
BLACK ROCK FOREST NEWS

Spring 2003

The Black Rock Forest Consortium

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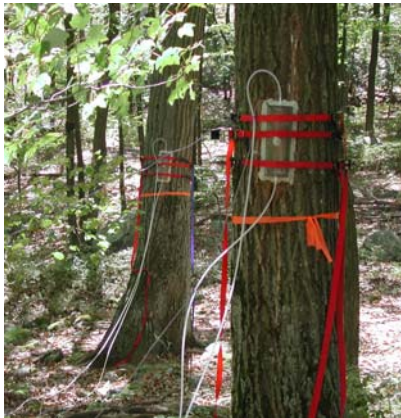
Small Grants Support Summer Research and Education

Scientists will be studying bees, turtles, age-related productivity decline in red oaks, and the use of an oxygen isotope in obtaining cell maturation information in Black Rock Forest this summer, thanks to the Stiefel Foundation Small Grant Program. Now in its fourteenth year (and the second with funding from Stiefel), the Small Grant Program provides up to \$5000 for research projects and up to \$3000 for education projects. Since 1990, it has funded 68 research projects for a total of more than \$281,000, and since 1994, it has provided just over \$54,000 for 23 education projects. This year, the grant program also funded three education proposals.

"The Small Grant program has developed a legacy of providing researchers from Consortium institutions with funds to initiate projects in the Forest," explains Forest Director Dr. William Schuster. "Some projects don't require additional funding. But for ones that do, the Small Grant program enables investigators to compile preliminary data needed for securing longer-term support. In addition to directly benefiting researchers and their students, the studies have substantially added to our understanding of forest structure and function."

Each winter, the Consortium distributes guidelines for the Small Grant Program to member institutions. The grants are designed to

promote scientific research and innovative education projects in the Forest, and must involve research or curricula related to its biota or physical environment. Funds may support students and postdocs, transportation, and equipment (although purchased equipment generally must remain at or be returned to the Forest). Proposals must reflect a well-conceived design with clearly stated goals and a reasonable promise of successful completion; they are also evaluated on scholarly promise and productivity, their contribution to the field, and the Forest's importance in fulfilling the research goals. The Consortium's Science and Education Committee makes the award decisions in consultation with Dr. Schuster.



Measuring tree stem respiration in a project by Dr. Kevin Griffin funded by a 2001 Small Grant.

Bees and Turtles

"Bees are the single most important animal pollinators in virtually all terrestrial regions except Antarctica," notes Dr. Jerome G. Rozen, Jr., a curator at the American Museum of Natural History. "The mutualistic relationship between bees and plants comprises a key dimension in healthy ecosystem function, biological diversity, and agricultural productivity. Bees provide a vital and far-reaching community service, affecting both directly and indirectly the integrity of ecological communities as a whole, including the health of humans." Dr.

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Education

City Public Schools Gain Forest Access

This spring, fourth and fifth graders from PS/IS 176 in northern Manhattan's Inwood neighborhood will become the first New York City public school students to benefit from Black Rock's new School in the Forest project. This program, started with a generous grant from the New York Community Trust, is designed to give public schools in the City the same opportunities to participate in the Forest's science education programs that independent schools and public schools in Orange County have enjoyed for more than twelve years. Joyce M. Baron, an educational consultant with many years of experience in both the public and private school worlds, including serving as principal of the Ethical Culture School and of the Fieldston Middle School and founding and directing an independent school in Rockland County, is developing and directing the program.

The core of the School in the Forest program is class trips to the Forest: day trips until the Lodge is built and overnight visits thereafter. Students will be able to participate in all the educational programs that have been developed over the years (see "Teacher Resources," Winter 2003). But equally important is the interaction between participating teachers and Forest staff. Prior to a class's initial trip to Black Rock, Forest staff visit the classroom and the teachers attend a forest orientation. "This allows us to learn what the students are studying and who they are as learners, so we can help the teachers build the content of their visit," explains Mrs. Baron, "and it gives the teachers a feeling of confidence when they bring their

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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 3785-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 Forest Director

First-hand experiences in nature provide a rich context for learning about living organisms and our environment. Enabling such experiences for students of all ages has always been a major focus of the Black Rock Forest Consortium. Using Black Rock as a vast natural classroom, teachers, scientists, and Forest staff have interacted to develop, refine, and spread educational activities that involve students as participants within a carefully designed and often rigorous learning framework. Research has shown that retention of concepts and facts is enhanced when students are actively involved in their learning. Using a compass and reading a map while viewing a landscape from the top of a mountain, studying amphibians in the habitats where they live, exploring the transformation of water from rain or groundwater to surface water or eventually drinking water: these are experiences from which students learn lasting life skills and gain a foundation for understanding our environment and our interconnections with it.

