

Monitoring for Impacts of Climate Change: Tracking and measuring outcomes in northeastern forests

9:00 to 5:30, December 13, 2019

Davis Center -- University of Vermont -- Burlington, VT



Agenda

8:15 – 9:00 **Registration and Coffee** (*Livak Fireplace Lounge. Coffee in Sugar/Silver Maple*)

8:30 – 8:45 **What is the FEMC?** (*Williams Family Room*)

First time at the FEMC conference? Want to learn more about what the FEMC does and how it works? Grab some coffee and join us for a quick pre-conference intro session to kick off your day.

9:00 – 9:15 **Introduction and Welcome** (*Sugar/Silver Maple*)

9:15 – 11:00 **Plenary: Monitoring Effects and Effectiveness** (*Sugar/Silver Maple*)

Michael Snyder, Commissioner, Vermont Department of Forests, Parks and Recreation, will be delivering the opening remarks and moderating the morning plenary session.

Using historical records combined with modern records to track the effects of climate change on the plants and animals of Thoreau's Concord

Richard Primack, Professor of Biology, Boston University



Evaluating success of monitoring for impacts of climate change on state wildlife lands in Massachusetts

John Scanlon, Habitat Programs Supervisor at Massachusetts Division of Fisheries & Wildlife



11:00 – 11:20 **Coffee Break** (*Sugar/Silver Maple*)

11:20 – 12:20 **Contributed Talks 1** (see grids on page 2)

12:20 – 1:30 **Lunch** (*Sugar/Silver Maple*)

1:30 – 2:50 **Contributed Talks 2** (see grids on page 2)

- 2:50 – 3:00** **Coffee Break** (*Sugar/Silver Maple*)
- 3:00 – 4:30** **Working Groups** (see list on page 4)
- 4:30 – 5:30** **Poster Session and Social Hour** (*Silver Maple*)

Contributed Talks 1 (11:20 AM – 12:20 PM)			
Climate and Forest Ecosystems <i>Moderator: Ellie Schiappa</i> <i>Room: Silver Maple</i>	Pests and Disease <i>Moderator: Ryan Kincaid</i> <i>Room: Mildred Livak</i>	Technology and Partnerships <i>Moderator: Stephanie Long</i> <i>Room: Jost Foundation</i>	Forest Management <i>Moderator: Meredith Naughton</i> <i>Room: Frank Livak</i>
Forest Carbon: An essential natural solution for climate change <i>Paul Catanzaro</i>	Using Invasive Species Data and Tools to Inform Management Priorities <i>Jennifer Dean</i>	Motus for New England <i>Carol Foss</i>	Climate Change and stream crossing practices on Vermont's timber harvests <i>David Wilcox</i>
Norther hardwood forest soil respiration response to climate change: Insights from multiple climate manipulation experiments <i>Andrew Reinmann</i>	What are we looking for - a review of regional potential incoming invasive species <i>Judy Rosovsky</i>	LiDAR-derived stream mapping stands to drastically improve NH stream data <i>Austin Hart</i>	Comparison of the resistance of even-aged and uneven-aged stands to environmental stressors in temperate forests as measure by tree mortality. <i>Rebeca Cordero Montoya</i>
Vermont's Functioning Floodplains Initiative--Reconnections in the Riverscape <i>Mike Kline</i>	Trends in invasive plants in eastern National Park forests <i>Aaron Weed</i>	The Catskill Science Collaborative: A unique partnership for research, resource management, and outreach. <i>Jamie Deppen</i>	Silviculture with birds in mind: effects of disturbance-based forestry practices on habitat characteristics and carbon storage <i>William Keeton</i>

