

Northeast Mountain Science Conference

*Strengthening Research Partnerships
for Healthy Mountain Ecosystems*



April 18-19, 2016
Burlington, VT
University of Vermont
George D. Aiken Center
Final Program

Northeast Mountain Science Conference

Strengthening Research Partnerships for Healthy Mountain Ecosystems

Conference Description

The Northeast Mountain Science Conference will gather 45 scientists and natural resource managers from New England and New York to plan integrated science and stewardship in northeastern mountain forests and alpine areas. The meeting will provide a forum to share and develop ideas for collaborative field research and science-based stewardship programs at sites throughout the region, including the proposed [Mount Mansfield Science and Stewardship Center](#). On the first day, participants will survey the frontiers of high-elevation and watershed-scale research in the physical, biological, and social sciences. Discussions will address opportunities to strengthen links between science and policy. Small, multi-disciplinary and multi-organizational teams will form on the second day to develop regional research proposals to enhance the understanding and vitality of mountain ecosystems. Outcomes will be incorporated into a research, education, and stewardship program on Mount Mansfield that will serve institutions throughout the region.



The Northeast Mountain Science Conference is funded by a strategic planning grant from the National Science Foundation Division of Biological Infrastructure to the University of Vermont. The UVM Rubenstein School of Environment and Natural Resources, the Office of the Provost, the Office of the Vice President for Research, the Vermont Monitoring Cooperative, the Vermont Center for Ecostudies, and the Vermont Department of Forests, Parks and Recreation provided additional support.

Conference Objectives

1. To encourage regional collaboration among professionals and field stations engaged in the study and management of northeastern mountain ecosystems
2. To promote interdisciplinary and cross-sector dialogue in support of healthy mountains, watersheds, and communities
3. To produce outlines of up to six proposals that address environmental concerns through actionable science

Organizing Committee

Nancy Mathews, Dean, UVM Rubenstein School of Environment and Natural Resources

Rick Paradis, Director, UVM Natural Areas Center

Jennifer Pontius, Principal Investigator, Vermont Monitoring Cooperative

Chris Rimmer, Executive Director, Vermont Center for Ecostudies

Allan Strong, Associate Dean, UVM Rubenstein School of Environment and Natural Resources

April Berteau, Assistant to the Dean, UVM Rubenstein School of Environment and Natural Resources

Nathan Fry, Graduate Student, UVM Rubenstein School of Environment and Natural Resources

Susan Hindinger, Associate Director, Vermont Center for Ecostudies

Dan Lambert, Mansfield Center Project Coordinator, High Branch Conservation Services

John Lloyd, Director of Science, Vermont Center for Ecostudies

Carl Waite, Program Coordinator, Vermont Monitoring Cooperative

Sandy Wilmot, Forest Health Specialist, Vermont Department of Forests, Parks and Recreation

General Information

Food and Beverages

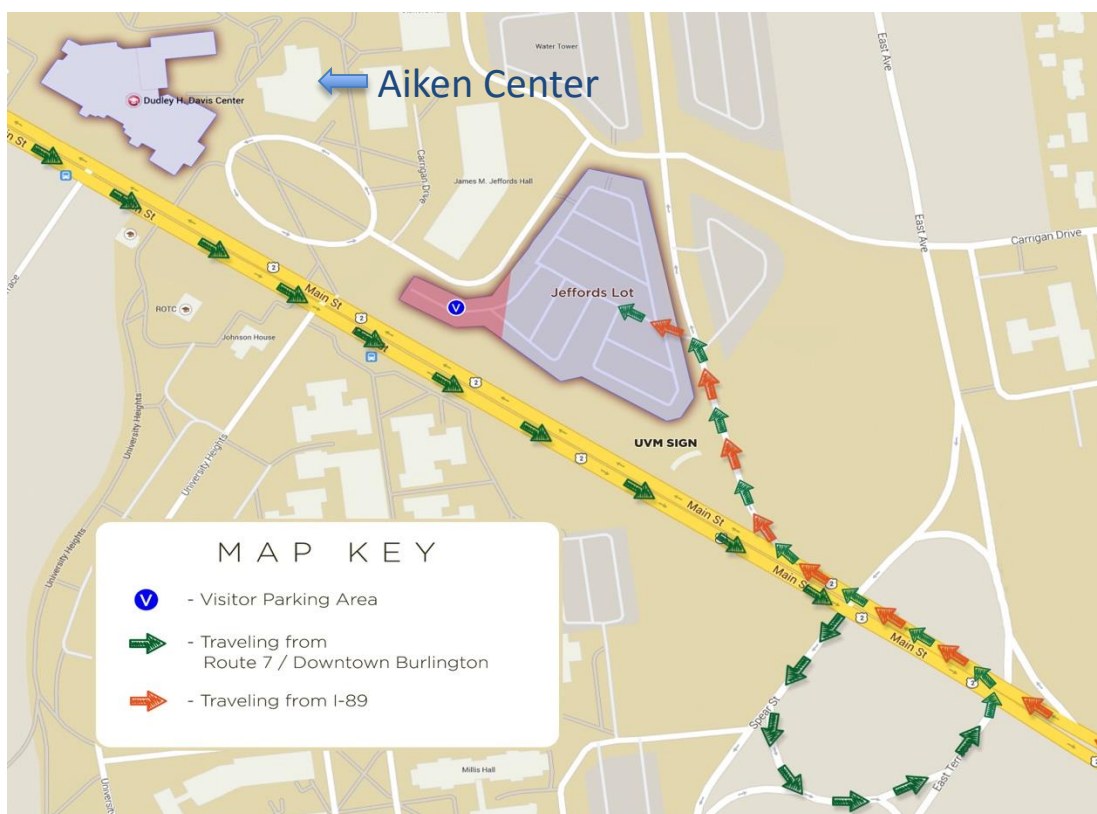
Lunches, snacks and beverages will be provided on both days. Dinner on the first day is also included.