Too many students, particularly from urban areas, are not provided with these experiences. And without them, as they become the new decision-makers in our society, it will be difficult for them to have much understanding of or concern for nature. Many programs have been developed to address this situation; the programs of the Black Rock Forest Consortium and its member institutions benefit thousands of youth from New York City, and closer cities such as Newburgh, each year. But such experiences are still not widely available to the majority of urban students. Their learning about the wonders of nature, if it exists at all, still relies largely on books and blackboards, a poor substitute for experiencing the cacophony of a pond full of mating frogs or a guided discovery of the heavens on a clear night.

Our School in the Forest project ([see page 1](#)) has been developed with the belief that all students should have such experiences as integral components of their learning about the world. Thanks to a leadership grant from the New York Community Trust, we have started a new pro-

gram working directly with New York City public school students and their teachers and administrators. We are now enjoying working with youngsters from PS 176 in northern Manhattan. The grant has allowed us to add an accomplished, multitalented educator, Joyce Baron, to our staff. Joyce has guided the development of this project, working with teachers and the resources of the Consortium to pull together the best of our programs. PS 176 will have access to all the benefits of Consortium membership. We plan to include other City schools in the near future.

It is not a practical goal to work with all or even a substantial portion of the students in the New York metropolitan area. But in and around the City (and most cities for that matter) are a host of natural areas, forests, marshes, rivers, and estuaries that are the focus of research activities. If those that are managed by organizations with comparable educational missions could jointly develop a model for a larger number of preserves and scientific field stations, we would be doing a great favor to our urban youth and our prospects for living sustainably within the natural systems on which we depend.

Please consider helping us if you can, or in directing support our way, because the project is not yet fully funded. We need additional support to provide these students with hands-on field experience, opportunities to meet researchers and collect and analyze their own real data. We want to work with more students and with other organizations to provide similar opportunities elsewhere. The School in the Forest has been developed to directly address state science teaching standards; we aim to do so more effectively than is typically done with only books and lectures. Teachers have repeatedly experienced how even some of their most difficult students blossom in such a rich, open environment. And what are they going to remember when they grow up: chapter fourteen or the time they identified, by themselves for the first time, the mountains and rivers that surrounded them in the landscape, while an eagle soared overhead? ■

— Dr. William Schuster

“Brookies at Black Rock” Brings Trout to Students

Growing from eggs to hatchlings to tiny fish in large nursery tanks in the Science Center, more than 300 brook trout (*Salvelinus fontinalis*) are now ready for release in Black Rock Forest's streams. Through the Forest's new Brookies at Black Rock program, they have provided exciting and varied educational activities for about 200 students from Newburgh's Balmville School, the Cornwall Schools, the American Museum of Natural History's Youth Can Club, the Friends of Fishes Youth Environmental Society (YES), and the Forest's Coyote Callers program. Students have ranged from third graders to AP biology students.

In November 2002, Forest Manager John Brady, who developed and leads the program along with Matthew Munson, traveled to Long Island to obtain eggs from the state's Cold Spring Harbor Hatchery. He brought them back to two 40-gallon nursery tanks, each containing equipment to chill, aerate, circulate, and filter the water. He also installed two adult brook trout, from a stream in the Adirondacks with no record of release of hatchery-raised trout, in a 180-gallon adult tank. Staff from Trout in the Classroom (TIC), an organization that enables schools to engage in egg-to-release activities (www.troutintheclassroom.org) helped him obtain the eggs and set up the nursery system. Additionally, the project received contributions from the Forest's youth group, the Coyote Callers (see article in the Spring 2002 issue), the Black Rock Fish and Game Club, and Pat Yazgi and the Friends of Fishes.

