New England Society of American Foresters

News Quarterly

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Congratulations 2020 NESAF Award Recipients!

Pictured (*L to R, top row*) Karen Bennett, Barrie Brusila, Laura Kenefic (*L to R, bottom row*) Kris Hoffmann, Paul Catanzaro, Amanda Mahaffey (*photo unavailable*) Steven K. Pelletier

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Emerging Science: Abstracts Selected for the 2020 NESAF Annual Meeting

News Quarterly Science Theme – Dr. Anthony D'Amato, Theme Editor

The NESAF Annual Winter Meeting was cancelled this year due to Covid-19, but thankfully many presenters are still able to share their work. This issue's theme is the compilation of those scientific and technical abstracts which were planned to be presented at the Annual Winter Meeting in Springfield, MA.

We hope the abstracts featured in this issue are as well received as they have been in previous years! Please also note that the Flash Talk abstracts are available in the print version of the *NQ*, while both Poster and Flash Talk Abstracts will be highlighted in the online version of the *News Quarterly*.

(*Articles begin on page 8)*

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Greetings from the Pine Tree State ~ Jake Metzler

Friends and colleagues, these are unprecedented times. At this point I don't need to tell you much more than that. I can tell you it certainly is not how we wanted to celebrate our 100th Anniversary as the New England Society of American Foresters - but here we are.

As I write this, we recently cancelled the Annual Winter Meeting and are gripped by daily reports of the impact of a global pandemic forcing us to practice "social distancing." We are adjusting to a very different work life (in some cases) and not so different in other cases (forest products have been deemed an Essential Business in Maine). I am guessing however that wherever you are, you are also seeing stories about the public adjusting to this reality with more trips to the forest and trails in an effort to get some fresh air and enjoy nature.

It's possible that out of this dark time, we'll end up with more people appreciating forests for their many values (toilet paper, for one!) and as our lives get back to "normal" we'll be able to build off this renewed appreciation for forests and what they provide to society in a way that will benefit foresters into the future.

Finally, while we could not gather as planned in Springfield to celebrate our Annual Meeting, please read this NQ closely and reach out to congratulate this year's NESAF award winners. They are an amazing group of people who deserve the recognition they have earned. Also follow-up with the authors of the selection of scientific articles included here and ask the questions you wished could have been asked in person in Springfield – I am sure each researcher will gladly get back to you. Thanks again for your support of NESAF and we look forward to the time where we can gather together again!

Council Update ~ Mariann Johnston

This is a trying time for our communities and nation as a whole. I am wishing the very best for each and every one of us, as we move forward through these uncharted waters. Take care. Here are some updates from National SAF.

Membership & Database. One of the most important services that SAF provides to its members is that of membership services – we are a service organization. Recent challenges have included database management issues and lack of sufficient staffing. SAF is happy to report that Chris Bellerdine has joined Steven Glover in the Membership Services department. Steven and Chris will be working to address database issues. As we move forward, we are also looking forward to enhanced support in that department. Please continue to exercise patience as we ramp up the Membership Services team.

Golden Member Recognition. One issue where clarification has been sought has been how to calculate Golden Member Recognition. This recognition is conferred upon SAF members who have 50 years of active and paid membership. For purposes of determination, this will be 600 months (50 years x 12 months). One question has been whether years as a student member are included. For purposes of calculation, SAF will recognize months of student membership. However, these months were not included in the database prior to 2014. Therefore, members who wish to have their student months counted towards their 50 years need to contact SAF and provide that information. Supporting documentation such as an old invoice or membership card will be helpful in making your case.

Marketing. SAF has hired Angela Colonna to provide support as a Communications/Marketing Manager. Angela will likely be working with some of the new messaging provided by our recent marketing analysis.

Continuing Education. SAF is pleased to announce that Melisa Loewe has joined the SAF team as the Education and Certification Specialist. Melisa will work with Naomi Marcus.

Sale of the SAF Mansion. SAF received an offer from a developer, and is presently nearing the end of the 45-day 'due-diligence' period, where either part could withdraw from the agreement. It is anticipated that the developer would renovate the building for lease, at present. National SAF staff are also seeking a new space for SAF operations. A 6-month lease-back period is built into the sale contract to allow time for location and remodeling of the new space, to improve staff efficiency and to provide an aesthetically pleasing and professional setting to conduct business. Areas being considered are Bethesda, and downtown nearer to other natural resources organizations and their headquarters, to allow for enhanced interaction and relationship-building with those organizations.

Convention. The 2020 Convention is set for Providence, RI. As many meetings have been cancelled in recent weeks due to the Coronavirus pandemic, I'm sure we'll all be watching and considering when it may be safe to start traveling again. Please stay tuned for updates for this and other SAF gatherings.

2020 NESAF Award Recipients

Steven K. Pelletier

Integrity in Conservation Award

The Integrity in Conservation Award recognizes an individual or organization working with natural resources who demonstrates adherence to principles and high standards in the face of adversity.

"*Over the course of more than 3 decades, Steve has worked with numerous private, industrial, corporate, and regulatory clients, and has well earned his widely-known reputation for bringing together science, best management practices, and unwavering professional integrity to provide science-based solutions that help best conserve our natural resources for the long term, given the constraints and issues at hand*," as stated in the nomination.

Steve is SAF CF, ME licensed forester, Certified Wildlife Biologist, and Professional Wetland Scientist. Currently, he is semi-retired as a Senior Principal and Ecological Discipline Leader at Stantec Consulting. His previous work experience includes 20 years of consulting at Woodlot Alternatives, of which he was the co-founder, 5 years as a ME DEP Environmental Enforcement Specialist, 2 years as a USDA Forest Service Wildlife Biologist in CA, 5 years as a ME IF&W Seasonal Biological Assistant, and 2 years of service in the US Navy. His educational background includes a 1980 BS in Wildlife Management & Forestry from the Univ. of ME, and a 1978 AS in Forest Management Technology, with Distinction from the Univ. of ME.

In an endorsement, this comment was expressed, "*as we managed the growth of our company (Woodlot Alternatives). Steve was the moral compass and always the voice for doing the right thing and you can probably sum up his career with that phrase.*" He has worked on both regional and national projects, including: Block Island Wind Farm, RI; Moosehead Region Concept Plan, Greenville, ME; Refugio Beach Oil Spill Response and Damage Assessment, Santa Barbara, CA; Forest Sustainability Study, Maine Forest Service; NH ATV Management Policy and Plan; and Eagle Nest Relocation and Vegetation Management Plan, Oroville, CA.

In another endorsement, "Steve has been a leader regardless of where he has worked, just by being himself. He is always had high standards and insures that those around do as well. Steve has artfully worked with difficult people on numerous occasions, by being honest with them, by engaging in thoughtful conversations, and by using the best information available to guide decision-making."

Karen Bennett

Distinguished Service Award

The Distinguished Service Award is the highest award given by the New England SAF, recognizing professional achievement in forestry, irrespective of age or tenure, by a New England SAF member.