Pests & Diseases

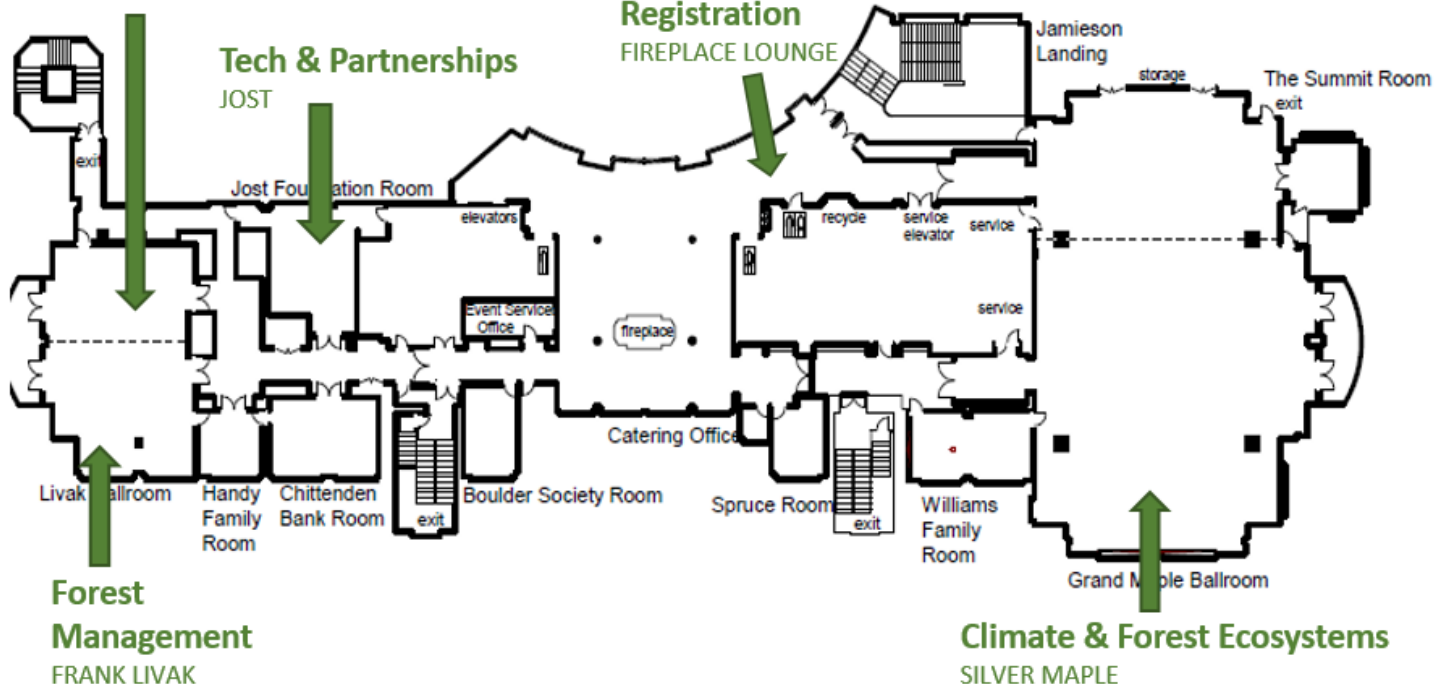
MILDRED LIVAK

Registration

FIREPLACE LOUNGE

Tech & Partnerships

JOST



Contributed Talks 2 (1:30 PM – 2:50 PM)

<p align="center">Climate and Forest Ecosystems</p> <p align="center"><i>Moderator: Eliza Letourneau Room: Frank Livak</i></p>	<p align="center">Forest and Alpine Ecology</p> <p align="center"><i>Moderator: Ryan Kincaid Room: Mildred Livak</i></p>	<p align="center">Wildlife</p> <p align="center"><i>Moderator: Stephanie Long Room: Jost Foundation</i></p>	<p align="center">Forested Waters</p> <p align="center"><i>Moderator: Rebecca Harvey Room: Chittenden Bank</i></p>
<p>Moving the Needle: Assessing What Forest Managers Need to Increase Climate Adaptation in New England <i>Amanda Mahaffey Christopher Riely</i></p>	<p>Northern Hardwoods and Long-Term Change: Assessing Old-Growth and Managed Experimental Forest in the Adirondack Mountains of New York <i>Stacy McNulty</i></p>	<p>Elevational Distributions of Montane Spruce-Fir Forest Bird Communities from 2010-2019 <i>Jason M. Hill</i></p>	<p>Acid rain update Adirondack Mountains (NY) 2019: deposition improvements revitalizing surface waters <i>Karen Roy</i></p>
<p>Growth of Northeastern Tree Seedlings in Response to Future Precipitation Scenarios <i>Peter Clark</i></p>	<p>Trends and environmental drivers of tree growth for seven major species in Vermont: future implications in the context of climate change <i>Rebecca Stern</i></p>	<p>Assessment of long-term freshwater mussel population trends in the lower Poultney and Lamoille Rivers. <i>Paul Marangelo</i></p>	<p>Managing headwater streams for climate resilience: Monitoring the geomorphic impact of large instream wood structures at Burnt Mountain Natural Area <i>Megan Gordon</i></p>
<p>Every Picture Tells a Story aka/ Forest Photography Designed to Document, Interpret and Monitor Climate Change-Forest Change <i>Roger L. Merchant</i></p>	<p>Monitoring plant populations in the Adirondack Alpine <i>Tim Howard</i></p>	<p>American marten density and habitat associations in New Hampshire <i>Donovan Drummey</i></p>	<p>Monitoring Vermont reference streams to understand climate change impacts <i>Aaron Moore</i></p>
<p>Assessing Ecosystem Controls on Soil Carbon Storage Across the Northeastern United States <i>Adam Noel</i></p>	<p>Forest structure could mitigate negative impacts of climate change on functional diversity in northeastern North America <i>Dominik Thom</i></p>	<p>Pulsed resources cause dynamic range changes in the North American Red Squirrel <i>Michael T. Hallworth</i></p>	<p>Site Preparation and Direct Seeding Trials for Riparian Forest Restoration <i>Annalise Carington</i></p>