This first year, each class will make about six visits to the Forest. In the first two, they saw the adults, the eggs, and some newly hatched fish. They learned about the trout's habitat, collected water temperature and acidity data, measured the tiny hatchlings, analyzed their mortality, studied their development under the microscope, and learned how to feed and care for the baby fish. “We're developing the program as we go along,” notes John Brady, “shaping it to the needs of the teachers and the students' level.”

By the students' third class in February and March, the two

adult trout had displayed spawning behavior, and Mr. Brady had obtained about 500 eggs from the 16-inch female and fertilized them with milt from the smaller male. This gave students an opportunity to learn about spawning and to study the external and internal anatomy of trout, methods for determining their age, and the importance of dissolved oxygen and its correlation with temperature.

In the spring, the students move to outdoor activities. The fourth class focuses on watersheds and water quality, where trout live and what they eat. The fifth class continues the theme of what the trout eat, as students use seine nets to catch and identify macroinvertebrates in Black Rock's streams. In the last class, in mid-June, students will say goodbye to their trout, each class releasing 20 to 50 of the young fish, which will be about six months old and about four to six inches in length. Some will be saved for release on Consortium Day (see “[Forest News in Brief](#),” p. 7) and some for summer programs.

“The program integrates so many subject areas,” notes Doreen Gleason, a third-grade teacher at Cornwall Elementary School. “The students use scientific instruments, estimate and make predictions, write about their experiences, and form an emotional connection with the fish. The trout have turned into magical creatures that they can't get enough of.” Her colleague Deborah Gilson, who teaches fourth grade at the same school, agrees. “The program brings learning and theory alive,” she says. “The students are proud of them-

Coyote Caller participants with trout.



Young trout in test tube for measuring.

selves for having a participatory effect on the trout's well-being, and they also learn just what scientists do.”

Brook trout once swam in Black Rock's streams, but appear to have disappeared after the droughts of the 1960s which, presumably, raised the water temperature so high the fish couldn't survive. Adult brook trout function best at water temperatures no higher than 58 to 62°F. When the water gets warmer, they stay in so-called trout pools, burrowing into the gravelly bottom and the mud, and are never abundant in water over 68°F; 77°F is their lethal limit.

Temperature also plays a role in egg development. In the wild, where winter water temperatures can get as low as just above freezing, eggs take 144 days to hatch, so eggs laid in the fall hatch in the spring. In the educational situation, the temperature can be varied to manipulate egg development; the higher the temperature, the sooner they hatch, but too-rapid hatching can result in greater mortality. At 52°F, which seems to be a safe temperature, eggs hatch in 37 days.

When the newly hatched trout stop living off their egg sacs, they eat food provided by the hatchery, but will start being fed macroinvertebrates and black-nosed dace (a fish) about two weeks before release so they will become familiar with what they will find to eat in the Forest's streams.

“Raising brook trout is much like farming,” notes John Brady, “with daily feeding and monitoring water quality, temperature, and filtration. But it provides a wonderful opportunity for the students, who can experience the fish behavior and biology as they watch them grow. The programs and curricula we can develop seem almost limitless.” ■

Standing on Top of the World: Forest Inspires Student Poets

Donna Qualey's sixth-grade students from Newburgh's Balmville School write poetry on their first trip to Black Rock Forest after they climb to the top of Black Rock Mountain and look out in amazement at how far they have walked. They write poetry after they stand on a boulder at Eagle's Cliff and feel like they're standing on top of the world. They write poetry when they participate in the trout-raising program (see p. 3). In fact, they write poetry whenever they visit the Forest. And, they not only write it, they get it published: in the *New Windsor Sentinel*, in the *Middle-town Record*, and in the *Hudson Valley Literary Magazine*.

Mrs. Qualey brings the sixth-graders to the Forest about eight to ten times a year, mixing science, math, and poetry in each trip. Each year, the first trip is one of total exploration for the students, many of whom have never been in the woods before and are, she says, "scared to death." They are also afraid of poetry, she notes. As the students gain con-

fidence in the Forest, they also gain confidence in their writing. "Now, they just love it."

