

HUBBARD BROOK RESEARCH FOUNDATION

Promoting the understanding
and stewardship of forest
ecosystems through scientific
research and monitoring,
policy outreach, and education.



A REPORT FOR 2009

FROM OUR EXECUTIVE DIRECTOR

Almost half a century ago, four visionary scientists visited Hubbard Brook, a remote 7,800-acre forested valley in the White Mountains of New Hampshire which had been set aside by the U.S. Forest Service for research on forest-management practices and hydrology. They recognized that the valley presented a unique opportunity to conduct a grand experiment using the forest as a “living laboratory.” They set up weirs on individual watersheds to measure inputs and outflows of stream water. They collected and recorded data on the chemical makeup of streams and Mirror Lake. Over time, other scientists joined them, carefully recording measurements of precipitation, soils, trees, birds, bedrock, and more. A new science, ecology, began to take root at Hubbard Brook as scientists realized, decades ahead of their time, the enormous need to document and understand complete ecological systems, including changes over time. This remote forest provided the perfect place. And so the Hubbard Brook Ecosystem Study was born.

Forty-seven years later, a broad and long-term picture is emerging of how human-induced and natural stresses have adversely impacted the forest. That early vision of four scientists—Herb Bormann, Gene Likens, and Noye Johnson from Dartmouth College, and Bob Pierce from the Forest Service—has grown over time into an internationally renowned research study involving dozens of researchers from over 40 colleges, universities, government agencies, and other research institutions. Major discoveries here about acid rain, climate change and carbon sequestration, migratory songbirds, harmful timber cutting practices, and much more have been reported in over 1,400 published scientific papers and eight books. Other similar studies have been launched around the world based on the Hubbard Brook model.

Our job at the Hubbard Brook Research Foundation is to support this scientific enterprise and to convey its findings in usable ways to help craft sound, science-based environmental policy. We also seek to educate the public about the importance of ecosystems. And we maintain residential and laboratory facilities at the forest for researchers.

It is heartening to report that the support of individuals, foundations, and government agencies (listed on pages 6 and 7) has remained strong despite the economic downturn in recent years. Now more than ever, we as citizens know that we must listen to and learn from engaged scientists to build a more sustainable future. HBRF thanks our supporters and we welcome newcomers to join us in our mission to communicate the lessons of ecosystem science to a wide audience.

Sincerely,

David Sleeper, *Executive Director*



The mission of the Hubbard Brook Research Foundation (HBRF) is to promote the understanding

and stewardship of ecosystems through scientific research, long-term monitoring, and education. Founded in 1993, HBRF works to sustain and enhance the Hubbard Brook Ecosystem Study in New Hampshire, in partnership with the U.S. Forest Service/Northern Research Station, the National Science Foundation's Long-Term Ecological Research Network, and many colleges, universities, and other research institutions.



Special thanks to Jordan Jessop, a student at UNH who took the cover photo and many others throughout this report during the summer of 2009 when he participated in the Research Experience for Undergraduates (REU) Program at Hubbard Brook.

SCIENCE AND POLICY

Almost since the first water samples were collected from headwater streams in the Hubbard Brook valley, scientists have been thrust into the unaccustomed role of communicating complex science to non-scientists. To meet this challenge, HBRF launched its flagship **Science Links** program, which convenes teams of scientists and policy advisers around critical public policy questions affecting the northeastern forested landscape. Science Links teams analyze and synthesize scientific data, evaluate the relative effectiveness of various policies, and work with HBRF staff to translate and disseminate the findings to decision makers, the media, and the public. In its hallmark formula, HBRF publishes the science in both peer-reviewed journals and companion policy reports. Science Links has



a proven track record on issues such as acid rain, nitrogen pollution, and mercury pollution, and will release its newest project on forest carbon in 2010. Funding for Science Links comes from the Jessie B. Cox Charitable Trust, John Merck Fund, Merck Family Fund, Northeastern States Research Cooperative, Orchard Foundation, Sudbury Foundation, and the Robert and Patricia Switzer Foundation.