The nomination letter stated that, "*Karen has been the glue for foresters in NH; her "What's Happening" newsletter has kept foresters across the state up on everything from job announcements, bug outbreaks, and upcoming workshops. This is but one of the outcomes from her position as the Extension Professor and Specialist, Forest Resources, UNH Cooperative Extension, since 1996 until her recent retirement.*"

Her educational background includes a 1979 BS in Forestry, *magna cum laude*, from UNH, and a MS in Forestry from UNH in 1992. She has been a NH licensed forester (#4) since 1990, and is a SAF CF since 2002. Her SAF involvement includes the Granite State Division Executive Committee (EC) over the 1987-1990 period, and the NESAF EC from 1995-1997, and being a SAF member since 1984.

In an endorsement, it was stated that, "*Karen is online and linked in all of the time, updating web pages, computer lists, logging into bug reports, and keeping foresters in touch with each other through her email newsletter. Yet through all this planning, organizing, committee work, teaching, and leading; she still has been making time for personal chats over lunch or a glass of wine with foresters/friends who have a problem or were just wanting some advice.*"

Her professional accomplishments include being the project manager and editor of the "*Good Forestry for the Granite State: Recommended Voluntary Forest Management Practices for New Hampshire (2010)*"; service on the NH Forest Advisory Board since 1996; a Board member of NH PLT for the 1996-2005 period; service on the NH Board of Licensure for Professional Foresters for the 1990-1999 period. She was recognized by the Granite State Division in 1992 as their Outstanding Forester, and again in 2011 with the NESAF Integrity in Conservation Award.

Kris Hoffmann

James W. Toumey Award

Presented for Outstanding Achievement in Service to the New England Society of American Foresters.

In the nomination letter it is noted that Kris's participation in SAF began in 2009 when she volunteered at the 2009 NESAF Meeting, due to a previous contact with Ken Laustsen at a MESAF exhibit at UME Portland. She has served on all levels with MESAF, from Member-at-Large (2011) to Chair (2016), and in between being the ME state representative to the NESAF EC for 2013-2014. Volunteerism is a strong point with Kris, she served as Facilities Chairs for the 2013 NESAF annual meeting and as General Chair for the 2017 meeting. Like me, Kris has a hard time saying no, but she also has a hard time taking no for an answer. These two traits combine to make her the ideal SAF volunteer. Kris also is involved with the North East Regional Council of Forest Engineering (NERCOFE) in planning and hosting their annual meetings. She has served as a conduit between SAF and NERCOFE, making sure that NERCOFE provides qualified educational CEU's for SAF foresters.

Since 2007, she has been employed as a Forestland Steward with the Forest Society of Maine; following a MS Forest Management degree from UME in 2007, and a 1995 BS degree from Northland College. In between these degrees she served as a Peace Corp volunteer in the Philippines, a Park Ranger at Acadia National Park, and the Executive Director of the Pemaquid Watershed Association.

In a letter of endorsement, "*Having worked with Kris for more than 10 years, I have seen her "can do" attitude day in and day out in all phases of her life, work, and volunteer efforts. She just wants to help out! Taking on the role of General Chair for the 2017 meeting should not be understated - it can be relatively easy to keep hosting a meeting at the same venue each time, but moving to a new venue raises lots of potential pitfalls and Kris showed she was the right person with the right attitude to roll with the punches in order to get the job done in the service of NESAF. Her demeanor is the key to her success.*"

Finally, "*In Maine we are fortunate to have Kris to turn to as a volunteer, committee member, forest professional, and friend. Her can-do attitude makes our group as a whole better.*"

Barrie Brusila

Austin Cary Practicing Professional Award

Presented to a member who has shown outstanding achievement recently or over a period of years as a practicing forest manager or consultant forester.

In the nomination letter, "*I have known Barrie for over 24 years as a consultant, colleague, educator, friend, and community member in the ME midcoast. In her many roles of forest practitioner, conservationist, advisor, teacher, and parent; Barrie consistently demonstrates unfailing commitment, thoughtfulness, compassion, and leadership that make her highly respected in all her endeavors. As a consulting forester for nearly 30 years, she has effectively served hundreds of landowner clients ranging from individual landowners, farmers, conservation groups, and municipalities with the kind of consistent, long-term forest management that is so challenging to apply to smaller ownerships over time.*"

Since 1995, Barrie is a co-partner, along with her husband, in the consulting firm of Mid-Maine Forestry, which has been a Certified Resource Manager, with SCS Global Services to the Forest Stewardship Council since 1998. She has previous employment with Two Trees Forestry, Somerset County Soil and Water Conservation District as a District Forester, a Forest Technician with the Maine Forest Service, a Forester with the Forest Products Marketing and Management Association and Cooperative, Inc. of Dover Foxcroft, ME, and several positions with the USDA Forest Service in 1977-1979. Her educational background includes a 1978 BS in Forest Management from UME, and a 1983 MS degree in Forestry from UME.

A letter of endorsement noted that, "*Cary was a pioneer and trailblazer in the forestry field. In her lifetime, Barrie, too, has blazed trails and led the way in shaping our profession. Barrie is a founding member of the Forest Stewards Guild and embodies the principles of this ethically-driven organization, including humility, respect for the entire forest ecosystem, and responsibility to the forest and its future.*"

Finally, "*She models the best kind of practitioner; one who thinks deeply, acts conscientiously, and then humbly asks; How did that go? How might I improve?*"

Paul Catanzaro

Ernest M. Gould, Jr. Technology Transfer Award

Presented to a member who has made outstanding contribution to natural resource science and management through education, extension, or youth service.

From the nomination letter, "*Paul's contribution to technology transfer has been largely through his role as an Extension Forestry Associate Professor at UMass. In this role, Paul serves as a critical conduit of information for land-owners, foresters, and other decision makers in MA and the greater region. This has included carrying on David Kittredge's legacy in leading the Coverts program, called Keystones in MA, establishing the Woods Forum Program to advance peer-to-peer learning opportunities for landowners, and creating and maintaining the MassWoods website and e-newsletter to disseminate education materials and opportunities.*"

One endorsement, from Vermont, has this comment, "*In short, even though he works in a different state, Paul has benefited me and the foresters of Vermont for a very long time through his stellar work and keen communication talents. While I am aware of Pauls' fine work as Co-Director of the Family Forest Research Center, his work as Director of the MA Keystone Project (training over 200 forest owners and community leaders in sustainable forest management, land protection, and wildlife habitat enhancement), and his role as Advisor for the UMass Student SAF Chapter – which are all powerful programs that make good on the promise of the Gould legacy – it is Paul's written work that has especially stood out to me from afar, as it has continually enhanced our practice of forestry here in Vermont.*"

Following a 1996 MS in Forest Resources Management, with a specialization in Silviculture from SUNY ESF, Paul began working in 1997, as a Service Forester for the MA Dept. of Conservation and Recreation. In 2005, he moved to UMass at Amherst as a Forestry Extension Specialist, becoming an Assistant Professor in 2011, and then an Associate Professor in 2015. In 2017 and currently, he is also a Co-Director of Family Forest Research Center. In his biographical sketch, there is a notable list of 14 outreach publications, dating back to 2005, and the recent current favorite, being Catanzaro, P.F. and A.W. D'Amato. 2019. *Forest Carbon.*

Lastly, a MA based endorsement notes, "*Paul was an early adopter of the now common mantra, keep forests as forests. He has been implementing the Estate Planning portion of DCR's Working Forest initiative since 2009. A few of his accomplishments from last year alone include; Development of a new "Protecting Your Legacy" publication, Open Space Committee Statewide Conference, Neighborhood outreach pilot project, seven landowner outreach events, development of an online Legacy Planning Tool, MassWoods.org outreach, and the Keystone 30th reunion.*"

Amanda Mahaffey

Mollie Beattie Young Forester Leadership Award

Presented to a member who is less than 40 years old at the time of nomination and has shown leadership in a program or project benefiting the practice of forestry.