Mrs. Qualey has selected books that match each site the students visit, choosing from a variety of genres (she plans to prepare a book list that will be available in the Forest office). They may read poetry or prose, or look at books with photos and art. On that first visit to Black Rock Mountain, for example, they read Maya Angelou's "On the Pulse of Morning," the poem she wrote for President Clinton's inauguration, which begins "A Rock, A River, A Tree." At Eagle Cliff, where they can so often see turkey vultures, they read and look at paintings in Melville and Locker's *Catskill Eagle*. Other books they read include Jean Craighead George's *My Side of the Mountain*, and books designed for younger readers that contain creative and inspiring illustrations, like John Gile's *First Forest* and Jane Yolen's *Encounter*. This spring, in class, they're reading poetry by Langston Hughes.

After they read, they write. They also keep detailed journals of each trip, including lots of pictures. "The students can see and imagine," Mrs. Qualey explains. "The Forest never lets us down." She notes that the children say the Forest enables them to write because they can write from their own experience; they feel they own the Forest. "It builds their self esteem," she says, and adds that Black Rock is an "equalizer" among students from different economic backgrounds, building great cooperation and changing their demeanor and relationships.

Publication is a goal of the poetry-writing; Mrs. Qualey believes that sharing what they have written within their school and beyond is important to the students. She sends their poetry to local newspapers and other publications. This year, every one of her twenty-four students has had at least one poem published, a class record. "The students think of themselves as writers," she says, "and they cheer each other on." ■

I Shook the Hand of Black Rock Forest and Felt . .

a home for creatures
strength
a family for creatures
a habitat
Limbs of trees extended out.
Lots of sun for trees to grow,
and strength to stay strong for the winter,
until their dreams come true
Life extended from minutes to hours.
Species that haven't been discovered.
Black Rock Forest is full of dreams.

Michael Babcock

Queen of the Cliff

Queen of the trees that seem so small.
Queen of the hills that now seem like pebbles.
Queen of the sky that now feels reachable.
Queen of the ground that now feels like the sky.
Queen of the Hudson that now seems so short.
Queen of the city that looks like tiny, tiny sticks.
Queen of the turkey hawks that tried to steal my lunch.
Queen of the view that could be seen.
I, Queen of Eagle's Cliff.

Gabrielle Diulio

Snow Isn't Snow But

A diamond falling from the sky.
A diamond for us
A shining wonder
Marvelous, magical magnificent view
White, winter, wonder.
Fluffy, flaky, feelings.
Delightful, soothing, flakes of ice
And silver flakes
Diamonds falling to signal the poor, it's their time to reign.

Jevaughn Davis

Prayer of the Brook Trout

I would love to have a family and see them do the same things as me.
I would pray that my kids grow up and have a family in the big blue river.

Katie Ibbetson

Brook Trout

In my cold and sometimes lukewarm water
I catch my food,
Wishing that one day I could find a family.
I pray for brothers and sisters
That could play with me and help me catch my food

Ruby Barillas

Small Grants (continued from page 1)

Rozen and Valerie Giles, a Museum scientific assistant, will conduct an inventory of the bee species in the Forest and their host plants.

They will collect bees with insect nets, pan traps, and trap nests in order to gather a variety of natural history data: a list of bee species by sex, seasonality (the period of adult flight), bee-floral associations, nesting requirements, and host associations of parasitic species. At the end of the project, they will produce a systematic, annotated list of the species found, to be made available to researchers. A synoptic collection of bees will be housed at the Forest, and a collection will also be stored in the Museum's dried insect collections and its Ambrose Monell Cryo Collection. "Because Black Rock Forest contains a variety of distinct habitat types typical of the region and is managed as a long-term preserve," Dr. Rozen explains, "a baseline inventory of its relatively intact bee species should provide a valuable basis for future comparisons across a range of spatial and temporal scales."

Researchers and educators from the American Museum of Natural History have been studying the turtles of Black Rock Forest for several years (see "Summer Programs," Fall 2002). Dave Karrmann, a senior instructor in the Museum's Education Department, has several goals for his Small Grant project: to obtain an accurate census of the metapopulation (a population broken into subpopulations by some sort of reproductive barrier) of eastern painted turtles (*Chrysemys picta picta*) in Black Rock's seven ponds, including sex, age, size, and range distribution, as well as annual cycles; to examine the movement of turtles among the ponds; to assess the apparent hybridization of eastern and midland (*C. p. marginata*) painted turtles; and to provide students with the opportunity to participate in the research.