The **Hubbard Brook Roundtable** convenes a broad range of stakeholders in a facilitated setting, utilizing an “ecosystems approach” to identify and discuss threats to the Northern Forest region. In 2009, a Hubbard Brook Roundtable focused on the role of wood biomass as a viable replacement for fossil fuels at a community scale, making recommendations in a white paper entitled *Our Carbon, Our Communities*, released in October. Future roundtables will explore winter climate change, environmental threats to forest birds, and other timely topics.

HBRF recently received funding from the USDA Natural Resources Conservation Service to establish a science-based marketplace for vital **watershed ecosystem services** in the Northern Forest. Such services including water purification, flood control and abatement, accessibility of recreational resources, and habitat protection. HBRF will conduct a pilot project in the Upper Connecticut River watershed, while project partners will do a similar effort

in Maine’s Crooked River watershed. The creation of marketplaces for ecosystem services is seen by many as the next powerful tool in the conservation toolbox, offering landowners a new suite of options for generating additional revenue while at the same time providing a critical service to the community. HBRF will conduct this three-year project in partnership the American Forest Foundation, White River Partnership, Manomet Center for Conservation Sciences, and Western Foothills Land Trust.



HUBBARD BROOK CONSORTIUM

The Hubbard Brook Consortium, founded in 2008, is a group of research and educational institutions that supports the work of HBRF and the Hubbard Brook Ecosystem Study. A special emphasis of Consortium programs is to support efforts to attract underrepresented populations of students to the field of ecology. The 2009 annual meeting of the Hubbard Brook Consortium, held at Dartmouth College, featured a public lecture by Dr. William Schlesinger, President of the Cary Institute of Ecosystem Studies, on the increasing use of nitrogen fertilizer and its effects worldwide. Institutional members of the Hubbard Brook Consortium include the Cary Institute of Ecosystem Studies, Dartmouth College, Plymouth State University, Syracuse University, the Urban Ecology Institute, U.S. Forest Service/Northern Research Station, and Wellesley College.

The creation of marketplaces for ecosystem services is seen by many as a powerful tool in the conservation toolbox.

EDUCATION

Educating the public is a large part of HBRF's mission. Our educators work to coordinate and promote opportunities that open the world of scientific study at Hubbard Brook to students of all ages, but with a focus on middle school students through undergraduates. HBRF's **Environmental Literacy Program (ELP)**, done in partnership with the U.S. Forest Service, conducts teacher professional-development workshops, develops curricula based on Hubbard Brook research, and sponsors public outreach events and tours of the forest.

A highlight of 2009 was the **Research Experience for Undergraduates (REU)** program, which supported 12 college students from around the country. In an intensive 10-week summer program, students conducted their own research projects, benefitting from close working relationships with researchers. They also collaborated with nonprofit and agency partners to create projects to translate and communicate their research to non-scientific audiences—a unique component of the REU program at Hubbard Brook. The REU program is administered by HBRF and Plymouth State University, with funding provided by the National Science Foundation and the Hubbard Brook Consortium.

FACILITIES

HBRF manages two sets of facilities adjacent to the Hubbard Brook Experimental Forest to serve the community of scientists, especially during the busy summer research season. Pleasant View Farm includes dormitory-style accommodations for 15 people, a laboratory, storage facilities, and a much-used volleyball court. The Mirror Lake Campus comprises eight cottages (with accommodations for up to 60 people), a multi-use classroom, and a popular swimming beach. When not occupied by researchers, HBRF's facilities are available for nonprofit groups for long-term rentals, field schools, and retreats. Please inquire about availability and rates.



