As a teacher and administrator in the Newburgh Enlarged City School District for the past 32 years, he's been involved with the Forest from the very beginning days of the Consortium. He has brought elementary and middle school students to Black Rock, organized required in-service training for Newburgh teachers taking classes to the Forest, and obtained grants for a variety of student research projects. He holds a master's in elementary education and a certificate of advanced study in school administration and supervision, both from SUNY New Paltz.

Jack will not only be the liaison for visiting groups, but will also oversee all operations of the Forest Lodge; have fiscal responsibility for facilities management; work closely with other Forest staff; refine, expand, and consolidate the Forest's current usage rules and safety and emergency plans; and seek "green, smart, and sustainable" ways of ensuring productive and safe visits and operational efficiency.

"I'm looking forward to meeting everyone from the different Consortium member institutions," he says, "learning about their particular needs, and exploring opportunities for bringing scientists and students together." ■

Other ideas include academic year and summertime residential field courses, science camps for students, and training courses for educators. "The Consortium now has a much greater capacity to host conferences and larger programs compared to previous years," notes Forest Director Dr. William Schuster. "The design and the location are perfect, and we are already seeing an increase in the ratio of multiday to single-day visits. With the completion of the Forest Lodge, the vision in our 1996 Master Plan has now been realized."

Costs

Overnight use of the Lodge costs \$20 per person per night and includes linens; daytime use of the Commons room for meetings is free for Consortium members. Visiting groups must make their own arrangements for meals. Operations Manager Jack Caldwell will be able to provide a list of recommended caterers, restaurants, and other dining options, and can also help groups arrange for nurse-on-call service for \$75 per night.

Reservations

Consortium members can reserve space on a first-come, first served basis by calling the Forest at 845-534-4517, or by [e-mailing](#) it. Groups staying overnight must have a ratio of at least one adult per five students.

With adequate prior notice, visitors may also be able to use the dining, meeting, and lodging facilities of the adjacent [Storm King School](#) (call the School at 845-534-7892 to inquire about availability and fees). ■

Hemlock Studies (continued from page 1) has established more than fifty new study plots, each with adjacent control plots, in areas infested by adelgids, damaged by the 2002 ice storm, or otherwise recently disturbed. Researchers surveyed the above-ground vegetation in the plots and then fenced in two areas in each disturbed area to serve as deer exclosures, as well as several small-mammal exclosures. They planted tree seedlings in some areas but not in others. These arrangements allow them to quantify the impact of deer, small herbivores, and new plantings on ecosystem responses to canopy disturbance.

"The experiment seeks to track the changes in species composition and structure over the coming decade," explains Forest Director Dr. William Schuster, the principal investigator of the study, "and to analyze the roles of herbivory and forest management strategies in mediating those changes. I encourage investigators interested in studying other changes on these plots, such as biological diversity or chemical cycling, to contact me."

Growth Impacts

The research funded by the Arthur Ross Foundation also aims at smaller scale impacts: how does the adelgid affect hemlock tree growth and does the decline of hemlocks trigger the growth of surrounding trees? To answer these questions, the Forest purchased tree-ring analysis equipment that enables researchers to assess radial growth before and after adelgid infestation by measuring ring widths from 1900 through 2000 on tree-ring sections from dead and cleared hemlock trees and on increment cores from healthy and impacted trees. As a side benefit, the Forest is establishing a long-lasting tree sample library, which now includes some one hun-

Small-mammal exclosure inside deer fence.



dred sections from hemlocks, oaks, and maples. Dr. Schuster and Columbia graduate student Rob Carson are analyzing the data and plan to write up their results this fall.

Fungal Impacts

J. D. Lewis, a biologist from Fordham University, is working in the Black Rock Brook watershed on a variety of adelgid-related projects, thanks to a grant from the US Department of Agriculture that provides for overhead payments to the Forest. He and his lab colleagues have discovered that, despite little change in tree composition following substantial hemlock mortality, there has been a significant reduction in the diversity of mycorrhizal fungi. "These fungi form mutualistic relationships with plant roots," Dr. Lewis explains, "and are critical for nutrient uptake in many plants. We have found that this reduction in fungal diversity is also reducing tree seedling growth, and are now digging deeper into the impacts of the adelgid on mycorrhizal diversity." The team has found little change in nitrogen cycling despite the hemlock mortality, and is exploring why some hemlock trees seem to be more resistant to the adelgid than others.