The student teams will use up to twenty traps to catch turtles in all seven ponds several times a month from April through October. They will record age, sex, size, and location data and mark the turtles with PIT (passive integrated transponder) tags, microchips implanted subcutaneously in a turtle's right rear leg, providing a unique identifying signal that can be detected with a specialized reader.

William Schiller, another Museum educator, will assist with fieldwork and supervising interns and students; Dr. Mande Holford, who coordinates the education department's genetics program, will conduct DNA sequencing of tissue samples with her classes. The program builds on the work of Krista McKinsey, formerly a grad student of Dr. Christopher Raxworthy, a Museum herpetologist who reviews the research protocols.

Ecophysiology

Dr. Kevin Griffin from Lamont-Doherty, Dr. David Tissue from Texas Tech University, and Dr. Matthew Turnbull from the University of Canterbury in New Zealand are part of an international team that has been using Black Rock Forest to study the carbon balance in forest ecosystems and the environmental variables that limit carbon uptake (see "Forest Research Symposium A Great Success," Fall 2001, and "Climate Change Study Brings New Zealand Scientists to Forest," Fall 1999). They will take a detailed look at the photosynthetic biochemistry and physiology of red oak (*Quercus rubra*), the dominant tree species in the Forest, to test hypotheses about age-related decline in above-ground productivity. Understanding the aging process, they note, "is fundamental to assessing the role of forests as carbon sinks, constructing mechanistic models of forest growth, predicting forest response to a changing climate, and understanding forest form and function."

Taking advantage of Black Rock's historical records of forest management, the team will work at ten sites representing five distinct age classes (from 35 to more than 150 years), sampling five trees at each site. By quantifying the physiological capacity for carbon fixation, basic foliar respiration rates, leaf chemical and physical properties, site leaf area index, and standing biomass, they propose to test whether age-related productivity decline is caused by a reduction in the ratio of photosynthesis to respiration, an increase in nutrient demand beyond the capacity of the site, hydraulic constraints, and/or genetic changes in the primary carboxylating enzyme of photosynthesis. "Our goal is to garner enough new information to be able to submit a full proposal to the National Science Foundation or the Department of Energy," they ex-

plain, "so we can continue to work on this important ecological paradigm at Black Rock Forest."

In another tree physiology study, Dr. Edward Cook, the head of the Tree-Ring Laboratory at Lamont-Doherty, and Dr. William Wright, a post-doc there, plan to use eastern white pines (*Pinus strobus*) to examine whether the $\delta^{18}\text{O}$ stable isotope of water incorporated into needle cellulose can be used as a proxy for needle cell maturation timing and local environmental information. Oxygen, like many other elements, exists predominantly in one atomic form, but also has a smaller number of atoms with slightly different numbers of neutrons in the nucleus; these are naturally occurring stable isotopes. They may be preferentially taken up or excluded in chemical reactions compared to the primary form, and their makeup in needles (and leaves, wood, and other materials produced by trees) varies somewhat with environmental conditions. Thus, analyzing isotopic compositions of these materials is an established method for analyzing conditions during their formation.

Throughout the 2003 growing season, the researchers will measure needle extension in pine needles and examine the oxygen isotope composition both of natural waters (rain, soil water, etc.) and of the needle cellulose from pine branch tips. Unlike previous studies that used stable isotope ratios from the entire growing season in a single sample to determine environmental conditions during cellulose formation, they will generate a time series by analyzing weekly incremental growth and isotope ratio data. They hope that this time series will correlate changes in the isotope ratios with cell growth information, and thus provide very high-resolution information about the duration of maturation phases and environmental conditions around the trees.

Education Projects

The three education proposals funded this year were a trout breeding study for The Browning School planned by Samuel Keany; the Cornwall School's fifth grade salamander research (see "Amphibian Project," Winter 2003), coordinated by Gregory Schmaltz; and an investigation of signs of spring by Newburgh's Vail's Gate High Tech Magnet School, developed by Marlayna Wiley. ■

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. ■

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.*

Long-Term Study (70 years) of Tree Population Dynamics and Carbon Storage. William Schuster (Black Rock Forest). *Contact: William Schuster.*

Multiple Trophic Impacts of Hemlock Woolly Adelgids on Eastern Hemlock Communities. James Danoff-Burg and Shahrina Chowdhury (Center for Environmental Research and Conservation at Columbia University). *Contact: James Danoff-Burg.*