Hubbard Brook Research Foundation

Statements of Financial Position

December 31, 2009 and 2008



	2009	2008
Assets		
Current assets:		
Cash and cash equivalents	\$ 89,228	\$ 203,095
Pledges receivable	12,235	7,900
Grants receivable	10,389	42,354
Other receivables	1,232	4,785
Deferred expenses	1,116	-
Prepaid expenses	2,908	2,908
Total current assets	117,108	261,042
Property and equipment:		
Buildings and improvements	1,905,857	1,854,914
Equipment	68,867	67,952
Land	470,200	470,200
	2,444,924	2,393,066
Less: accumulated depreciation	393,124	334,922
Total property and equipment	2,051,800	2,058,144
Total Assets	\$ 2,168,908	\$ 2,319,186
Liabilities and Net Assets		
Current Liabilities:		
Accounts payable and accrued liabilities	\$ 9,461	\$ 20,345
Deferred income	8,763	26,092
Accrued interest	819	773
Total current liabilities	19,043	47,210
Note Payable	707,934	667,976
Net Assets:		
Unrestricted	1,300,182	1,323,668
Temporarily restricted	141,749	280,332
Total net assets	1,441,931	1,604,000
Total liabilities and net assets	\$ 2,168,908	\$ 2,319,186
Revenue & support		
Contributions and grants	\$ 338,476	\$ 498,979
Rental Income	69,560	81,628
HBRF Consortium dues	77,829	49,008
Other Income	6,831	4,632
Total revenues and support	492,696	634,247
Expenses		
Program costs:		
Facilities	213,886	229,660
Education	259,888	289,356
Total program expenses	473,774	519,016
Supporting services expense:		
Management and general	134,800	132,087
Fundraising	46,191	87,038
Total supporting services	180,991	219,125
Total expenses	654,765	738,141
Change in net assets	(162,069)	(103,894)
Net assets, beginning of year	1,604,000	1,707,894
Net assets, end of year	\$ 1,441,931	\$ 1,604,000

Statements of Activities and Changes in Net Assets

Note: These schedules should not be confused with HBRF's audited financial statements. That report, including footnotes and the auditor's opinion, is available upon request or may be found on the HBRF website.

Support ecosystem science on-line at
www.hubbardbrookfoundation.org/donate

Our Donors

A heartfelt *thank you* to all of our donors who made donations in 2009 to support the mission of the Hubbard Brook Research Foundation!

Stewardship Circle

Honoring those who donate \$1,000 or more, or who double their highest previous annual fund gift.

John Battles and Janis Ching
Charley and Kim Driscoll
Peter and Helen Fahey
Timothy and Lois Fahey
Charles and Charlotte Faulkner
Timothy A. Ingraham
Thomas and Lia Kehler
Pamela Kohlberg and Curt Greer
Gene and Phyllis Likens**
Peter Martin and Lynn Freeman
Wilhelm M. Merck
Michael B. Moskow
Ralph and Christine Perron*
Carol Pierce*
David M. Roby
David and Cronin Sleeper
Emmy-Lou Sleeper
Mike and Jean Smith
Peter Stein and Lisa Cashdan
Cyrus and Barbara Sweet
Stan and Jenny Williams
Thomas C. Winter**
David and Susan Zimmerman

Donors

John Aber
Edward A. Ames
Susan Arnold
David Austin
William C. Badger
Scott and Amey Bailey
Patricia A. Barker
Emily M. Bateson
Charlotte F. Belser
Putnam and Marion Blodgett
Joel Blum
Herbert and Christine Bormann

Rebecca Bormann
Molly and Dick Brooks
Judy and Jim Brown
Thomas J. Butler
Starling W. Childs
Lynn Christenson
T. Christopher
Robert W. Christy
Robert A. Cochran
Thomas and Andrea Colgan
Sally Crissman
Dr. Christopher Cronan
Thomas and Dorcas Deans
Charles T. Driscoll, Sr.
Winslow H. Duke
James A. Dumont
Alan and Jerry English
Fred Ernst
Stephen R. Fahey
C. Anthony Federer*
Ruth R. Ferm
Stuart Fisher
David Forshay
Jerry and Phyllis Franklin
John and Isabel Freeman
Jameson S. French
Andy and Katie Friedland
Carolyn and Jerry Friedman
Milton and Carolyn Frye
Helaine Gants
Ralph Gants
Anne Giblin and Kenneth Foreman
Robert S. Gilmore
Mike and Margie Gottscho
Marion Weathers Grassi
Clark A. Griffiths
Evan S. Griswold
Peter M. Groffman
Ian and Jessica Halm
Steven Hamburg and Sarah Barker
Bruce Hammond
Harry L. Hampton, Jr.
Bill and Jill Hatch
Richard and Deborah Holmes
David and Kathy Hooke
Jim and Nancy Hornbeck*
Anne Marie and Mark Housel
Marcy and Buddy Huffaker