Mortality Update

Throughout Black Rock Forest, an average of 57 percent of the established hemlock trees have died since 1985, before the adelgid reached the Forest. However, nearly all of that mortality has occurred quite recently, as 48 percent of the living hemlocks surveyed in 2000 in the Black Rock and Canterbury Brook stands were dead by 2003. In many cases, these trees suffered substantial defoliation in previous years before dying in the past year. And, while adelgids have abandoned some previously infested trees, many of these trees show high levels of scale insects that also feed on needles and may continue to weaken the trees (see "Forest a Center of Woolly Adelgid Research," Winter 2001).

"These numbers greatly exceeded the long-term mortality rate of oak and other hardwood trees in the Forest, which has averaged



Uneven success in unfenced white pine planting.

about 1 percent per year since 1930," notes Dr. Schuster, "and is more than five times greater than the increased mortality rate since 1999 on long-term plots of about 3 percent per year."

Reforestation Update

An earlier Arthur Ross Foundation grant funded a multiyear study of the potential of reforestation in areas suffering from hemlock mortality. The research involved planting seedlings of a variety of native conifers and hardwoods in two heavily adelgid-impacted sites, and analyzing how active tree planting compared with natural reclamation, with and without fencing to exclude deer (see "Conifers, Hardwoods Can Reforest Areas of Hemlock Mortality," [Winter 2004](#)). In 2003, after two to three years of growth, overall survival was 89 percent, and that of white pines was 95 percent. After another year, survival remains outstanding.

This success, however, comes with a price tag, because the study areas were graded and enclosed with 7.5-foot-high heavy-duty fence, at costs ranging from \$2600 for a half-acre exclosure to \$3700 for a one-acre one. "Examination of previous, unfenced Black Rock Forest plantings indicates that mammal browsing almost always has a significant, negative impact on growth and survival," notes Dr. Schuster. "In three different unfenced plantings of white pines from 3 to 9 years old, all seedlings show evidence of browsing. Although survival still ranges from 30 to 80 percent, height data indicate that less than 15 percent of these trees will survive over the long run. In an unfenced planting of hardwood seedlings, nearly all have died over the past five years, due primarily to damage from heavy browsing." ■

Student Research Spotlight: Impact of Deer Browsing on Forest Growth

by Collin Law

This summer, Hannah Roth and I studied the effects of deer browsing on forest regeneration in Black Rock Forest. Browsing by a variety of mammals, predominantly the white-tailed deer, *Odocoileus virginianus*, has been shown in numerous studies to inhibit tree regeneration and to alter the nature of forest regrowth patterns. The deer herd in the northeastern United States has expanded tremendously in the absence of natural predators (such as the coyote), reaching 35-40 per square mile in Black Rock, well over the 15 per square mile known to be detrimental to forest regeneration.

In 1988, Forest staff constructed an enclosure, a fenced area that deer cannot enter, along Hall Road near Sutherland Pond. Both dead and living trees were cleared. A large area that was clear-cut in 1971 serves as an approximate control. The plots are directly adjacent, topographically identical, and have been subject to

similar forest management practices for the past 75 years. The important difference is that the unexclosed 1971 clear-cut was cleared 17 years before the 1988 enclosure.

For a 1999 study, three 0.01-acre plots were established in the 1988 enclosure (called enclosure-in), and part of the fencing was removed to create an additional study area with three more plots (called enclosure-out). Hannah and I established six new plots in the 1971 clear-cut area this summer. In each of these randomly positioned plots, we identified and measured the trees and surveyed vegetation by species and coverage.