Management of Eastern Hemlock Decline in the Northeastern United States. William Schuster and John Brady (Black Rock Forest). *Contact: William Schuster.*

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

Forest Management, Fragmentation, and Insect Biodiversity. James Danoff-Burg (Center for Environmental Research and Conservation at Columbia University) and Robert Dunn (University of Connecticut). *Contact: James Danoff-Burg.*

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

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

Ground Source Geothermal Power Systems: Assessing Energy Efficiency and Local Heat Flow. Dallas Abbott (Lamont-Doherty Earth Observatory of Columbia University). *Contact: Dallas Abbott.*

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

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.*

Controls on Ecosystem Water Use in a Forest with Moderate Topographic Relief: Modeling Results. Kevin Griffin and Mark Stieglitz (Lamont-Doherty Earth Observatory of Columbia University). *Contact: Kevin Griffin.*

Delta ¹⁸O in *Pinus strobus* Needle Cellulose: Assessing the Potential for Recovering Subseasonal Cell Maturation Information. Edward E. Cook and William E. Wright (Lamont-Doherty Earth Observatory of Columbia University). *Contact: Edward Cook.*

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). *Contact: Kevin Griffin.*

Survey of Bees (Hymenoptera, Apoidea) of Black Rock Forest. Jerome G. Rozen, Jr. (American Museum of Natural History). *Contact: Jerome Rozen.* ■

City Schools (continued from page 1) students to Black Rock." Forest staff will also help with between-trip follow-up and preparation.

PS/IS 176 was chosen as the first school to participate for several reasons: easy travel to the Forest; recommendation by Marselle Heywood, the District 6 science coordinator; enthusiastic support from Principal Miriam Moreno-Pedraja; teacher willingness to incorporate the topics and lessons from the program into their existing curriculum; technology resources; and willingness to support efforts to continue the program over the long term.

There are three learning communities within PS/IS 176, named the W. Haywood Burns School after the late lawyer and civil rights activist. Students from two of these will participate in this spring's activities: the Amistad program, in which children study in English on some days and Spanish on others, and the Muscota program, which uses integrated and interdisciplinary curricula and strives to involve students in hands-on experiences. One class has already studied in Inwood Park, and is excited about investigating water quality, macro-invertebrates, and other animals in a forest ecosystem. Another class has been studying indigenous people, and will explore the teepee and other sites at Black Rock, and a third has been exploring plants and biosystems, including making terrariums and working with microscopes. "One of the cornerstones of our program is hands-on, project-based learning," explains Ms. Moreno-Pedraja, "so the Black Rock project is a perfect match."

"We are excited about PS/IS 176's involvement in the School in the Forest program," notes Forest Director Dr. William Schuster, "because we have long sought a way to offer Black Rock's resources to a wider selection of New York City public school students. The New York Community Trust's initial support has been wonderful, but we need to find additional sponsors so we can work with more classes and sustain the program for a long time. Urban kids especially need to experience a real connection to the natural world. We are confident that this program will be richly rewarding for everyone involved." ■

Forest News in Brief

Consortium Day on June 8. Join colleagues from member institutions from 1 to 5 PM at the Center for Science and Education for walks and talks, fun and food, and the annual Stillman Award, which will be given to Anne and Constantine Sidamon-Eristoff. Highlights of the afternoon include a talk on "Black Rock's Hidden Past" by Rutgers University historian Dr. Neil Maher, the release of some of the brook trout raised from eggs (see "[Brookies at Black Rock](#)," p. 3), a turtle research demonstration, and the traditional amphibian hike and student and researcher presentations.

Third Forest Research Symposium on June 23. Faculty members and graduate students working at Black Rock have been invited to present their research. At the last symposium, there were 23 talks covering a wide variety of fields (see "Forest Research Symposium A Great Success," Fall 2001). This year's event will last from approximately 9 to 4:30; box lunches will be available for \$5.00. For more information, contact the Forest office.