Harold W. Janeway
Win and Rita Johnson
Jean Jones*
Robert A. Jones
Dr. Marilyn J. Jordan
Thomas Jorling
Kevin and Punan Keller
Sherman and Laura Kent
Chip Kimball and Susan P. Bryant-Kimball
Dr. Michael Koterba and Dr. Joann Roskoski
Carola Lea
Thomas E. Lovejoy
Weyman I. Lundquist
Vincent Lunetta
Mark Mattson
Mary Ann McGarry and Steve Kahl
J. Michael McGean
Barbara and Douglas McIlroy
Bruce and Susan McLaughry
Carolyn and Peter Mertz
James W. Meryman and Laura Mammarelli
Dr. Myron J. Mitchell
Robert E. Moeller*
Sarah Muyskens and Michael Green
June and Harold Noreen*
Rachel O'Brien and Jack Lindberg
Theodore K. Osgood
Henry W. Parker
Benjamin Peierls and Karin Howe
Heather Pembroke and Tom Pichler
Kevin A. Peterson
Sydney Pierce and Tim Zimmer*
Thomas and Candace Powers
Deborah Johnson Pyles***
Peter and Debbie Rhoades
Nicholas Rodenhouse
Elisabeth W. Russell
Lindsey Rustad
Dr. and Mrs. Douglas and Lillian Ryan
Jennifer and Mark Schiffman
Jill and John Schiffman
Frederick A. Schwalm
Jamie Shanley
Karin P. Sheldon
Anne and Peter M. Silberfarb
Jane S. Sokolow
Larry and Eleanor Spencer**
Andria and Trevor Staniec



Charlotte M. Stetson
Frank B. Stevens
Sharon J. Surra
Henry and Freda Swan
David and Martha Talbot
Carl and Ching-Wen Taylor
Louise Nunan Taylor
Dr. George H. Tomlinson II
George Tuthill
John VanBrunt
Rick Van De Poll
Ann and Brad Wallace
Thomas and Kathryn Wallace
Rhoda Walter
Dr. and Mrs. Deane Wang*
Louise and Charles Weed
Mrs. Carol Wetzel
Vanessa and Alexander Wolff
Cynthia and David Wood
Ruth Yanai
Anonymous (5)

* *In honor of Dr. Robert S. Pierce, HBES Co-Founder*

** *Campaign for Mirror Lake*

*** *In memory of Noye M. Johnson*

Foundations, Businesses, Institutions and Government Agencies

Cashdan-Stein Great Grandmother Fund of the Vermont Community Foundation
Common Man Family of Restaurants
The French Foundation
GE Foundation Matching Gifts Program
Howard A. Van Vleck Foundation
Hubbard Brook Consortium
Huether-McClelland Foundation
James N. and Jane B. Levitt Charitable Fund
Ledyard National Bank
Lyme Northern Forest Fund LP
National Science Foundation, Schoolyard LTER Program
National Science Foundation, REU Program
New Hampshire Charitable Foundation—
Upper Valley Region
Donor Advised Funds:
Children's Fund of the Upper Valley
Freeman-Martin Family Fund
The Tarleton Fund
Northeastern States Research Cooperative
Noyes Insurance Agency
Orchard Foundation
Robert and Patricia Switzer Foundation
Schiffman, Paul & Dattilio, P.C.
Thomas Marshall Foundation
U.S. Forest Service, Northern Research Station
USDA Conservation Innovation Grants Program
Vermont Law School
Wapack Foundation



Home Institutions

The following colleges, universities, government agencies, and other research institutions have one or more scientists participating in the Hubbard Brook Ecosystem Study in 2009:

Allegheny College
Boston University
Brown University
Cary Institute of Ecosystem Studies
Cornell University
Dartmouth College
Duke University
Environmental Defense Fund
Hartwick College
Harvard University
Lund University
Miami University
NASA Ames Research Center
NOAA Fisheries
Northern Kentucky University
Oregon State University
Plymouth State University
Rochester Institute of Technology
Smithsonian Migratory Bird Center
SUNY College of Environmental Science and Forestry