Forest & Alpine Ecology

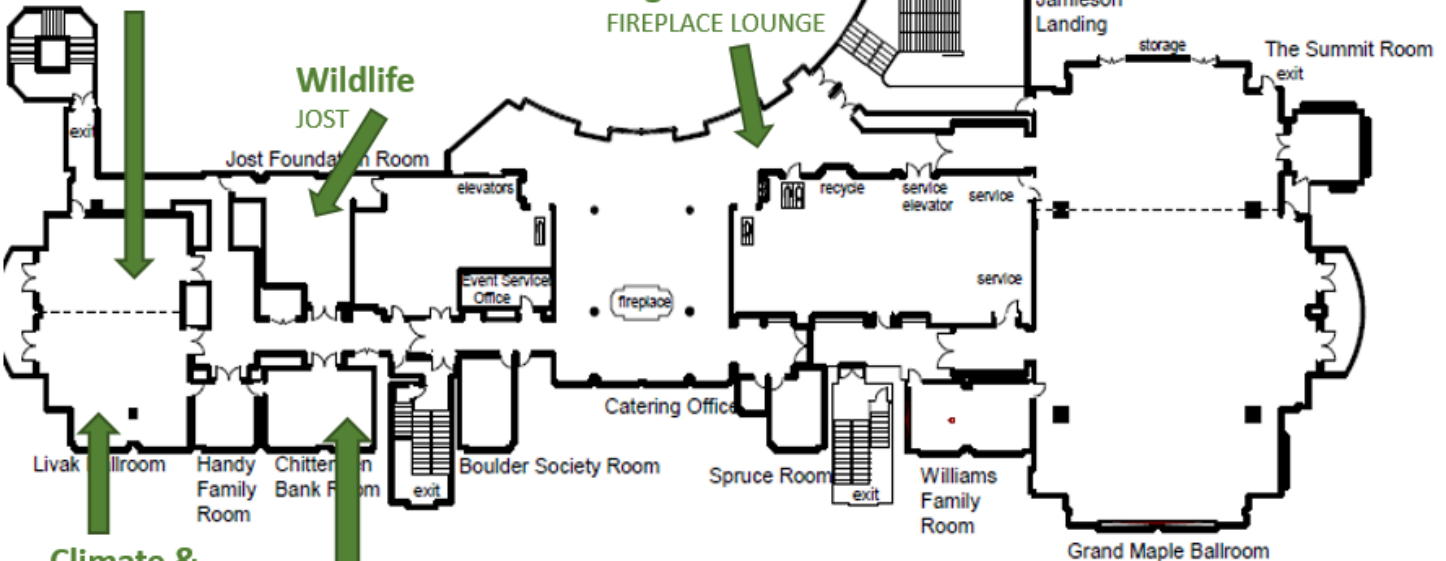
MILDRED LIVAK

Registration

FIREPLACE LOUNGE

Wildlife

JOST



Climate & Forest Ecosystems
FRANK LIVAK

Forested Waters
CHITTENDEN BANK

3:00 – 4:30

Working Groups

Proposed and organized by cooperators, these working group sessions provide opportunities to focus on key issues and priorities of members of the Cooperative