In the letter of nomination, "*Her approach to the field, with her dedication to good management, her energy, and her ability to relate to people and groups are well recognized. She sees ethics as central to professional practice, motivating her to become engaged with the subject, as seen in a session at the 2019 NESAF meeting in Burlington.*"

Amanda currently serves as the Deputy Director of the Forest Stewards Guild, which builds on a previous 7-year span as the Guild's Northeast Region Director, and prior to that work as a field forester and in environmental consulting. Her educational background includes degrees from Yale and the Univ. of Southern ME, and she is a ME licensed forester. She is also known in musical circles as a choral conductor and singer, and she may well be the only Handel Messiah soloist ever to have been deployed on a wildfire assignment in Quebec.

The Northeastern Fire Protection Commission submitted an endorsement, noting "*Amanda is a very talented forester who has been working with our Commission for the past 5 years representing the North Atlantic Fires Science Exchange. In her role, she has made great strides in bridging the gap between fire managers and fire scientists. This work included numerous workshops and field trips focused on specific aspects of forestry, to include fire history, fire impacts, forest health situations, regeneration, and environmental consequences. We had the privilege of working with Amanda to host a joint conference titled "Igniting Exchange" in Portland, ME in January, 2018. The conference was filled with outstanding speakers, had 200 attendees from 47 states and Canadian provinces. It was indeed an international conference, due in large part to her ability to network with the forest community.*"

Lastly, "*She is equally at home deep in the woods arguing about which tree to mark or facilitating a discussion of adaptation in a room full of natural resource professionals. As a forester, Amanda moves adeptly through the forest, but considers carefully both the future health of the stand and how to make a sale work financially. She is equally contentious in working with her colleagues. Amanda is a clear, strategic thinker with an unwavering ethical compass. When there are difficult decisions, I can count on her to put the forest first and treat people fairly.*"

Laura Kenefic

David M. Smith Award

Presented annually to a member engaged in research, teaching, or the field application of silviculture whose work reflects Dave's advice that "we should observe and analyze the patterns of stand development first and devise silvicultural treatments to fit or modify them afterwards."

Laura is Principal Silviculturist and Lead Scientist for the USDA Forest Service Penobscot Experimental Forest (PEF) in Bradley, ME. She began her silviculture career with Ralph Nyland, with whom she earned a MS in 1995. She came to UME in 1994 as a USDA Forest Scientist Trainee and worked on her PhD in Silviculture with Bob Seymour, completing the degree in 2000. She also believes that the research must be available so that it affects forest management as indicated by her receiving the NESAF Ernest M. Gould Technology Transfer Award in 2019. Other awards include Inspiring Women Leadership Award (2017) and Early Career Scientist Award (2005) from the USDA Forest Service, and the 2006 NESAF Mollie Beattie Young Leadership Award.

"*We have collaborated on countless research endeavors and regularly co-lead field tours for students and professionals on the PEF. From the very beginning, it was obvious that Laura was destined for greatness, and in examining her recent accomplishments, I'm virtually speechless as what an extraordinary record she has compiled, both in depth and breadth of activities and interests. In the face of adversity, she has doggedly kept the discipline of silviculture in the forefront of the Forest Service's research mission in the Northeast and Lake States, by linking its historical traditions and substance with contemporary issues of resilience in the face of ecological change. Along with Tony D'Amato at UVM, she is unquestionably the top research silviculturists in New England, and among the best in the US.*" as was conveyed in a letter of endorsement.

Another endorsement letter quotes, "*Clearly, her research, teaching, and field application of silviculture reflects David's advice to devise silvicultural treatments consistent with observed patterns of stand development and to share those with people who manage the forests of New England and elsewhere. At the regional and international level, Laura's collaboration with researchers and practitioners in eastern Canada also led to translating findings from research into meaningful guidelines for the managing of northern white cedar and mixedwood stands. Those publications, related conference presentations, and field trips have opened new understanding about the species and associated forest types. Through all these efforts, Laura has earned a reputation as a go-to silviculturist in the Northeast.*"

Flash Talk Abstracts Selected for the 2020 NESAF Annual Meeting

Grow, build, live: Mass timber for a thriving New England

Connor Rockett[1]

[1]AmeriCorps Member, New England Forestry Foundation

As our region moves to act on climate change, urban housing shortages, and a changing forest products sector, mass timber can play a role in addressing each of these challenges. This flash talk will explore New England Forestry Foundation's work to foster support for the use of mass timber as a building material with a remarkably wide range of benefits. It will cover the material's advantages for regional environmental, social, and economic concerns, before describing in greater depth the work NEFF is doing with stakeholders, from architects to landowners, to break down obstacles to tall wood buildings. The talk will conclude with a summary of policy options to prioritize the use of mass timber, taken from jurisdictions in Canada, Europe, and the US.

Soil Nutrient and mycorrhizal effects on seedling competition within and between *Acer rubrum* and *Quercus rubra*

Mike Maier[1]

[1]Yale School of Forestry and Environmental Studies.

Redistribution of nitrogen (N) and phosphorus (P) in global biogeochemical cycles due to industry and human impacts is one of the most drastic measurable ecological changes of the last 100 years (Elser & Bennett, 2011; Galloway et al., 2008; Mahowald et al., 2008) and anthropogenic impacts are significant to forest regeneration, especially around heavily urbanized regions (Decina, Templer, Hutyra, Gately, & Rao, 2017). Belowground nutrient cycling in forests is an important component in modelling for climate change effects and a clearer understanding of soil nutrient dynamics is imperative for local sustainable forestry and agricultural policy, as well as at the larger scale of climate change feedbacks on global forest ecosystems (Bonan, 2008). This research study describes a fully factorial greenhouse experiment that measured the effect of varying nitrogen and phosphorus limitations on red maple and red oak seedlings inoculated with arbuscular or ecto-mycorrhizae under intra and interspecific competition. As mycorrhizal type varies by species (maple-AM, oak-EM) and functional traits vary in terms of capacity for mineral nutrition, we measured a range of growth metrics and the degree of mycorrhizal colonization of seedlings under treatment combinations in order to characterize the potential effects of varying N:P ratios on plant community and forest biodiversity.

What do Forestry and Wildlife Students think about Professional Ethics?

Lloyd C. Irland[1]

[1]The Irland Group and University of Maine.