Our most significant finding comes from comparisons between the enclosure plots and the 1971 clear-cut area. The clear-cut area has never been protected from deer browsing. Over the past 33 years, not a single tree has reached even one inch in diameter. While both the enclosure-in and enclosure-out plots

have grown into lively birch stands with some other hardwood species, the adjacent 1971 clear-cut area has grown into a dense, treeless blueberry patch. (A predominantly birch stand is an indicator of healthy regeneration because birches are "early-to-intermediate" species in ecological succession, typical trees that recolonize cleared areas.) These data strongly support the hypothesis that deer browsing is effectively inhibiting forest regrowth in Black Rock Forest. ■

Collin Law is a senior in Ecology, Evolution, and Environmental Biology at Columbia University, and Hannah Roth is a junior in Urban Studies at Barnard College. They learned about the Forest internship through the Center for Environmental Research and Conservation; their research was supervised by Dr. William Schuster, with assistance from John Brady, Matthew Munson, and Rob Carson (a Columbia graduate student).

Consortium Day (continued from page 1) mony. The Consortium presents its annual E. G. Stillman award, named after Forest founder Dr. Ernest Stillman, to people who have provided environmental leadership and support for Black Rock Forest and its Hudson Highlands region.

Dr. Schuster described this year's recipient, H. Peter Stern, as "the chairman and president of the [Storm King Art Center](#), that world-class outdoor sculpture museum whose eastern backdrop is the Black Rock Forest, a leader in land preservation efforts in the Hudson River Valley, and the preserver of the great Schunemunk Mountain," as well as the vice-chairman of the World Monuments Fund and a director-at-large of the Black Rock Forest Consortium. He then called on Peter Bienstock, chairman of the Storm King Art Center's executive committee, president of Friends of the Hudson Valley, board member of the Open Space Institute, and "a vociferous advocate of the entire Hudson Valley and a long-standing friend of Black Rock Forest," to give the audience addi-

tional perspective on Peter Stern's many contributions to the region's environment.

Activities for All

As always, Consortium Day featured a plethora of other activities. Forest Manager John Brady released some

Peter Stern and Peter Bienstock with the E. G. Stillman Award for 2004.



of the brook trout raised at the Forest into Black Rock Brook (see "Brookies at Black Rock," [Spring 2003](#)), herpetologist Peter Warny led his now-traditional amphibian hike, Dave Karrmann demonstrated the American Museum of Natural History's turtle research and education project (see "Small Grants," Spring 2003), and Neil Pederson of Lamont-Doherty Earth Observatory described the tree-ring climate study on a walk through the woods starting at the Upper Reservoir.

Displays at the Science Center highlighted the School in the Forest program for New York City public school students (see "Fall in the Forest for City Public Schools," [Winter 2004](#)), the Signs of Spring project at the Vails Gate School (part of the Newburgh school system), seasonal nature study activities at the Cornwall Schools, posters about the turtle research, tanks with native brook trout and amphibians, and seedlings from the Forest's 250-year-old Continental White Oak Tree on sale as a fundraiser. Seedlings are still available for \$25 each and are ready for planting this fall. ■

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. ■

Effects of Hiking Trails on Arthropod and Bird Community Diversity. Ed McGowan (New York-New Jersey Trail Conference) and James Danoff-Burg (Center for Environmental Research and Conservation at Columbia University). *Contact: James Danoff-Burg.*

Controls on Carbon and Nitrogen Cycling in the Cascade Brook Watershed of Black Rock Forest. Kevin Griffin (Lamont-Doherty Earth Observatory). *Contact: Kevin Griffin.*

Biodiversity of Spiders of the Black Rock Forest. Vladimir Ovtsharenko and Kefyn Catley (American Museum of Natural History). *Contact: Vladimir Ovtsharenko.*

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

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

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

Response to Canopy Disturbance in the Black Rock Forest. William Schuster and John Brady (Black Rock Forest). *Contact: William Schuster.*

Coyotes of the Hudson River Highlands and the New York Bioscape Initiative. Fred Koontz (Wildlife Trust). *Contact: Fred Koontz.*

Floristic Changes Over Time in the Black Rock Forest. Kerry Barringer and Steve Clemants (Brooklyn Botanic Garden). *Contact: Kerry Barringer.*