Confirmed working sessions include:

Reducing the Risks of Invasive Forest Pests and Climate Change Using Knowledge Co-Production

Organizer: Toni Lyn Morelli, U.S. Geological Survey

Co-Designing Forestry Studies to Address Adaptation Science Needs

Organizer: Tony D’Amato, Rubenstein School of Environmental and Natural Resources, University of Vermont

Why oak? Increasing Resiliency in Southern New England's Oak Forests

Organizer: Christopher Riely, Rhode Island Woodland Partnership

Data Rescue: Archiving ‘At-Risk’ Data from the Catskills To Katahdin

Organizer: Matthias Sirch, Forest Ecosystem Monitoring Cooperative

Managing Ash in the Context of EAB - a Regional Discussion

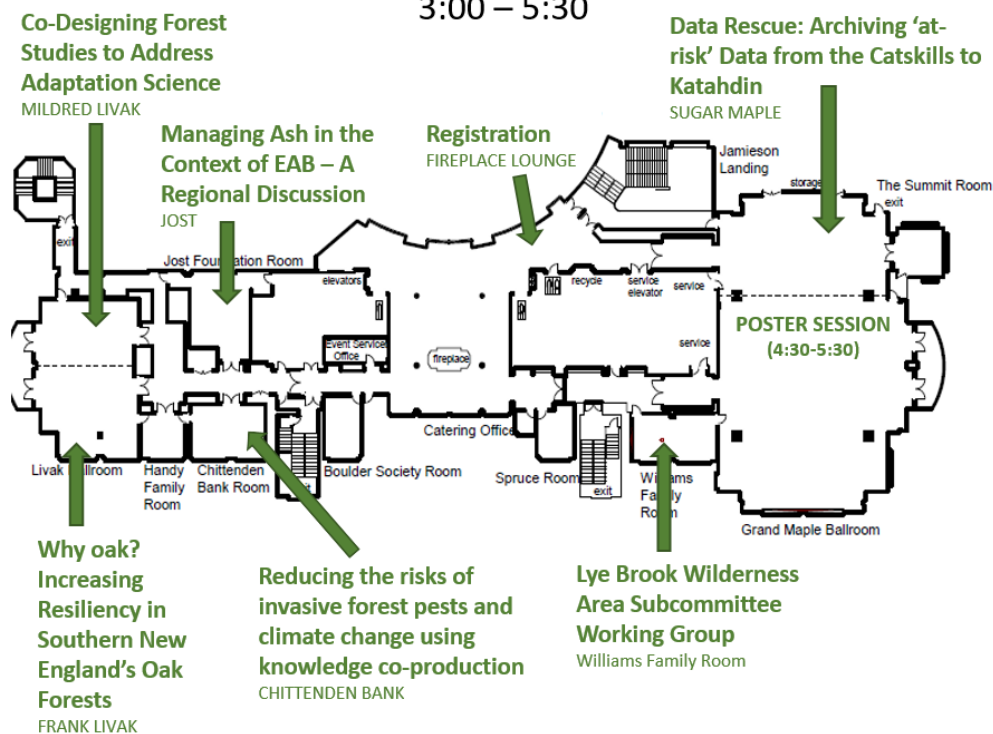
Organizer: Amanda Mahaffey, Forest Stewards Guild

Lye Brook Wilderness Area Subcommittee Working Group

Organizer: Angie Quintana, Green Mountain & Finger Lakes National Forests

Room Assignments for Working Groups and Poster Session

3:00 – 5:30



Working Group Descriptions

Reducing the risks of invasive forest pests and climate change using knowledge co-production

Organizer: Toni Lyn Morelli, U.S. Geological Survey

Room: Chittenden Bank Room

Building off a recently formed working group focused on understanding of risks associated with pest outbreaks in forests, this working session will refine a structured decision-making framework, with input from new and existing working group members. The goal is to bring the power of ecological forecasts and knowledge coproduction (resource managers and scientists working together) to develop a scalable decision-support system. We are working together to identify information needs for pest species (especially Hemlock Woolly Adelgid). We will further develop our understanding of the role of risk in forest pest management. This working session is a collaboration among the National Phenology Network, USGS, USFS, and the Regional Invasive Species and Climate Change (RISCC) Management network.