In fall 2019, several upper level classes in forestry and wildlife at the University of Maine at Orono took an electronic survey designed to gain their general perceptions on professional ethics. There were 59 respondents. The instrument was administered by Adam Daigneault and Mindy Crandall. It was IRB-approved. The Qualtrics system was used. Most of the Students reported hearing of ethics in some way or another in classes, but the subject was concentrated in a few classes. Some reported seeing what they took as ethical violations on campus. They did not report hearing of specific ethical issues such as conflict of interest or moonlighting. This talk will summarize highlights. An opportunity to run this survey was offered to several other forestry schools; inquiries form interested institutions would be welcomed.

Priorities, perspectives and use of a community forest by surrounding residents in Mayagüez, Puerto Rico

Gabriela M. Morales Nieves[1]

[1]Yale University, School of Forestry and Environmental Studies

Community forests have been considered as essential components for the protection of lands, reduction of deforestation rates, conservation of biodiversity, carbon sequestration while providing socioeconomic benefits to those that live around them. In the insular Caribbean, the model of community forests does not seem to be used widely. Given that it is a region with high biodiversity and endemism while being also the sub region in Latin America and the Caribbean with highest population density, protection of lands in fragmented landscapes is especially important. In order to expand the adoption of community forests, it is important to understand the interests of those who live around these forests in managing them and the opportunity these residents see in community forests. This research project was dedicated to performing interviews to people living around a community forest in Mayagüez, Puerto Rico. Interviewees were asked about which activities they would be interested in participating in the forest, perceived ecosystem services and about what should be the management priorities and services the forest should provide to the community. The most important ecosystem service for residents was air quality, followed by recreation. Many of the motives that impeded the use of the forest by residents had to do with the presence of non-native species like the Boa constrictor. The forest is currently a meeting space for community activities related to celebrations, workshops and the selling of food and other products.

Dirt to Trees to Wildlife

Brendan Prusik[1]

[1]UNH Cooperative Extension

Dirt to Trees to Wildlife (DTW) is a new online tool designed to help professional managers simplify the process of compiling complex relationships between soils, vegetation and breeding habitats. This tool is the culmination of decades-long work reflecting collaboration by soil scientists, foresters, researchers and wildlife biologists. DTW, simply requires a user to identify a piece of land by drawing it on a map. Behind the scenes, DTW identifies the soils on that land, the vegetation naturally supported by that soil, and breeding habitats supported by each vegetation type. This information is compiled in a handy report to inform management decisions

Soils are defined by their unique characteristics, providing the foundation of DTW. Soils can be grouped by characteristics that define vegetative types naturally occurring on it. Each group of soils sets up conditions for several vegetative types. Any one of these vegetative types would occur depending on the natural disturbance or deliberate treatment. Each potential vegetative type, in turn provides characteristics suitable as breeding habitat for a number wildlife species.

With this knowledge and adding existing forest stands, a user can compare multiple potential outcomes to inform management strategies that align with landowner objectives.

DTW currently applies to Bird Conservation Region 14 in New Hampshire. Efforts are underway to expand its application to other New England states and has potential to be applied across the United States where soils have been mapped. This presentation will demonstrate the tool and discuss opportunities for expanding it's use beyond NH. (www.DirtTreesWildlife.org)

The influences of fire severity on conifer regeneration in yellow pine and mixed-conifer forests

Zhi Li[1], Hugh D. Safford[2], Mark S. Ashton[1]

[1]Yale School of Forestry and Environmental Studies

[2]USDA-Forest Service, Pacific Southwest Region

As one of the major disturbances in the western United States, fires modify forest composition and structure through long-lasting effects on forest dynamics and forest developmental pathway. In Yellow Pine and Mixed-Conifer Forests in the Sierra Nevada region, the increase in high-severity fires over the previous decades has led to a decrease in conifer regeneration and a shift in the regenerated species. While previous studies have identified postfire shrub density and distance to seed trees as two drivers to these changes, few have compared their influences across various fire severity levels or examined their effects on species competition. To assess the responses of conifer regeneration to postfire biotic consequences, we surveyed 132 plots across six fire severity levels 6 years following the Rim Fire, the largest fire ever recorded in the Sierra Nevada. Across the studied region, 29% of the plots have zero regenerated seedlings, most of which are located in high severity patches (21 out of 38 plots). Across six fire severity levels (from unburned to high severity), the quantity of regenerated seedlings reveals a humped shape, peaking at the moderate severity level (mean = 8,161 stems ha-1). Additionally, the regenerated seedlings are dominated by shade-tolerant white fir (*Abies concolor*) in low-to-moderate and moderate severity patches whereas other species including Ponderosa pine (*Pinus ponderosa*), Jeffery pine (*Pinus jefferii*), incense cedar (*Calocedrus decurrens*), and Douglas-fir (*Pseudotsuga menziesii*) exceed white fir in low and moderate-to-high severity patches. Shrub coverage and distance to seed trees peak in high severity patches, and they reveal a negative relationship with conifer regeneration. As fire severity is projected to increase in concert with prolonged and more arid dry seasons due to the changing climates, these results can provide guidance to promote resilience to the impacts of future fire regimes and develop corresponding management practices.

Airborne hyperspectral data application in health stress detection of ash trees

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Advanced detection of health stress in forests can prompt management responses to mitigate detrimental conditions such as drought and disease. Remote sensing has provided timely and reliable information covering large spatial extents, while new applications in hyperspectral data and imaging spectroscopy have shown potential in early stress detection. We build on previous work by assessing and integrating airborne spectral data, ground spectral data, and health classifications in ash trees of differing emerald ash borer (EAB) infestation scales in aims of accurately detecting health stress.

Airborne scans and ground spectral data were collected within 3 days in late July, 2019 over 3 sites in southern New Hampshire. Ground sampled data were collected in November 2019 and include sampled ash classified on a scale of 1-5 (1=healthy, no major branch morality, 5=dead). The remotely sensed data will be validated through ground measurements and linked to the health classifications. Using methods in machine learning and statistical analysis, we aim to relate reflectance measurements to the health classifications, and ultimately to different intensities of EAB infestation.

Our work seeks to utilize imaging spectroscopy in understanding tree stress signals, particularly in earlier stages to prevent the progression of adverse conditions such as EAB. The applications in this study however, are not limited to forests and have use in a multitude of other fields and scales. One of the greatest advantages of these technologies is the capability provided in monitoring and maintaining consistent health, relevant especially in fluctuating climate. As remote sensing techniques are advanced, the methods in monitoring and understanding forest health can as well.