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

Hydrologic and Chemical Fluxes in the Black Rock Forest. H. James Simpson (Lamont-Doherty Earth Observatory of Columbia University). *Contact: H. James Simpson.*

Long-Term Studies of Painted Turtle Population Dynamics and Dispersal. David Karrmann and Christopher Raxworthy (American Museum of Natural History). *Contact: David Karrmann.*

Delineating Detailed Ecological Land Units in the New York Bioscape Using Multi-Temporal Landsat Imagery. John Mickelson (CIESIN at Columbia University), William Schuster (Black Rock Forest), and Fred Koontz (Wildlife Trust). *Contact: John Mickelson.*

Taxonomic Inventory of the Black Rock Forest in Relation to Environmental Stability: A Voucher-Based Field Collection. Angélique Corthals and Julie Feinstein (American Museum of Natural History). *Contact Angélique Corthals.*

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) and Will Bowman (Center for Environmental Research and Conservation at Columbia University). *Contact Kevin Griffin.* ■

Take a Virtual Hike!

Students, teachers, nature lovers, and the merely curious can now take a virtual hike in Black Rock Forest, clicking their way through various habitats along two miles of forest trails. “A Walk Through Black Rock Forest,” online at <http://icp.giss.nasa.gov/education/modules/carbon/topic1/#>, stops at ten points between the Center for Science and Education and the White Oak Tree: the underground water pipeline from Aleck Meadow Reservoir, the northern slope of Honey Hill, a hemlock stand, Aleck Meadow Pond, Black Rock Brook, Transition Rock, a vernal pond, a deciduous habitat, a ridge top, and a beaver swamp. Each stop provides general information about the site and then allows the visitor to investigate geology and soils, plant life, wildlife, and human impacts. Photos and maps help the “hiker” visualize the Forest environment.

At the Aleck Meadow Pond stop, for example, the main page discusses the differences between terrestrial and aquatic habitats, the variation of water temperature with depth, and the effects of the lack of a canopy (lots of sun, rain, and wind). The geology and soils page examines the creation of ponds and swamps by glacier withdrawal; the one on plant life looks at submersed, floating, and emergent vegetation; the wildlife page points out that ponds are great places to see animals because some live in it and others visit it, and then focuses on turtles; and the human impacts page covers sedimentation and eutrophication.

The virtual hike is one module of a problem-based curriculum developed for middle- and high-school students by the [Institute for Climate and Planets](http://www.columbia.edu/~ce1100/), a collaborative education outreach project of the Goddard Institute for Space Studies (a NASA program located at Columbia University), the Earth Institute at Columbia, and teachers from twenty schools and colleges in the metropolitan New York City area. Its content draws largely on Black Rock Forest’s own Ecosystems Curriculum created by Isabel Ashton and John Brady. The web site also includes materials for teachers and students. ■

Forest News in Brief

Hot Off the Press: New Forest Brochure. An updated Forest brochure that includes information about the new Forest Lodge is now available. Printed with soy ink on recycled paper, it covers the Forest, the Consortium, field station facilities, scientific research and education programs, technology, conservation, accomplishments, ideas for the future, and funding opportunities, interspersed with colorful photos of scientists, students, and the Forest itself. Representatives from Consortium member institutions and friends of the Forest will receive copies in the mail, but are encouraged to request additional copies from the Forest office to distribute to colleagues who might be interested in using or supporting the Forest.

New Meteorological Station. Thanks to a recent grant from the National Science Foundation, the Forest’s environmental monitoring network now includes a new meteorological station atop the Fire Tower. It will measure air temperature and humidity, precipitation, solar radiation, and wind speed and direction, and will also include the Forest’s first web camera. Data from the station, including video from the camera, is scheduled to be available this fall. Additionally, the Forest is switching to new, higher-bandwidth radios that will allow video and sound files to be transmitted around the monitoring network for potential future use in tracking animal populations and studying other environmental parameters.

Interns for Stream Quality Studies. This fall, Hudson Basin River Watch is conducting a stream quality assessment project for the Orange County Water Authority.