Co-Designing Forestry Studies to Address Adaptation Science Needs

Organizer: Tony D'Amato, Rubenstein School of Environmental and Natural Resources, University of Vermont

Room: Mildred Livak

The uncertainty around the impacts of climate change, invasive species, and extreme weather events poses a significant challenge to sustaining forest ecosystems in the northeast. Much of our current management is guided by the outcomes of decades of silviculture research, yet many of the conditions under which those results were generated are rapidly changing. General suggestions for how to approach forest adaptation for uncertain future conditions have been suggested, but few, robust field evaluations exist to inform widespread management applications. This working group session will facilitate discussion among forestry professionals and research scientists to identify what science is most needed to help inform forest adaptation strategies to address the impacts of climate change and invasive species, and garner input on how to best engage landowners when testing such approaches. The outcomes of this session will inform the design of a series of new silvicultural studies and develop manager-scientist partnerships to enhance the region's capacity for implementing and sharing the outcomes of forest adaptation in practice.

Why oak? Increasing Resiliency in Southern New England's Oak Forests

Organizer: Christopher Riely, Rhode Island Woodland Partnership

Room: Frank Livak

Oak trees are an iconic part of southern New England's forests. Today, they are under pressure from a complex range of stresses including gypsy moth, deer browse, and invasives. Forest managers are struggling to secure regeneration and are further challenged with how to communicate with landowners about options for managing oak woodlands in a changing climate. What makes a resilient forest? What tools can we use to assess how "healthy" a forest is? What are practical management strategies to help increase resiliency in oak forests? What tools can we use to monitor our efforts and find out if we're making a difference? This facilitated working session will explore these and other questions. All participants who work in or care for oak forests are invited to take part.

This discussion is related to a USDA Forest Service-funded project in its early stages with partners in Rhode Island, Connecticut, and Massachusetts. Outputs from the session will help inform our work with professionals and landowners to increase resiliency in southern New England's oak forests.

Working Group Descriptions Continued

Data Rescue: Archiving 'At-Risk' Data from the Catskills to Katahdin

Organizer: Matthias Sirch and Emma Tait, Forest Ecosystem Monitoring Cooperative

Room: Sugar Maple

FEMC has been working to compile an inventory of at-risk data and rescue high priority material. In this working session we will share insights gained in the rescuing process to inform a broader discussion around defining at-risk data and ways to collectively develop a data rescue framework. What data do you want to see rescued? How do we establish priority? What are the obstacles to rescuing and utilizing at-risk data? Together we will discuss these questions as well as brainstorm more efficient methods for connecting rescues with resources and explore avenues for addressing future data risk.

Managing Ash in the Context of EAB - a Regional Discussion

Organizer: Amanda Mahaffey, Forest Stewards Guild

Room: Jost Foundation Room

The “little green bug”, the emerald ash borer, is known as a harbinger of death and destruction to ash trees across the continent. Its presence instantly brings to mind the disheartening prospect of every ash tree in a stand, forest, or state disintegrating into a snag and disappearing from the forest ecosystem. All too often, even the mention of the bug leads managers to harvest every ash tree in reach during a timber harvest. But wait! There are sound, science-based reasons to consider alternative treatments. Ash trees are irreplaceable to Native American cultures in our region. Ash trees - living, dead, or dying - also provide important habitat to wildlife in forest ecosystems. Recent research shows that not all ash trees will die and that cutting them all eliminates our chances of retaining their important ecological and social values.

A series of forums in Vermont this year helped forest managers explore alternative management approaches for ash in the context of EAB. What is your state doing to help foresters manage ash in spite of the little green bug? In this facilitated working session, participants will share ideas, observations, and strategies for conducting thoughtful silviculture and share learning about ash management across the Northeast region.