Adaptive Silviculture for Climate Change: initial structural and compositional outcomes in northern New England northern hardwood forests

Jessica Wikle[1], Anthony D'Amato[1], Chris Woodall[2], and Kevin Evans[3]

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Climate change introduces a suite of unknowns into conditions affecting forest growth, development, and health. Forest managers are in need of strategies for retaining forest integrity in the face of climate change that are regionally relevant and can be incorporated into current silvicultural planning processes. The Adaptive Silviculture for Climate Change network (ASCC) is an international network designed to examine adaptation strategies to address these changes through operational-scale treatments based on local expertise in forest management. ASCC involves three treatments: resistance, resilience, and transition, as well as a no action option, representing a gradient of silvicultural approaches spanning single-tree selection to continuous cover irregular shelterwood methods. The northern hardwoods ASCC site is located at Dartmouth College's Second College Grant in northern NH and has been active since 2017. We examine here initial structural and compositional outcomes of these treatments. Two years post-harvest, there are notable differences in overstory diameter classes among treatments, with the more intensive treatments showing a lower density of trees in mid-diameter ranges, while basal area and overstory species composition remain similar across all treatments. Post-harvest total aboveground biomass in the transition treatment was less than in the control, with no significant differences between the other treatments and control. Measurements of regeneration across the elements created by each treatment (i.e. gaps, thinned matrix, uncut reserve patches, and controls) revealed that sugar maple and beech were the most common across all size classes, despite beech reduction being a component of prescriptions. Large saplings were higher in abundance with decreasing severity of treatment, with uncut plots containing the highest sapling abundance. These results indicate that despite similar density and overstory species composition, the three treatments have led to differences in stand structure that represent different potential pathways and functional responses to future changes in climate and disturbance in these areas.

Ecological Study and Floristics of Alpine Medicinal Plants in West Nepal Himalaya

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Increasing commercial demand for herbal medicine has placed an unprecedented pressure on the populations of rare medicinal plants in the Himalaya due to over-harvesting. This may have undesired consequences for the livelihoods of millions of people dependent on these plant for healthcare, tradition and income. In the mountainous Karnali region of north-west Nepal where the government hopes to industrialise herbal medicine production, it has become increasingly important to assess the ecological status and distribution of the high-value plants. We sampled five sites in community-managed alpine meadows in the Lamteli Community Forest for five of the most socially and economically valuable plants: *Nardostachys jatamasi, Dactylorhiza hatagirea, Neopicrorhiza scrophulariiflora, Fritillaria cirrhosa* and *Trillidium govanianum*. Each site was comprised of a mosaic of habitats, including ericaceous scrub, dry grasslands, alpine steppe and mesic herbaceous meadowland. While *F. cirrhosa* was the most common species, occurring across all sites and most microhabitats, *T. govanianum* was limited to a tiny forest stand in the smallest site. With the exception of *F. cirrhosa*, each of the studied plants had different community assemblages of co-occuring plants. A considerable portion of the co-occurring flora also have pharmacological properties. Taken together, the studied plants and their community assemblages encompass most of the floristic diversity of the alpine meadows. Our results indicate that sustainable management focused on the studied plants could allow for the protection of most of the flora, habitats and human traditions associated with this ecosystem.

Future precipitation interacts with seedbed conditions to alter regeneration response of northeastern seedlings

Pete Clark[1] and Anthony D'Amato[1]

University of Vermont, Rubenstein School for Environment and Natural Resources

Seedling regeneration is a sensitive period and a critical bottleneck for the establishment of future forests, yet less is known about how this process will be impacted by a shifting climate with more extreme events (i.e., severe droughts, intense episodic flooding). Examining this regeneration response under novel future climate is critical for understanding and anticipating changes in forest structure, composition, and dynamics. We tested fourteen currently- and "future-adapted" tree species grown from seed and bare-root seedlings under precipitation manipulation experiments located in situ in newly harvested 0.1ha gaps in a northern hardwood transition forest. Two seedbed treatments (scarified and undisturbed) and four precipitation treatments that included a range of potential daily and seasonal precipitation extremes (average historic, future drought, future episodic, and future inundation) were used to examine seedling establishment and growth. Results show a significant regeneration response to precipitation and an interaction with seedbed treatment, functional traits, and life stage. Germination was significantly affected by seedbed treatment, with a mean increase of 128% (±58) in scarified treatments but survival was moderated between precipitation and seedbed. Survival for large- seeded species such as *Fagus grandifolia*, *Castenea dentata*, and *Quercus rubra* was unaffected by precipitation treatment ($p > 0.05$), whereas small-seeded species such as *Acer* sp., *Betula* sp. *Pinus strobus,* and *Tsuga canadensis* were significantly affected ($p < 0.05$). Survival was most strongly associated with the periodicity of rainfall rather than intense, episodic downpours. While many models report no change in total seasonal accumulation, changes in the hydrologic cycle from intense, heavy episodic rainfall may not compensate for moisture deficits from a shifting periodicity in rainfall leading to higher regeneration failure. Growth and survival change across species life stage, functional traits, and seedbed condition highlight the importance of accounting for species functional characteristics and preferred seedbed conditions when managing for future adaptability in stand composition (assisted migration).

Comparison of attitudes toward roadside vegetation management across an exurban landscape

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University of Connecticut, Department of Natural Resources and the Environment

Storm events such as nor'easters and hurricanes are common to the east coast of the United States and can cause significant impacts, such as power outages, which affect residents and communities. Roadside vegetation management aims to mitigate these power outages, the majority of which are caused by trees falling on power lines during storm events. Connecticut's exurban landscape contains relatively dense human development and a high percentage of forest cover, with housing intermixed among the forested lands. Therefore, maintaining reliable power, while also managing the roadside forest, creates a complex situation for natural resource management, and involves a multitude of stakeholders. My objective was to integrate social and landscape data to better understand resident attitudes towards roadside vegetation management across this exurban landscape. Data from two mail surveys of residents ($n = 1962$), collected from across four different study areas in Connecticut, were used to complete this analysis. For two of three attitudes variables evaluated, comparative analyses revealed differences in attitudes toward vegetation management scores among study areas. Regression analyses revealed that respondents with more favorable attitudes towards vegetation management were more likely to have greater knowledge about trees, utilitarian value orientations related to trees, less concern about roadside aesthetics, and feel more strongly about reducing power outages than preserving trees. Landscape characteristics, such as percent tree cover around a respondent's home, were not significant predictors of attitudes. This research demonstrates both the homogeneity and heterogeneity of perceptions held by residents living within an exurban landscape. Therefore, locational variation and individual characteristics among residents is likely to play a role in support or opposition to management strategies affecting the roadside forest.

Employing qualitative research interviews to understand the programming needs of tree wardens in Massachusetts

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A review of the Extension literature reveals that stakeholder audiences prefer face-to-face interaction with Extension professionals. Research interviewing is a distinctive qualitative data collection method that incorporates technique and skill, aimed at generating knowledge through the context of social practice. To build deeper knowledge regarding urban forestry issues and familiarity with a key programming audience, a multi-year needs assessment was conducted by initiating qualitative stakeholder research interviews with professional urban foresters, known as tree wardens, in the Commonwealth of Massachusetts. In the New England states, tree wardens are the local officials that are responsible for the preservation, maintenance, and stewardship of municipal public trees. A total of fifty interviews were conducted from 2013 – 2016. Interviews typically lasted 15-30 minutes and were conducted on-site (i.e., in a naturalistic manner), at the professional setting of the tree warden. A key objective of this research was to inform the implementation of relevant Extension education programming. Findings indicated that tree wardens are typically housed in a municipal department (often public works or highway), that tree wardens routinely interact with a wide variety of local organizations, including representatives from other municipal departments, agencies and community volunteer associations, and that tree wardens are highly concerned about forest pests as nearly all interviewees (n=49) indicated that they monitor for invasive insects on a regular basis. Findings also indicated that qualitative stakeholder research interviews, among other data-collection methods, are a reliable needs assessment methodology and have widespread applicability for a range of Extension professionals. As a result of this research, a sustained, online urban forestry educational program was developed, and a street tree selection guide (McElhinney & Harper 2019) for tree care professionals and residents living and working in Massachusetts was produced.