UN Group Met at Black Rock. On January 29 and 30, the United Nations Forum on Forests Secretariat held a strategy-building retreat at Black Rock Forest. Sixteen members of the Secretariat, whose mission is to promote "the management, conservation, and sustainable development for all types of forests, and to strengthen long-term political commitment to this end," heard Forest Director Dr. William Schuster describe the Consortium and its activities and enjoyed a hike, as well as participating in two days of talks and working groups. After the retreat,

Dr. Catalina Santamaria, the Secretariat's Forest Policy Advisor, and Mr. Pekka Patosaari, its Head and Coordinator, commented, "it is with organizations like Black Rock Forest that our forests can prevail and continue to contribute to the well-being of the planet and humanity."

Web Site Updated. Thanks to the volunteer efforts of Dr. Jean E. Taylor, a member-at-large of the Consortium's Board of Directors, the Forest's web site at www.black-rockforest.org now contains up-to-date information about Consortium members, directors, Forest staff, and the Stiefel Small Grant program. Future plans include placing pdf versions of this newsletter (and past issues) on the site, as well as additional data from the Forest, such as the growth of "adopted" trees.

Teacher on Sabbatical, Intern Help Forest Education. Toni Daly, a teacher at Friends Seminary who has developed many educational projects at Black Rock, is spending a spring-semester sabbatical partly at the Forest, working on a resource guide to help teachers and students make use of the Forest, and also on classroom and field lessons for students. Rebecca Sussman, a senior who has graduated early from the Dalton School, is spending the spring in residence at the Forest, training as a field educator and working on a variety of projects including tree-ring studies and brook trout breeding.

Oak Seedlings for Sale. Later this year, seedlings from Black Rock's more than 200-year-old Continental white oak tree will be sold as a fundraiser for the Forest. For more information, please contact the Forest office. ■

Join Us! Become a Friend of Black Rock Forest!

New Member or Renewal

- | | |
|--|---------------|
| <input type="checkbox"/> White Oak | \$500 or more |
| <input type="checkbox"/> Hemlock | \$250 |
| <input type="checkbox"/> Sugar Maple | \$100 |
| <input type="checkbox"/> Individual | \$20 |
| <input type="checkbox"/> Student/Over 65 | \$15 |
| <input type="checkbox"/> Family | \$25 |

Name _____

Address _____

Phone _____

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My company will match my gift.
Company name and address _____

Please send me information concerning:
 Gifts of land/real estate Memorial gifts

I would like to volunteer to help with the following:

Please mail this coupon with your contribution to: Black Rock Forest, 129 Continental Road, Cornwall NY 12518-2119.

Please make checks payable to the Black Rock Forest Consortium.

Thank you!

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

Report from the Forest Manager

Winter left grudgingly on April 23, with a snow flurry. From November 18 to April 7, 18 snow events totaled 92 inches. Although short of the 109 inches left in the winter of 1996, this winter's severity surpassed that of 1996.

Winter severity is an index of environmental factors (snowfall, snow pack, temperature, and wind) affecting the survival of white-tailed deer and other over-wintering animals. Snow pack, the daily measurement of accumulated snow from December 1 to March 1 (120 days), was continuous this winter.

Cold temperatures and lack of a January thaw were the factors to make 2003 a winter not to be easily forgotten. Critical ingredients to the impact of winter severity are animal health and population size entering the winter. Biological information at the Black Rock

Forest deer station gave indication of a healthy herd at a manageable density. Fattening up on a good acorn crop (nearly 300 pounds per acre), all acorn-eating birds and mammals

were well prepared. As winter continued and snow depths deepened, the difficulty of digging for acorns was relieved by the abundant browse (tree buds and branches) left by the damaging ice storm of November 17.

Winter casualties were light; only one 7½-year-old doe was found killed by coyotes during the two days of greatest snow pack, 38 inches. The winter severity impact will show up in other ways, such as next fall's deer weights and antler size.

The winter affected people as well: skiers and snowshoers enjoyed excellent conditions. Visitors to the stone house practiced survival skills to enjoy their stay.

Heavy rains of late February and early March were soaked up by the two-foot snow pack of that time. Concern about a disastrous spring melt-down and damaging runoff was relieved by a moderately cold early spring. The slowly melting snow gave beautiful images of streams and roaring water at Mineral Springs Falls. ■

— John Brady

Snow Pack	2003	1996
Days of snow cover	115	99
Continuous days of snow cover	114	85
Days of 18+ inches of snow cover	56	14
Days of 12+ inches of snow cover	81	44
Days of 6+ inches of snow cover	102	78

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Consortium Day
June 8
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