Directions

The George D. Aiken Center is located at 81 Carrigan Drive in Burlington, VT ([map link](#)).

From I-89: Take Exit 14 W toward Burlington. Head west on Williston Road (US-2). After the second light in the jug handle, "exit" by veering right onto Beaumont Avenue. As you exit toward the water tower, you will see a wind turbine up ahead on your right and the University of Vermont sign on your left. Proceed up Beaumont Avenue about 100 yards and turn left into a parking lot (the Jeffords lot). Look for visitor parking in the far, western corner of the lot.

From Route 7 North: Follow Shelburne Road/Route 7 into Burlington. At the rotary, bear right onto South Willard Street/Route 7. Travel less than one mile to the intersection with Main Street (US-2); turn right onto Main Street. Head uphill past the University Green until you reach Spear Street on your right; turn right onto Spear Street. Take an immediate left around the jug handle and take a left at the light onto Williston Rd. (US-2). After the second light in the jug handle, "exit" by veering right onto Beaumont Avenue. As you exit toward the water tower, you will see a wind turbine up ahead on your right and the University of Vermont sign on your left. Proceed up Beaumont Avenue about 100 yards and turn left into a parking lot (the Jeffords lot). Look for visitor parking in the far, western corner of the lot.



Parking

Proceed to the pay station located next to the visitor parking area and follow the directions to enter your space number, select the amount of time you wish to park, and make payment. Parking rates are \$1.00 per hour or \$8.00 per day. After you pay for your space, continue northwest beyond the pay station to the Aiken Center (see map on page 2).

Another parking lot, the [Waterman visitor's lot](#) is a short walk from the Aiken Center. This is a paid lot, but free after 6 pm.

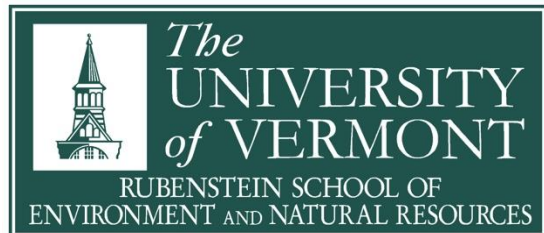
Contact Transportation and Parking Services with concerns or questions at (802) 656-8686.

Lodging

Guests who have been offered overnight accommodations may check in at [Homewood Suites](#) by Hilton beginning at 3pm on the day of arrival. The hotel is located one mile from the Aiken Center at 5 Dorset Street in South Burlington. Included in the stay are a hot breakfast and a free, on-demand shuttle service to and from campus (call 802-652-4400).



Host and Co-Sponsor



Co-Hosts



Onsite Contacts

- Nancy E. Mathews, Cell # 608-225-3583
Email: nancy.mathews@uvm.edu
- Dan Lambert, Cell # 802-299-8231
Email: dan@highbranchconservation.com
- April Berteau, Office # 802-656-1353
Cell # 802-735-7844
Email: april.berteau@uvm.edu



Schedule Overview

Monday, April 18 – Scoping Science and Stewardship Opportunities

- 8:00 Coffee and Registration
- 8:30 Welcome and Conference Objectives
- 8:45 Program Overview and Introductions

Session 1: Converging on the Frontiers of Mountain Science

- 9:00 Northeast Climate Variability
- 9:30 Elevational Shifts in Montane Forest Ecotones: Evidence, Causes, and Consequences
- 10:00 Water Quantity and Quality in the Mountain Setting
- 10:30 Break
- 10:45 Distributed Sensor Systems in a Northeastern Alpine Setting
- 11:15 Biodiversity in the Mountains of the Northeast
- 11:45 Identifying Shared Research Priorities
- 12:15 Lunch

Session 2: Human Dimensions of Mountain Science

- 1:15 Valuing Services Provided by Mountain Social-ecological Systems
- 1:45 Frameworks for Managing Recreation in the Northeastern Mountains
- 2:15 Alpine Stewardship and Restoration
- 2:45 Immersive, Place-based Experiences: Contributions to Learning, Health, Well-being, and Professional Development
- 3:15 Break
- 3:30 Science Supporting Policy
- 4:00 Identifying Shared Research Priorities and Ranking Research Questions
- 4:50 Review Evening Program and Goals for Tuesday
- 5:00 Break
- 5:30 Social at Waterman Manor
- 6:00 Dinner Greeting and Update on the Mount Mansfield Science and Stewardship Center
- 6:15 Buffet Dinner
- 7:15 Introduction to Keynote Address: Vermont Monitoring Cooperative Studies on Mount Mansfield
- 7:30 Unraveling Mountain Mysteries: Reflections from 25 Years on Mount Mansfield
- 8:00 Closing Remarks