Sugar Maple Survey Opportunity

The University of Vermont is conducting a survey to understand the current status of forestry practices used when managing maple forests. The purpose of this study is to conduct a multi-state survey of northeast public and private foresters to understand current status of forest management related to maple sap production. Survey results will be compiled and summarized to help educate interested stakeholders as to best practices. You have been invited to participate given your professional experience in this area. Taking part in this study is voluntary. You may choose to withdraw at any time. If you take part in the survey you will be asked to complete the following online (or print survey). The survey will take approximately 10 minutes to complete. If you would like to request a printed hard copy you can contact Mark Isselhardt at (802) 899-9926 or mark.isselhardt@uvm.edu to have a copy sent to you.

All information collected about you during the course of this study will be stored without any identifiers. You will access the survey by following this link: https://www.surveymonkey.com/r/ZRX7P62

If you have any questions about this study contact Mark Isselhardt at the following phone number (802) 899-9926. If you have questions or concerns about your rights as a research participant, then you may contact the Director of the Research Protections Office at (802) 656-5040.

Posters Selected for the 2020 NESAF Annual Meeting

Long-term effects of frequent burning on tree mortality in New England pine-oak woodlands.

Peter W. Murphy[1], George LoCascio[1], William A. Patterson III[1] and David W. Crary, Jr.[2]

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Coastal Plain Pitch Pine–Oak woodlands of the Northeast have been impacted by wildfire for centuries. Today, controlled burns are used for fuel reduction and habit management. Fire generally favors Pine over Oak; but burns at <5-yr intervals may shift woodlands to savannah and grasslands which are valued as habitat for rare species.

Since 1986 Cape Cod National Seashore and UMass/Amherst scientists have burned twenty-four, 0.16-ha plots in an Oak-Pine stand in Truro, MA. The objective has been to determine the effects of frequency and seasonality of burning on fuel loading and tree cover. Plots were burned in the dormant (April) or growing (July) season at 1-, 2-, 3-, or 4-year intervals. Each of the eight treatments was replicated three times and compared with five controls. 2020 will be the 34th year of treatments.

We compared the effects of different burn intervals during 1986-2019 on tree mortality for Pitch Pine and Oak species. For all treatments and species combined, stem mortality was 61% ; with Control=53%, Black Oak=73%, Pitch Pine=24%, and White Oak=64%. Average mortality rate (# stems/yr) was 13% higher on treated versus control plots, and greatest for Black Oak and White Oak and least for Pitch Pine across all burn seasons and frequencies. Most Oak stems <15 cm dbh were dead within five years. Virtually no in-growth occurred on any plot. Two significant Gypsy Moth defoliations increased Oak mortality on both treatment and control plots.

Our results suggest that frequent burning increases the dominance of Pitch Pine, but tree cover cannot be sustained with short interval burning. Frequent burning reduces wildfire hazard, but could eventually convert woodlands to flammable savannahs. Type conversion would take many decades but may be accelerated by insect-related tree mortality.

Shifts in dynamic characteristics of trees after management

Amanda Bunce[1], John Volin[2], David Miller[1], Mark Rudnicki[3,] Thomas Worthley[1], and Robert Fahey[1]

[1]University of Connecticut
[2]University of Rhode Island
[3]Michigan Technological University

In southern New England, roadside forest presents a risk to utility infrastructure during storm events. It is estimated that 90% of power outages in storms are caused by trees, and cost is in damage, economic losses, and risk to public safety. Climate change projections suggest storm events will become more frequent and severe. Forest, however, is vital to the southern New England socio-ecosystem. Management of roadside forest could mitigate the risk it poses.

Research suggests that trees with a higher sway frequency are less susceptible to wind damage. We monitored the sway motion of forty-one trees in three edge sites in Connecticut for one year before thinning the sites, and for several years after. Residual trees were healthy, well-formed, and expected to respond well to the opening of space around them. In addition, greater wind penetration into the forest was expected to stimulate the increase of sway frequencies. In this preliminary look at the long-term data, we see frequency increasing in the majority of trees. Comparatively, trees in unmanaged control areas experienced lesser and more variable changes. To study the amplitude of sway, we mapped the area reached by a tree as it sways in ten-minute periods. The area of the map, for a given wind condition, appears to be decreasing, suggesting the tree displaces to lesser distances. This roadside forest management method has the potential to increase the wind firmness of residual trees, and if implemented landscape-wide, could significantly mitigate the risk to infrastructure and protect the forest.

Bridging the gap: including cultural science in post-secondary education to enhance learning within the forestry curriculum for Native and non-Native students

tish carr[1] and Darren Ranco[1]

[1]Wabanaki Center, University of Maine, Orono

Can the addition of Cultural Science (aka Traditional Ecological Knowledge, TEK) into western science instruction, not as an add on, but as an integrated component, have a significant impact on Native and non-Native students learning in postsecondary education? Can non-Native youth, once familiar with and understanding Cultural Science (CS) relevance to environmental issues, lead to a better decision-making process? Many federal organizations require collaboration with Federally Recognized Indian Tribes. Would the inclusion of cultural science aid these students in the future and ultimately lead to better decisions by federal agencies?

The majority of the research focused on three forestry courses at the University of Maine School of Forest Resources over a 16- month (4 semesters) period. The short -term research followed the changes in beliefs for Native and non-Native students as it revolved around the relationship of cultural science to western science in these courses. Pre and post assessments as well as student reflections (Native and non-Native) were utilized to determine whether learning was enhanced with the inclusion of CS.

This research initiated because statistics indicate that less than 50 percent of Native Students graduate from high school with single digit attendance in post-secondary education. Research has attributed some of the learning challenges to a lack of inclusion, an educational framework developed by predominately White institutions, and the influence of dominant ideologies related to the teaching and exclusivity of science. Utilizing mixed methods, this study charted the value inclusion of CS enhanced learning for Native and non-Native students to increase learning within academics and future careers utilizing a framework established over the last seven years through the Wabanaki Youth in Science (WaYS) program. Notably, there has been a 15% increase in the number of Native students attending post-secondary education in STEM fields at the University of Maine.

Gender representation in the U.S. Forest Service: trends and implications

Laura S. Kenefic[1a], Christel C. Kern[2], Michael Dockry[3], and Alan Cobo-Lewis[4]

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The U.S. Forest Service manages almost 190 million acres of national forest land and conducts inventory, research, and outreach in support of sustainable public and private forest management nationwide. It is crucial that the demographics of the agency represent those of the American people to ensure that decision making reflects diverse viewpoints and values. Yet women remain under-represented in the Forest Service despite decades of targeted efforts to improve gender balance in the workforce. In fact, the proportion of women employees decreased over the last two decades (from 38 to 34%) across the Forest Service as a whole, despite increases in proportions of women in the Office of the Chief and Business Operations (Human Resources, Safety and Occupational Health, Acquisitions, etc.). This reflects reductions in the proportions of women in more field-oriented branches of the organization: National Forest System, Research and Development, and State and Private Forestry. This has implications for inclusion of women in research and the practice of forestry on federal lands. Results from a survey of scientists in the Northern Research Station of the Research and Development branch of the Forest Service reveal that women there are more likely to experience discrimination than the men they work with, and that this discrimination is most often based on gender. Furthermore, findings show that those who experience discrimination are less likely to feel successful and satisfied in their careers. Although more research is needed, these observations suggest relationships between employee gender, impacts of discrimination, and career satisfaction. Without attention to these aspects of workplace culture, the Forest Service will be limited in realizing its mission related to scientific discovery and public land management.