Working Group Descriptions Continued

Lye Brook Wilderness Area Subcommittee Working Group

Organizer: Angie Quintana, Green Mountain & Finger Lakes National Forests

Room: Williams Family Room

Anyone interested in ongoing or future monitoring and research at the Lye Brook Wilderness Area is encouraged to join, with the goal of making connections and coordinating across organizations and disciplines to support this work. Lye Brook is the only Class I Wilderness Area in Vermont, and includes a rich archive of existing data and long-term studies. This workgroup brings together key partners in an ongoing collaboration focused at this FEMC intensive research site. The Lye Brook Wilderness is in the southern Green Mountains of Vermont. It's named after the brook flowing through its western half. Most of it is above 2500 feet, on a high plateau with several ponds and bogs. Approximately 80% of the area is forested with northern hardwoods: birch, beech, and maple. Thickets of small spruce dot the area. Several species of neotropical birds, black bear, moose, deer, pine martin and bobcat inhabit these woods. There are many marshy areas off trail and the ecological balance is quite fragile.

Meeting Objectives:

- Provide brief updates on current and near future research and monitoring projects in the Lye Brook Wilderness Area, building on our existing list at https://www.uvm.edu/femc/cooperative/lye_brook_committee
- Identify additional research or project needs (to add to existing list)
- Prioritize and develop strategies to collaborate and accomplish projects and research
- Choose a date and location for a field trip in summer 2020, and Nov/Dec 2020 meeting

Poster Titles and Presenters

Travels of a Rusty Blackbird

Presenter: Carol Foss, *New Hampshire Audubon*

What is the DEN? A new online database of tree-ring and ecological information for scientists and managers.

Presenter: Paul Schaberg, *USDA Forest Service Northern Research Station*

Assessing the statewide condition of macroinvertebrate and fish communities in Vermont streams

Presenter: Aaron Moore, *Vermont Agency of Agriculture, Food and Markets*

Comparison of climatic conditions experienced by northern and southern red spruce ecotypes

Presenter: John R. Butnor, *Southern Research Station, USDA Forest Service*

Monitoring spring canopy green up in Pinkham Notch, NH using digital cameras

Presenter: Patrick Scordato, *Appalachian Mountain Club*

Translating Science into Practice and Practice into Science - Northeast RISCC Management Network

Presenter: Audrey Barker Plotkin, *University of Massachusetts, Amherst, Amherst, MA*

Adaptive Silviculture for Climate Change: Initial Structural Outcomes in the Northern Hardwood Forest

Presenter: Jessica Wikle, *University of Vermont, Rubenstein School for Environment and Natural Resources*

Poster Titles and Presenters Continued

Understanding forest landowner management and decision making in the context of water quality, land use and climate change in the Lake Champlain Basin

Presenters: Sarah Haedrich, Meagan Tan, Harrison Rohrer, *Middlebury College Environmental Studies*

Forest Land Use Activities and Fragmentation as a Threat to Northeastern Forest Cover and Water Quality

Presenter: Elizabeth Doran, *UVM VT EPSCoR BREE Project*

Does soil moisture and soil texture predict the fine-scale community organization of sugar maple and beech in a 1ha old growth forest in Middlebury, Vermont?

Presenter: Morgan Forest Perlman, *Middlebury College*

Updated Projections of Species Response to Climate Change

Presenter: Maria Janowiak, *Northern Institute of Applied Climate Science & US Forest Service*

Sliding down Cotton Brook, Waterbury, VT

Presenter: Marjorie Gale, *Vermont Geological Survey, DEC*

Lake Champlain wetland vegetation monitoring

Presenter: Jo Robertson, *Vermont Fish and Wildlife Department & Eco AmeriCorps*

New low-cost stream gauging stations on headwater streams of the White Mountain National Forest

Presenter: Austin Hart, *White Mountain National Forest*

Tree-SMART Trade: Policy Recommendations to Reduce the Importation of Forest Pests

Presenter: Gary Lovett, *Cary Institute of Ecosystem Studies*

Geospatial analysis of tree species at risk from nitrogen deposition in the northeastern U.S.

Presenter: Linda Pardo, *U.S. Forest Service, Northern Research Station*

Monitoring the Health of Vermont's Forests: Data from 2019 and Changes in Tree Health

Presenter: Julia Pupko, *Forest Ecosystem Monitoring Cooperative*

2019 Forest Ecosystem Monitoring Cooperative Partner Projects

Presenter: *Forest Ecosystem Monitoring Cooperative*

2019 Forest Ecosystem Monitoring Cooperative Regional Projects

Presenter: *Forest Ecosystem Monitoring Cooperative*