Tuesday, April 19 – Planning Collaborative Science and Stewardship

- 8:00 Gathering and Coffee
- 8:30 Welcome and Reflections from Day 1
- 8:40 Why Art at Field Stations?
- 9:10 Review Top-ranked Project Ideas and Form Breakout Groups
- 9:30 Proposal Development (break as needed)
- 12:00 Lunch
- 1:00 Proposal Development (continued)
- 2:45 Break
- 3:00 Proposal Presentations
- 4:20 Closing Remarks
- 4:30 Adjourn

Agenda

Monday, April 18

Scoping Science and Stewardship Opportunities

Aiken Center – Room 311

8:00 **Coffee and Registration**

8:30 **Welcome and Conference Objectives**

Nancy Mathews, Dean, UVM Rubenstein School of Environment and Natural Resources

8:45 **Program Overview and Introductions**

Rick Paradis, Director, UVM Natural Areas Center

9:00 **Session 1: Converging on the Frontiers of Mountain Science**

Moderator: John Lloyd, Director of Science, Vermont Center for Ecostudies

During this session presenters from throughout the region will describe recent findings, critical information needs, and new lines of inquiry with potential to guide natural resource decisions. Discussions will address opportunities to blend fields of knowledge and practice.

Northeast Climate Variability

Eric Kelsey, Mount Washington Observatory and Plymouth State University

The rugged mountains of the northeastern United States exhibit wide climate variability across a range of elevations and local environmental conditions (*e.g.*, aspect, slope, vegetation type and density). Across short spatial scales, climate types range from microthermal to tundra. This complexity imposes challenges when projecting future climates. This presentation will explore the modern climate of the Northeast, recent climate changes, and challenges for making accurate climate projections for the 21st century.

9:20 Discussion

9:30 **Elevational shifts in Montane Forest Ecotones: Evidence, Causes, and Consequences**

Jane Foster, Northeast Climate Science Center

Montane forests and the species that live in them are vulnerable to climate change. As the climate warms, cool-adapted tree species are expected to migrate to higher elevations and shrink in range. Yet emerging research is finding that climate response in montane ecosystems is more variable than expected. This presentation will review what we know about elevational shifts in montane forests and what questions remain unanswered. Specific examples from the Green and White Mountains will illustrate the dynamics and consequences of elevational shifts on montane ecosystem function.

9:50 Discussion

10:00 **Water Quantity and Quality in the Mountain Setting: Lessons from the Mt. Mansfield Paired Watershed Study**

Beverley C. Wemple, Department of Geography and Rubenstein School of Environment and Natural Resources, University of Vermont

James B. Shanley, U.S. Geological Survey, Montpelier, Vermont

The forested mountain landscape serves as the source area for freshwater to rivers and lakes and provides important water quality protection to downstream receiving waters. Pressures associated with forest fragmentation and climate change threaten to alter water quality and quantity dynamics in our mountain watersheds, with important implications for downstream water users and ecosystems. In this presentation, we will describe what we know about connections between mountain hydrology and downstream water quantity and quality concerns, and summarize lessons learned from a long-term water monitoring program on Mt. Mansfield.

10:20 Discussion

10:30 Break

10:45 **Distributed Sensor Systems in a Northeastern Alpine Setting**

Christian Skalka, Department of Computer Science, University of Vermont

Modern distributed sensor systems support a variety of earth science research at multiple scales. Unique opportunities for sensor studies in a northeastern alpine environment could be supported with appropriate, relatively low-cost infrastructure. In this presentation, I will provide background on some modern distributed sensor technologies and how they can be applied to earth science research, in particular to snow studies. I will also discuss relevant enabling technologies that could be incorporated into infrastructure planning.

11:05 Discussion

11:15 **Biodiversity in the Mountains of the Northeast**

Steve Trombulak, Middlebury College

This talk will briefly explore three broad themes related to the present and future of biodiversity in the mountains of the Northeast, in particular the Green Mountains. First, what do we know about the importance of montane environments for regional species and community diversity? Second, what are the drivers of change likely to influence montane biodiversity in the future? And third, what are some priorities for research that will help us better understand the intersection of current and future states, and especially improve our ability to promote the biological integrity of montane environments in the face of climate change?

11:35 Discussion

11:45 **Identifying Shared Research Priorities**

What are the unifying themes and research priorities among these fields?

What other important questions call for regional attention?

Do these questions directly address the information needs of land stewards and other decision-makers?

12:15 Lunch

1:15 **Session 2: Human Dimensions of Mountain Science**

Moderator: Nathan Fry, graduate student at the UVM Rubenstein School of Environment and Natural Resources and a company commander in the Vermont National Guard's Mountain Infantry Battalion

This session will address the intersection of mountain ecosystems and society. Presenters will explore the scientific and social value of alpine ecosystems, as well as the positive and negative effects of human activity. Emphasis will be placed on identifying areas in which science may be applied to practical conservation and policy issues.

Valuing Services Provided by Mountain Social-ecological Systems

Brendan Fisher, UVM Rubenstein School of Environment and Natural Resources

Evaluating the wide range of benefits that nature provides to humans has become a common policy and decision-making approach over the past decade. Typically bundled under the concept of *ecosystem services*, such assessments have led to a clearer understanding of the multitude of benefits well-functioning ecosystems deliver to humans, while at the same time elucidating the extent of tradeoffs across management and policy decisions. In this talk we will move from an overview of ecosystem services specific to mountain social-ecological systems to a discussion of several ecosystem services assessments in mountain regions and the ways in which benefits from these systems can be valued.