Syracuse University
Texas A&M University
The Nature Conservancy/Michigan
Universität für Bodenkultur
University of Bayreuth
University of California-Berkeley
University of Illinois
University of Louisville
University of Maine
University of Michigan
University of Montana
University of New Hampshire
University of Vermont
University of Wisconsin/Oshkosh
University of Wyoming
U.S. Army Cold Regions Research and Engineering Laboratory
U.S. Environmental Protection Agency
U.S. Forest Service/Northern Research Station
U.S. Geological Survey
Virginia Tech
Washington State University
Wellesley College
Wright State University
Yale University



2009 Hubbard Brook Cooperators Meeting

Hubbard Brook Research Foundation

Administrative Offices

16 Buck Road

Hanover, NH 03755

Tel: 603-653-0390

Fax: 603-653-0391

www.hubbardbrookfoundation.org



Pleasant View Farm and Mirror Lake Campus

25 Dobson Hill Road

Thornton, NH 03285

Tel: 603-726-8911

Fax: 603-726-4451

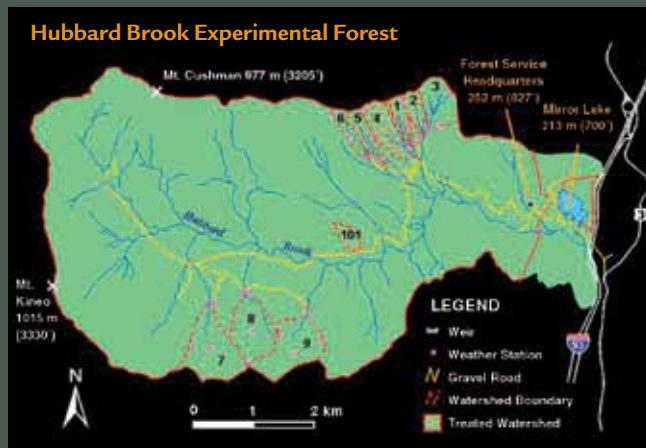
Hubbard Brook Experimental Forest

Robert S. Pierce Laboratory

Owned and operated by the
U.S. Forest Service

Ian Halm, Site Manager

Tel: 603-726-8902



Trustees

Stuart V. Smith, Jr., *Chair*

John Aber, *Vice Chair*
University of New Hampshire

Peter R. Stein, *Secretary*
Lyme Timber Company

Stanton Williams, *Treasurer*

Christopher C. Barton
Wright State University

Charles T. Driscoll
Syracuse University

Timothy J. Fahey
Cornell University

Steven Hamburg
Environmental Defense Fund

Richard T. Holmes
Dartmouth College

Thomas C. Jorling

Mark Latham
Vermont Law School

Gene E. Likens
Cary Institute of Ecosystem
Studies

Peter Martin

Jane E. S. Sokolow

Lindsey Rustad, *Ex Officio*
U.S. Forest Service

F. Herbert Bormann
Founding Trustee Emeritus
Yale University

Advisory Council

Edward A. Ames

Susan Arnold

Posy Bass

Alison Chase

Dave Chase

Starling Childs

Larry Forcier

Anne Forcier

Isabel Freeman

Tom Gross

Dick Henry

Joe Hill

Harold Janeway

Thomas Kehler

Lia Kehler

Laura Kent

Sherman Kent

Marcy Lyman

Carol Pierce

Connie Royster

Jean Smith

Larry Spencer

Institutional Members of the Hubbard Brook Consortium

Cary Institute of Ecosystem Studies

Dartmouth College

Plymouth State University

Syracuse University

Urban Ecology Institute

U.S. Forest Service / Northern Research Station

Wellesley College

Staff

David Sleeper

Executive Director

Judy F. Brown

Director of Communications

Edwin L. Johnson

*Director of Finance
and Administration*

Geoff Wilson

*Hubbard Brook Site and Program
Director*

Jacqueline Wilson

Education Associate

William Yandik

*Switzer Fellow,
Science Links Associate*

Support ecosystem science on-line at www.hubbardbrookfoundation.org/donate

Photo credits: Judy Brown, Ian Halm, Jordan Jessop, Mary Ann McGarry, Audrey Reid, Jackie Wilson.

Designed by: Ravenmark, Inc. Printed on recycled stock that meets the Sustainable Forestry Initiative (SFI) standard. Go to www.aboutsfiprogram.org to find out more.