Invasive species management for the Penobscot Experimental Forest in Bradley, Maine

Michael Redante[1]

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Studies have shown that invasive species dominance can negatively affect native species richness, simplify vegetation structure, disrupt food webs, and delay succession (Chornesky & Randall, 2003). The expansion of invasive plants is facilitated by disturbances such as forest harvesting, road construction, and natural disturbance, all of which can reduce native plant populations and give nonnative invasive species a competitive advantage (Hellmann et al. 2008). The Penobscot Experimental Forest (PEF) is owned by the University of Maine and leased for use by the U.S Forest Service. No inventory, planning, or control of invasive species has been conducted on the PEF until now. My poster highlights my inventory method and design and their role in developing a management plan to control invasive woody species with minimal cost.

Soil chemical properties reflect contrasts in site productivity for white pine at the ends of the spectrum

R. D. Briggs[1], L. Badri, J. Beslity, M. Demcevski, T. Richmond, J. Thiele, Z. Warning and C. Schirmer

[1]SUNY-ESF

White pine (*Pinus strobus*) exhibits a wide range in productivity across sites in New York State. Soil samples were collected from the A and B horizons under white pine stands at two sites representing endpoints for the range of productivity in New York. Average site index of white pine growing on index (80 ft) at Huntington Wildlife Forest (HWF), representing its upper range in NY, contrasts markedly with the corresponding value at Pack Demonstration Forest (PDF), Warrensburg (58 ft). Differences in productivity are reflected in soil quality. Soils at HWF (Skerry and Adirondack series), formed in aeolian loamy material overlying dense sandy till, have greater soil organic matter, cation exchange capacity, and extractable cations compared to the Plainfield series at PDF, formed in excessively drained glacial outwash. This poster presents the magnitude of the effects of site, horizon, and their interaction on soil organic matter, total C, total N, cation exchange capacity, concentrations of extractable K, Ca, Mg, Na and Al for these two contrasting sites.

Investigating the role of structural complexity in mediating post-disturbance primary productivity

Brandon Alveshere[1], Thomas Worthley[1], Jeff Atkins[2], and Robert Fahey[1]

[1]University of Connecticut
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Canopy structural complexity (CSC) is an important functional characteristic of forests that describes variability in physical locations of canopy structural elements. CSC influences numerous physical processes within the canopy, including radiation transfer, wind penetration, and gas diffusion rates, which may affect Net Primary Productivity (NPP) and its response to disturbance. Observational studies suggest NPP response to disturbance is mediated by CSC, but further research is needed to separate the specific effects of pre-disturbance conditions, disturbance severity, and disturbance induced changes in CSC as drivers of NPP response. We addressed this need by designing and implementing a replicated field experiment in which stands similar in initial composition and structure were explicitly manipulated to different levels of CSC. Digital scans were collected from 12 temperate forest plots using a terrestrial laser scanner (TLS), and then combined into point clouds representing baseline forest structure. Point clouds were manipulated to alter CSC based on canopy rugosity, which was calculated for pre- and post-manipulation point clouds using the *forestr* package in R. Plots were then managed according to the digital templates to increase, decrease, or maintain CSC through removal of approximately 20% of the initial plot basal area. Measurements of bole diameter are collected on an annual basis to determine wood increment, and results will be combined with region- and species-specific allometric equations to evaluate the role of CSC in determining NPP response to forest disturbance. Ongoing monitoring will provide insights into CSC-disturbance-productivity relationships useful in silviculture and forest ecosystem model parameterization.

Substituting low value, local species for white oak in cask production

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[2]University of New Hampshire College of Life Sciences and Agriculture

The cask market reflects a traditional wine and whisky industry. Historically, casks are crafted from white oak, but other species can and have been substituted in production (e.g. acacia, cherry).

This 2-year project explores the feasibility of substituting historically low value native New Hampshire species for white oak in cask production. The results of the project will help us better understand some considerations of using local wood to meet local-regional cask market demand.

This project has a 1) beer brewing research component evaluating taste profiles of toasted wood from select native tree species, 2) market research component assessing local demand for non-white oak wood species in alcoholic beverage production, and 3) cask manufacturing component exploring cask manufacturing potential and barriers.

A 2019 NESAF poster provided a project overview. This poster will provide an update on the project activities and results to date.

Good silviculture will increase productivity and value over time: a 72-year history in a Northern hardwood forest.

Kevin Evans[1]

[1]Dartmouth College Woodlands

The Second College Grant, owned by Dartmouth College, is a 27,000-acre property in Northern New Hampshire. The temperate hardwood forest consists of approximately 50 percent hardwood forest with 30 percent in mixed hardwood forest.

Inventories have been performed on the forest since 1947. Cruises were completed in 1947, 1967. 1986, 1998 and 2018. In 1998 we designed the inventory to utilize log descriptions based on diameter sizes and clear faces rather than current commercial specifications. The 1998, and 2018 cruise resulted in a 15 by 10 chain grid over the entire property (1803 plots) for easy replication every 20 years.

Prior to 1986, historic treatments in the northern hardwood type at the Grant included removal of large volumes of mature trees using diameter limit cutting and saw log only harvest. This is evidenced by a reduction in hardwood saw log volume in 1947 at 77 million feet to 3 million feet in 1967, while pulp-wood grew from 77,000 cords to 188,000 cords. This trend continued thru 1987, although most cutting was diameter limit treatments (14 inches and up) but were at a low enough number to start to increase growth back in saw logs (16 million feet) and pulpwood increased to 330,000 cords. Thus, indicating that we were still cutting saw logs and leaving pulp behind.

In 1986 the college hired a fulltime forester and wrote a new management plan. That plan put forward a mandate to reduce the volume of hardwood pulp and increase the saw log volumes. Most of the cutting was designed to improve the percentage of hardwood saw log volumes all the while reducing pulp volumes. The stands would be marked to a basal area of 75 to 85 square feet and retain as many saw logs as possible with a return interval of 20 years. Most cuts were 80-85 percent single and group selection cuts (openings no larger than 1/10 acre) with some small (average size 2 acres) clear cuts.

Inventory data from the 1998 and 2018 cruise show us how successful these treatments have been at increasing our hardwood saw log volume and stabilizing, even reducing our hardwood pulpwood volume. Average volume from 18.6 to 20.6 with an increase of 19% in hardwood saw logs.

This poster would present our method of cutting along with volumes to show how the management of the property contributed to higher per acre value over time.