1:35 Discussion

1:45 Frameworks for Managing Recreation in the Northeastern Mountains

Robert Manning and Elizabeth Perry, Park Studies Laboratory, UVM Rubenstein School of Environment and Natural Resources

Outdoor recreation is an important use of mountains in the Northeast. However, this use must be managed in ways that sustain mountain ecosystems, provide opportunities for high quality outdoor recreation, meet the diverse needs of the public, and create partnerships that can leverage scarce financial and staffing resources. In this presentation, we offer several conceptual, empirical, and decision-making frameworks that can be used to clarify and guide outdoor recreation management. These frameworks include the interdisciplinary character of outdoor recreation, carrying capacity, indicators and standards of quality, management strategies and practices, social equity, and collaborative partnerships.

2:05 Discussion

2:15 Alpine Stewardship and Restoration

Julia Goren, Adirondack High Peaks Summit Steward Program, Adirondack Mountain Club

As a whole, alpine areas are part of the defining character of Northeast. Despite the small geographical area that they compose, these areas are disproportionately important within the region, as they are found in areas of significant recreational value, such as Mt. Katadhin, the Presidential Range, Mt. Mansfield, and the Adirondacks. These areas epitomize the conflict between management for preservation of biodiversity and management for recreational use. Stewardship programs are one of the most effective ways to protect these fragile ecosystems, combining onsite education and passive management. Currently eight such programs exist, protecting alpine areas in NY, VT, NH, and ME. While each program is unique in its approach, use of signage, volunteers, and management techniques, all programs work to achieve the same goal: protecting alpine ecosystems from human trampling.

2:35 Discussion

2:45 Immersive, Place-based Experiences: Contributions to Learning, Health, Well-being, and Professional Development

Andrea Charest and Steve Charest, Petra Cliffs Climbing Center and Mountaineering School

Alpine environments provide a unique setting for people to interact with the land through climbing, skiing, and other mountain-related activities. In fact, the harsh weather and conditions of the Northeast make its terrain a valuable all-around training ground. As a community of guides and educators, we bear a responsibility for connecting people with the natural environment,

protecting our resources and mentoring its users to promote conservation and stewardship. We believe that well-facilitated outdoor experiences produce competent climbers and protectors of the land. These experiences also develop confidence, leadership, a sense of place, self-reliance and close friendships between users. We will present on the interaction between mountain-related recreation, education, and ecology.

3:05 Discussion

3:15 Break

3:30 **Science Supporting Policy**

Michael Snyder, Commissioner, Vermont Department of Forests, Parks and Recreation

We strive for policies that support clean air, clean water and healthy forest ecosystems. Success requires both a clear understanding of the science behind complex environmental issues and effective communication of the science. Forest fragmentation is a current issue before the Vermont legislature. Effectively communicating the science to legislators and citizens is the difference between creating strong policies that protect forest integrity or a perpetuation of business-as-usual land development. Collective scientific wisdom is needed to address today's issues: climate change and forest adaptation strategies; four-season recreation that is compatible with forest ecosystem health; flood resiliency starting with high-elevation forest management; effects of roads and trails on forest integrity; and the influx of non-native invasive plants and pests.

3:50 Discussion

4:00 **Identifying Shared Research Priorities**

What are the unifying themes and research priorities among these fields?

What other important questions call for regional attention?

Which ideas should be developed into cooperative project proposals?

4:30 **Ranking Research Questions**

Dan Lambert, High Branch Conservation Services

We will use a multi-voting system to identify research questions that are of high interest to the assembled scientists and land stewards. Questions will be printed on separate sheets and posted around the room. Each conference participant will be asked to place one sticker, bearing her or his name, on up to five research questions that are of greatest interest. Later in the evening, conference organizers will use weighted criteria to identify six of these questions for development into project proposals during the second day of the conference.

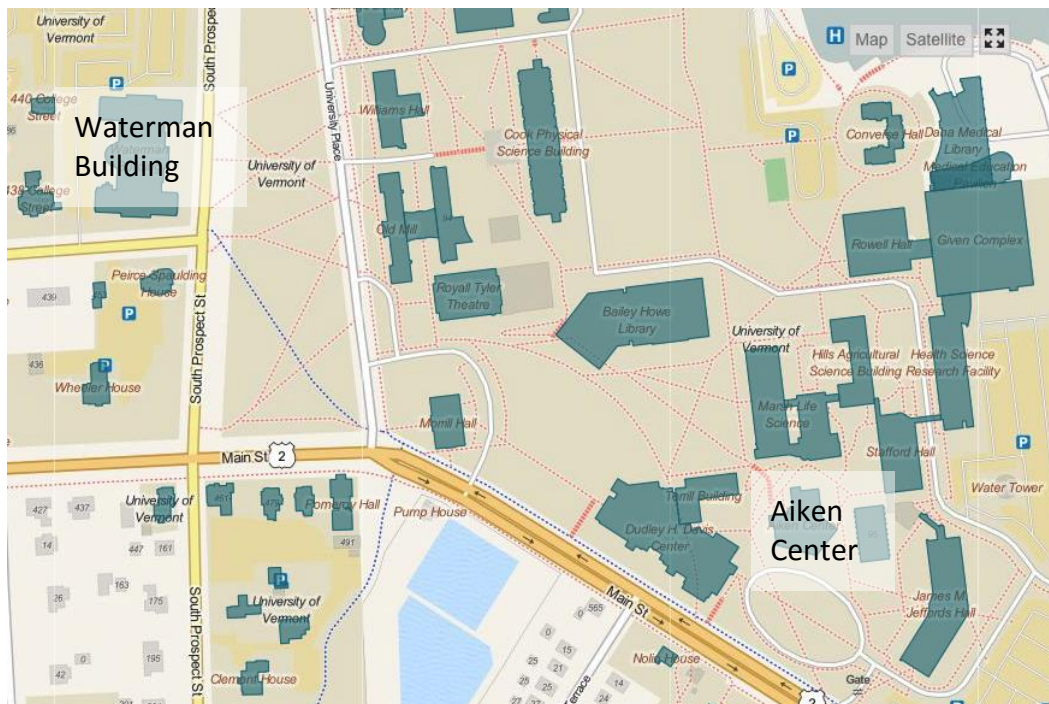
4:50 **Review Evening Program and Goals for Tuesday**