Through early October, they will be sampling numerous streams in the county, including in Black Rock Forest, examining macroinvertebrate communities and water chemistry parameters in order to characterize stream health. The project will continue next summer, and Hudson Basin River Watch would like to offer internships to students who would enjoy participating in this kind of field experience. Interested students and teachers should contact [Kelly Nolan](#) at [Hudson Basin River Watch](#).

Adopt a Tree to Support the Forest. In October, the Forest will plant several hundred tree seedlings — a mix of native hardwoods and some legacy apple trees and native conifers — in the area along Continental Road that was devastated by the ice storms of 2002. Through an Adopt-a-Tree program, people can support this effort by sponsoring trees for \$25 per tree. Supporters can choose the species of tree they wish to sponsor and will receive a certificate and size measurements for their tree. Consortium member student groups will have opportunities to plant trees, with Forest staff instruction and oversight.

Funding Opportunities. The Consortium still needs to raise about \$60,000 to complete the facilities in the Lower Level of the Lodge (the student activity area and the trout breeding and study room); funds are also needed to support the cost of the new “green” kitchen. These spaces — and others in the Lodge — can be named after major donors, if desired. Please contact Executive Director Dr. William Schuster if you know of any possible funding sources. ■

Join Us! Become a Friend of Black Rock Forest!

New Member or Renewal

- White Oak \$1000 or more
- American Beech \$500
- Hemlock \$250
- Sugar Maple \$100
- Individual \$20
- Student/Over 65 \$15
- Family \$25

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Please make checks payable to the Black Rock Forest Consortium.
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**Forest Lodge Open!
Reserve Now!
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Report from the Forest Manager

In 1926, two visionary men visited the forest of Black Rock. Richard Fisher, Director of the Harvard Forest and strong supporter of our country's first forester, Gifford Pinchot, walked these woods with Dr. Ernest Stillman, the newly installed owner of Black Rock Forest. They experienced a forest much different from today's. Two centuries of exploitation had left only a remnant of the Highlands' former ecosystem.

Oh, to be a bird on a small tree to hear what they had to say! Their conversation was most certainly of reclamation of a productive ecosystem. They sought to benefit mankind but also to establish future forest, and to use Black Rock as a demonstration forest. They initiated as-yet unproven forest treatments and practices to manipulate this land into a healthy productive ecosystem, now the basic objective of modern silviculture. Henry Tryon was brought on to employ his expert mapping and silvicultural skills. Concentrating on the Forest's most economically productive species, oak, they began the earliest treatments for regeneration and de-

velopment of the species. With a crew harvesting and thinning, Black Rock became a forest system driven toward mature oak trees.

Today, we enjoy this apparently pristine environment, the result of nurturing by past directors, including Ben Stout and Jack Karnig. Of the many tracts managed for mature oak, the northern slope of Black Rock Mountain is an excellent study site, displaying a park-like appearance of dominant, large-crowned oak trees with an understory of native saplings. In the early 20th century, oaks established themselves in the open spaces created by the chestnut blight; their growth was strengthened by thinning undesirable species and they matured in these shallow glacial till soils. Then they were challenged by the drought of the 1960s, repeated defoliations from gypsy moth during the 1970s and 1980s, recent forest fires and ice storms, and now the possible introduction of sudden oak death. In recent years, we have witnessed a remarkable increase in oak mortality.

Presently, one of the topics of study is the health of mature oaks,

their regeneration, and the possible effects on the Forest of oak mortality. Recently, traditional forest research has been continued at Black Rock due to the interest and generosity of the Arthur Ross Foundation, which has provided funding to stage both hemlock research and oak regeneration studies. This summer, study areas along the north slope of Black Rock Mountain were thoroughly inventoried by SUNY Environmental Science and Forestry students Matthew Brady and Sarah Lamagna. A temporary forest crew (Joe Oliva, Matthew Brady, Sarah Lamagna, and Benjamin Brady), along with Matthew Munson, will prepare the study areas and construct exclosures to prevent deer and other animals from impacting forest regeneration in some of the areas, creating study opportunities for students and other researchers. Funding is needed for support of student involvement.

From the reclamation of a forest to investigation of its future, the process is slow, like the growth of a tree, giving us every chance to learn. ■

— John Brady