5:00 Break

A free shuttle to Homewood Suites will be available for out-of-town guests. Gather at the circle in front of the Aiken Center. A return shuttle to the Waterman Building will depart from Homewood Suites at about 5:45 pm.

5:30 **Social at Waterman Manor**

For the evening program, conference participants will be joined by others from the UVM community who are interested in mountain science, stewardship, and education. Beverages will be available at a cash bar. Waterman Manor is located in the Waterman Building at 85 South Prospect Street (see map on next page).



6:00 **Dinner Greeting**

Nancy Mathews will greet dinner guests and provide an update on the proposed Mount Mansfield Science and Stewardship Center. Her remarks will highlight the Mansfield Center's potential to strengthen scholarship, education, and environmental policy in Vermont and beyond.

6:15 **Buffet Dinner**

7:15 **Introduction to Keynote Address**

Jennifer Pontius, Principal Investigator of the Vermont Monitoring Cooperative (VMC), will set the stage for the keynote address with an overview of forest ecosystem studies coordinated by VMC on Mount Mansfield since 1991.

7:30 **Keynote: Unraveling Mountain Mysteries: Reflections from 25 Years on Mount Mansfield**

Kent McFarland, Conservation Biologist, Vermont Center for Ecostudies

Kent will share discoveries and anecdotes from a quarter-century of ecological field studies on Mount Mansfield, along with striking images from the site's subalpine and alpine communities. An accomplished photographer and co-host of VPR's *Outdoor Radio*, Kent has a knack for transporting people to remote locations and inspiring curiosity about the natural world. He is also an Elected Fellow of the American Ornithologists' Union, recognized for exceptional and sustained contributions to avian science for research conducted on Mount Mansfield and Stratton Mountain with Chris Rimmer and their many collaborators.

8:00 **Closing Remarks**

Nancy Mathews

Tuesday, April 19

Planning Collaborative Science and Stewardship

Aiken Center – Room 311

8:00 **Gathering and Coffee**

8:30 **Welcome and Reflections from Day 1**

Allan Strong, Associate Dean, Rubenstein School of Environment and Natural Resources

8:40 **Why Art at Field Stations?**

Faerthen Felix, Sagehen Creek Field Station, University of California, Berkeley

In this presentation, Faerthen will examine art as a means to advance - not just illustrate - scientific discovery. Her talk will include examples of art-science integration that may serve as useful models in the development of cooperative project proposals.

9:00 Discussion

9:10 **Review Top-ranked Project Ideas and Form Breakout Groups**

Dan Lambert will share the results of Monday's project ranking exercise and present provisional group assignments based on preferences expressed by individuals during the multi-voting. Conference participants will have the opportunity to switch groups before breakout discussions begin.

9:30 **Proposal Development** (Rooms 311, 301, 220D, and 103; breaks taken as needed)

Breakout group facilitators: Allan Strong, Jennifer Pontius, Susan Hindinger, others

Each of six breakout groups will develop a high-priority research question into an outline for a regional and/or interdisciplinary project proposal that addresses an environmental concern through actionable science. The proposal will include the following sections:

- Title
- Issue/Need
- Research question
- Hypothesis and predictions / Goals
- Methods
- Opportunities to engage students or decision makers
- Infrastructure and equipment needs
- Benefits to society
- Prospective collaborators
- Potential funding sources
- Next steps for proposal development

One facilitator will lead each breakout discussion, with assistance from a recorder who will outline the research proposal on a PowerPoint template. Volunteers are needed to fill the roles of recorder and presenter.

12:00 Lunch

1:00 **Proposal Development** (continued)

- 2:45 Break
- 3:00 **Proposal Presentations**
Moderator: Dan Lambert
Representatives from each breakout group will have ten minutes to present their project proposals to the full group for input and feedback. For ideas that generate strong interest, teams and team leaders will be identified to continue proposal development and submission.
- 4:20 **Closing Remarks**
Chris Rimmer, Vermont Center for Ecostudies
- 4:30 **Adjourn**

Presenter Biographies



Andrea Charest is Petra Cliffs' Co-Owner and Jill of All Trades. Andrea began working for Petra Cliffs in 2002 as a birthday party facilitator, and has moved through each and every position along the way to proprietorship. Andrea is committed to providing a high quality climbing center and offering its visitors, members and employees a positive environment and valuable education. She gets outside as much as possible as a rock and ice climbing and backcountry ski guide, and when she's not working... she is climbing or skiing.



Steve Charest is Petra Cliffs' Co-Owner, Program Director and Head Guide. He has been professionally guiding rock, ice, mountaineering, and ski mountaineering programs since 2001. Steve has a degree in Outdoor Education from Johnson State College and completed a NOLS Outdoor Educators Course for Mountaineering & Rock to kickstart his career as a mountain guide and educator.



Faerthen Felix is the Assistant Manager of the University of California's Berkeley's Sagehen Creek Field Station, and the Chair of the Art@FSMLs Committee of the Organization of Biological Field Stations.



Brendan Fisher is an Associate Professor at the University of Vermont. His research and fieldwork lie at the nexus of conservation, development, natural resource economics and human behavior. He is the author of over 50 peer-reviewed articles on topics such as poverty, health, ecosystem services and biological conservation, and the author with colleagues of two books, *Valuing Ecosystem Services* (Earthscan, London, 2008) and *A Field Guide to Economics for Conservationists* (Roberts and Company, 2015). Brendan teaches courses on sustainability science, behavioral economics, environmental/ ecological economics and ecosystem management. He has conducted field research in Borneo, Cambodia, Mozambique, and Tanzania.



Jane Foster is a Landscape Ecologist in a postdoctoral position with the Northeast Climate Science Center and the University of Minnesota. She received a BA from Yale University, a Masters in Forest Science from the Yale School of Forestry and Environmental Science, and a Doctorate in Forestry from the University of Wisconsin. She studies ecosystem responses to disturbance and environmental stress using fine-scale field data, such as tree rings, and broad-scale geospatial data and tools, such as satellite data and simulation models. Jane lives in Philadelphia, PA.



Julia Goren is an avid hiker, an alpine plant enthusiast, coordinator of the Adirondack High Peaks Summit Steward program, and Education Director for the Adirondack Mountain Club (ADK). Julia has been with the Summit Steward program since 2006, first as Botany Steward and later as the program's first full-time coordinator. She received her MS in Environmental Studies from Antioch University and her BA in Medieval History from Williams College. Julia considers herself supremely lucky to call the Adirondacks her home and the High Peaks her office.



Eric Kelsey is Director of Research at Mount Washington Observatory and Research Assistant Professor of Atmospheric Science at Plymouth State University. After becoming captivated by New Hampshire's constantly changing weather as a child, he earned his BS and MS degrees in atmospheric science at the University of Missouri and University at Albany, respectively. Thereafter, Eric merged his interest in weather, climate change, and environmental stewardship by studying climate signals recorded in Yukon ice cores for his PhD at the University of New Hampshire. Eric's active research interests include elevation-dependent warming, cold-air damming, and cold air pools.



Kent McFarland is a conservation biologist, photographer, writer and naturalist with over 20 years of experience across the Americas. Kent's writing and images have appeared widely in magazines, newspapers, and mobile field guides. He is co-host of *Outdoor Radio*, a monthly natural history series on Vermont Public Radio. He has coauthored many scientific journal articles and a field guide to the birds of Hispaniola. Kent received his M.S. degree in Conservation Biology from Antioch University New England.



Robert Manning is the Steven Rubenstein Professor of Environment and Natural Resources at the University of Vermont where he teaches and conducts research on this history, philosophy, and management of parks, wilderness and related areas. He directs the university's Park Studies Laboratory, which conducts a long-term program of research for the National Park Service and other agencies and organizations.



Elizabeth (Bess) Perry is a Rubenstein Doctoral Fellow and PhD candidate in the Rubenstein School. Her research and teaching interests focus on aspects of protected areas such as visitor use, management, community interactions, and justice implications. Bess' dissertation studies examine the contributions of the National Park Service's parks, programs, and partnerships to engaging diverse communities in a variety of urban settings. She also has extensive work experience with the National Park Service.



James Shanley is a Research Hydrologist with the U.S. Geological Survey. His research focuses on biogeochemical processes in forested watersheds. He is principal investigator of the Sleepers River Research Watershed in Vermont and has served as PI for the Luquillo Long-term Ecological Research Site in Puerto Rico. Since 2000, he has served with Beverley Wemple as a co-PI for the joint VMC-USGS supported Mt. Mansfield paired watershed study.

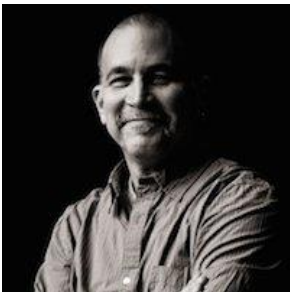


Christian Skalka is Associate Professor and Interim Chair of Computer Science at UVM. His research focuses on new computational methodologies for earth science, especially snow hydrology, including sensor systems development and computer modeling of mountain snowpacks. His lab's work on these topics has been supported by grants from VSGC/NASA and NSF.



Michael Snyder was appointed Commissioner of Vermont Forests, Parks, and Recreation by Gov. Peter Shumlin in December 2010. Prior to that he served for 14 years as Chittenden County Forester, providing land stewardship assistance to private landowners and municipalities. He also taught, for 12 years, two courses in Forestry at the University of Vermont and he continues to write the *Woods Whys* column for Northern Woodlands Magazine. Previously he worked in forest ecosystem science at the Hubbard Brook Experimental Forest and in land surveying and forest management in New Hampshire, New Mexico, and

Sweden. He lives in Stowe and owns and manages a 91-acre forest in the northern Connecticut River valley of Vermont. He received both his Bachelor's and Master of Science degrees in forestry from the University of Vermont.



Steve Trombulak is the Anderson Professor of Environmental and Biosphere Studies at Middlebury College, where he has been on the faculty in the Department of Biology and the Program in Environmental Studies since 1985. He is the author or editor of several articles and books, including *The Story of Vermont: a natural and cultural history* and *Landscape-scale Conservation Planning*. He has participated in numerous regional conservation organizations and initiatives, including the Biodiversity Working Group of the Northern Forest Lands Council, the Vermont Biodiversity Project, and Two Countries, One Forest. He has also served as president for the North American section of the Society for Conservation Biology.



Beverley Wemple is an Associate Professor at the University of Vermont. Her research examines the dynamics of runoff production and water quality in mountain watersheds. She serves on the advisory committee for the Vermont Monitoring Cooperative and is engaged in other water monitoring efforts in the U.S. and internationally. Since 2000, she has served with James Shanley as a co-PI for the joint VMC-USGS supported Mt. Mansfield paired watershed study.

2016 Northeast Mountain Science Conference Participants

Name	Email	Title	Organization	Other Affiliation(s) and Areas of Interest
Rob Apple	rapple@sprucepeak.com	Planning Director	Stowe Mountain Resort	Mountain resort planning and management
Breck Bowden	breck.bowden@uvm.edu	Professor	University of Vermont	Vermont Water Resources and Lake Studies Center, hydrological and biogeochemical processes, watershed science and planning, climate change impacts
Jeff Brown	sagehen@berkeley.edu	Director	UC Berkeley - Central Sierra Field Research Stations	Global Network of Mountain Observatories, Organization of Biological Field Stations
Paul Casson	pcasson@albany.edu	Operations Manager	Atmospheric Science Research Center - Whiteface Mountain Field Station	Field station operations, atmospheric science, natural resource management
Andrea Charest	andrea@petracliffs.com	Co-owner, Guide	Petra Cliffs Climbing Center and Mountaineering School	Saint Michael's College, backcountry resource management, leadership and empowerment
Steve Charest	steve@petracliffs.com	Co-owner, Guide	Petra Cliffs Climbing Center and Mountaineering School	Saint Michael's College, mountaineering, outdoor education, backcountry resource management
Todd Comen	Todd.Comen@jsc.edu	Professor	Johnson State College	Ecotourism, rural lifestyles, natural resource management
Anthony D'Amato	anthony.damato@uvm.edu	Associate Professor	University of Vermont	Silviculture, applied forest ecology, global change
Michael DeBonis	mdebonis@greenmountainclub.org	Executive Director	Green Mountain Club	Forest management, mountain recreation
Lesley-Ann Dupigny-Giroux	Lesley-Ann.Dupigny-Giroux@uvm.edu	Professor	University of Vermont	Climate and climate literacy, severe weather, use of remote sensing and in spatial climate and land-surface processes
Faerthen Felix	ffelix@berkeley.edu	Assistant Manager	UC Berkeley Sagehen Creek Field Station	Global Network of Mountain Observatories, Art@FSMLs Committee of the Organization of Biological Field Stations
Brendan Fisher	bfisher@uvm.edu	Associate Professor	University of Vermont	Ecological economics, ecosystem services, biodiversity conservation
Jane Foster	jrfoster@umn.edu	Postdoctoral Fellow, Forest Ecologist	University of Minnesota, Northeast Climate Science Center	Ecosystem responses to disturbance and stress, carbon dynamics, changes in species composition, competition & nutrient cycling
Nathan Fry	nathan.e.fry@uvm.edu	Graduate Student	University of Vermont	VT National Guard, sustainable land use and management, mountaineering, education

Julia Goren	summit@adk.org	Summit Steward Coordinator	Adirondack Mountain Club	Alpine stewardship, education, trail maintenance, research
Susan Hindinger	shindinger@vtecostudies.org	Associate Director	Vermont Center for Ecostudies	Land stewardship, geology, conservation science
Eric Howe	ehowe@lcbp.org	Technical Coordinator	Lake Champlain Basin Program	Fisheries biology, water quality monitoring, natural resource management
William Howland	whowland@lcbp.org	Basin Program Director	Lake Champlain Basin Program	Biophysical remote sensing and terrain modeling, ecological biogeography, physical geography and Arctic field studies
Eric Kelsey	ekelsey2@plymouth.edu	Director of Research	Mount Washington Observatory	Plymouth State University, atmospheric and climate science
Mollie Klepack	mklepack@greenmountainclub.org	Land Stewardship Coordinator	Green Mountain Club	Land stewardship, forest pests, outreach
Brian Kloeppel	bkloeppel@wcu.edu	Interim Dean and Professor	Western Carolina University	Organization of Biological Field Stations, watershed ecology, carbon and water cycling, forest growth and dynamics
Dan Lambert	dan@highbranchconservation.com	Mansfield Center Project Coordinator	High Branch Conservation Services	Wildlife ecology and conservation, natural resources management, science and conservation networks
John Lloyd	jlloyd@vtecostudies.org	Director of Science	Vermont Center for Ecostudies	Avian ecology and conservation, evolutionary biology, quantitative methods
Andrea Lloyd	lloyd@middlebury.edu	Dean of Faculty, Professor	Middlebury College	Climate change effects on forest communities, tree ring analysis, tree population dynamics near treeline
Robert Manning	Robert.Manning@uvm.edu	Professor	University of Vermont	Parks and protected areas, outdoor recreation, carrying capacity
Nancy Mathews	nancy.mathews@uvm.edu	Dean	UVM Rubenstein School of Environment and Natural Resources	Wildlife ecology and management, public service, service-learning, science education
Kent McFarland	kmcfarland@vtecostudies.org	Conservation Biologist	Vermont Center for Ecostudies	Avian ecology, alpine butterflies, informatics
Stacy McNulty	smcnulty@esf.edu	Assistant Director	SUNY ESF - Adirondack Ecological Center	Organization of Biological Field Stations, forest ecology, landscape ecology, impacts of human land use on wildlife habitat
Brad Moskowitz	brad.moskowitz@jsc.edu	Professor of Outdoor Education	Johnson State College	Outdoor and experiential education, recreation management, leadership training
Jason Nerenberg	jason.nerenberg@vermont.gov	Stewardship Forester	Vermont Department of Forests, Parks and Recreation	Forestry, natural resource management

Rick Paradis	richard.paradis@uvm.edu	Director	University of Vermont Natural Areas Center	Conservation biology, natural areas management, ecological restoration
Elizabeth (Bess) Perry	elizabeth.perry@uvm.edu	PhD Candidate	University of Vermont	Parks and protected areas, outdoor recreation, carrying capacity
Jennifer Pontius	jennifer.pontius@uvm.edu	Director	Vermont Monitoring Cooperative	Forest health and ecology, remote sensing, GIS modeling
Shelly Rayback	shelly.rayback@uvm.edu	Associate Professor	University of Vermont	Biogeography, paleoclimatology, dendro-chronology, climate change, isotopes, Arctic
Chris Rimmer	crimmer@vtecostudies.org	Executive Director	Vermont Center for Ecostudies	Avian ecology and conservation, trophic dynamics, ecotoxicology
Don Ross	donald.ross@uvm.edu	Research Professor	University of Vermont	Nutrient dynamics in forest soils and streams, calcium mineralogy, long-term forest soil monitoring
Lindsey Rustad	lrustad@fs.fed.us	Research Ecologist	USDA Forest Service, Northern Research Station	Anthropogenic disturbances, acidic deposition, climate change, convergence of arts and sciences
Paul Schaberg	pschaberg@fs.fed.us	Plant Physiologist, Director's Representative	USDA Forest Service, Northern Research Station	Tree physiology, air pollution ecology, climate change, species restoration
William Schuster	wschuster@blackrockforest.org	Executive Director	Black Rock Forest Consortium	Organization of Biological Field Stations, tree and forest health and growth, long-term ecological research and sustainability
Jamie Shanley	jshanley@usgs.gov	Research Hydrologist	US Geological Survey	Hydrology, biogeochemistry
Christian Skalka	skalka@cs.uvm.edu	Associate Professor	University of Vermont	Computer science, information systems, snow hydrology
Michael Snyder	michael.snyder@vermont.gov	Commissioner	Vermont Department of Forests, Parks and Recreation	Forest management and policy
Allan Strong	allan.strong@uvm.edu	Associate Dean and Associate Professor	UVM Rubenstein School of Environment and Natural Resources	Avian ecology and conservation, trophic interactions, natural resources management
Stephen Trombulak	trombulak@middlebury.edu	Professor of Biology	Middlebury College	Conservation biology, landscape ecology, biology of mammals, birds, and beetles, GIS planning tools, natural history education
Doug Weihrauch	dweihrauch@outdoors.org	Staff Ecologist	Appalachian Mountain Club	Alpine plant ecology and plant monitoring
Beverley Wemple	bwemple@uvm.edu	Associate Professor	University of Vermont	Water resources, geomorphology, mountain environments
Sandy Wilmot	sandy.wilmot@vermont.gov	Forest Health Specialist, Climate Change Program Coordinator	Vermont Department of Forests, Parks and Recreation	Forest health monitoring, climate change adaptation, forest management



Dean Nancy Mathews

cordially invites you to attend
a buffet dinner with conversation about

Science and Stewardship on Mount Mansfield

Monday, April 18, 2016

5:30 – 8:00 p.m.

Waterman Manor, Waterman Building
85 South Prospect St.
Burlington, Vermont

Featuring

An update on planning for the
Mount Mansfield Science and Stewardship Center

An overview of Vermont Monitoring Cooperative
activities on the mountain

and

Unraveling Mountain Mysteries Reflections from 25 Years on Mount Mansfield

A keynote address by Kent McFarland
Conservation Biologist at the Vermont Center for Ecostudies
and Co-host of VPR's *Outdoor Radio*

*This cash bar event is open to invited members of the UVM community
and participants in the 2016 Northeast Mountain Science Conference*

RSVP respectfully requested by April  to:
April Berteau at April.Berteau@uvm.edu or 802-656-1353