Support for this project is provided by New England Society of American Forests and National Science Foundation I-Corps program.

Plant your way out of climate change? Examining initial outcomes of climate-adapted plantings for adapting northern forests to global change

Peter Clark[1], Anthony D'Amato[1], Chris Woodall[2], and Kevin Evans[3]

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[2]USDA Forest Service, Northern Research Station
[3]Dartmouth College Woodlands

Climate-adaptation strategies are needed in the face global change. While strategies to mitigate impacts from climate change and increase forest resilience have been broadly proposed, there are nascent formal empirical evaluations that indicate what locally-calibrated adaptation measures might be most effective. Specifically, there is little examination of the challenges of operationalizing transitional silvicultural strategies such as adaptive plantings (i.e., assisted migration) or their effectiveness in the Northeastern US. Here we present on the initial outcomes of climate-adapted plantings from regional adaptation experiments including the New England Adaptive Silviculture for Climate Change (ASCC) installation at the Second College Grant in northern New Hampshire. Over 5,000 seedlings from nine "future-adapted" tree species were planted in 0.1 and 0.4 ha harvest gaps, selected from a suite of functional traits and forestry assisted migration classes (i.e., native population enrichment vs. range expansion). Initial two-year mean survival across all species was 62% with weak significant differences in mortality rates between harvest treatments ($p = 0.05$), although survival rank orders were consistent between years, with *Quercus rubra* (83% survival) > *Picea rubens* > *Pinus strobus* > *Carya cordiformis* > *Betula lenta* > *Tsuga canadensis* > *Castanea dentata* > *Populus grandidentata* >*Prunus serotina* (43% survival). Initial mortality was highest in smaller root collar diameter size classes (50% survival <4mm diameter) compared to larger size classes (80% survival >6mm diameter), although significantly more dieback was observed in larger size classes ($p < 0.05$), suggesting a tradeoff between growth and survival. Compared to native enrichment plantings, species planted outside range limits had significantly higher mortality (9% ±9 vs. 17% ±11, $p < 0.000$ respectively) and lowest growth (height RGR: 0.36 ±0.18 cm cm^{-1} yr^{1} vs. 0.05 ±0.13 cm cm^{-1} yr^{1}, $p < 0.000$ respectively) suggesting maladaptation. The implications of this research may refine future species distribution models and provide tangible information for managers of northern forests seeking to maintain ecosystem function during a time of uncertain future global conditions.

Field manual for managing eastern white pine health in New England

William Livingston[1], Isabel Munck[2], Kyle Lombard[3], Aaron Bergdahl[4], Laura S. Kenefic[2], Barbara Schultz[5], Robert S. Seymour[1]

[1]University of Maine, Orono
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[3]NH Division of Forests & Lands
[4]Maine Forest Service
[5]Vermont Department of Forests, Parks, & Recreation

This manual provides basic information for identifying and evaluating important health problems of eastern white pine in New England. The health problems include:

- White pine weevil
- White pine blister rust
- Caliciopsis canker
- White pine bast scale
- White pine needle damage
- Red rot or Red-ring rot

In addition to providing descriptions of symptoms, signs, and risk factors, recommendations for white pine silviculture are described for managing stands for low densities and crop trees. Printed copies will be available. A pdf file can be downloaded at https://digitalcommons.library.umaine.edu/aes_miscpubs/24/

Spatial and structural characteristics of old-growth red spruce-northern hardwood mixedwood forests in New York and New Hampshire

Jordan Luff[1], Anthony D'Amato[1], Shawn Fraver[2], and Laura Kenefic[3]

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[2]School of Forest Resources, University of Maine
[3]USDA Forest Service Northern Research Station, Bradley, ME

Historical selective removal of red spruce, along with a range of biotic and abiotic stressors, have significantly impacted the composition and structure of mixedwood stands in the transition zone between spruce-fir and northern hardwoods forests. Key knowledge gaps regarding the spatiotemporal recruitment dynamics of these forests, particularly the red spruce component, limits our ability to develop effective silvicultural strategies for restoring this regionally important forest system. The objective of this work was to reconstruct the recruitment dynamics of mixedwood forests in order to identify critical recruitment limitations of red spruce and to inform silvicultural recommendations to restore and maintain this species. We collected structural, spatial, and dendroecological data from 0.25-ha plots at two old-growth mixedwood sites: 6 plots established in Adirondack Park and 3 plots established along an elevational gradient in White Mountain National Forest. A broad range of structural conditions characterized these systems, including reverse-J shaped diameter distributions and coarse woody material volumes ranging from 47.6–146.3 m^3/ha in New York and from 57.7–163.3 m^3/ha in New Hampshire. The dominance of red spruce, as quantified by importance values (IV), varied within and across sites with values ranging from 14.7–26.8% across relatively uniform elevation in New York, and increasing from 16.6% to 56.7% with increasing altitude and slope in New Hampshire. Reconstructions of red spruce recruitment patterns demonstrated consistent, decadal recruitment over the past three centuries, with the majority of living stems recruiting approximately 60–90 years ago. Point pattern analysis of mapped stems at both sites revealed spatially random arrangements of pooled living and dead stems by species. Ongoing analysis will include reconstructions of canopy disturbance histories to further elucidate natural development pathways and models for developing ecological silvicultural systems for these forests.

Impacts of an aging forest and lack of regeneration on nesting seabirds on a Maine Island

Lundy Stowe[1] and Hale Morrell[1]

[1]College of the Atlantic Island Research Center, Bar Harbor, ME

As forests change over time, their suitability for species occupying that environment will change as well. This research sought to predict the impact of a marked lack of forest regeneration on a species of concern in Maine: The Leach's Storm-Petrel (*Oceanodroma leucorhoa*). The study took place on Great Duck Island (GDI); a 91-hectare island located 15 km south of Mount Desert Island, Maine, USA. During the summer of 2019, we conducted the first official forest survey of GDI using the National Park Service's Northeastern Temperate Network (NETN) protocols. The objective of the survey was to assess forest health and resilience. The forest is made up predominantly of Spruce (*Picea spp.*), with scattered Balsam Fir (*Abies balsamea*), Birch (*Betula spp.*), and American Mountain Ash (*Sorbus americana*). Additionally, we recorded the abundance of Petrel burrows within each plot and mapped their locations. GDI is home to the largest Leach's Storm-Petrel colony in the eastern US, with approximately 90% of the known breeding petrels in the lower 48 states. The bird's nest in burrows under roots and downed woody debris (of predominantly spruce) in the forest while they raise their young from May to November. The majority of Petrels nest within 20m of the forest edge. Data analysis suggests a lack of spruce forest regeneration on the island which could negatively impact the Leach's Storm-Petrel population. As the forest disappears, prime petrel habitat will be eliminated. Our results provide both a window into present forest conditions and a potential timeline of forest change. This research will facilitate The Nature Conservancy's and Maine's Fish and Wildlife Department's future management decisions for this Island. Furthermore, the project demonstrates the value of natural history in the face of changes in land use and climate in the 21st century.

Mortality of oak trees following drought and repeated defoliation

Jeffrey S. Ward[1] and Joseph P. Barsky[1]

[1]Connecticut Agricultural Experiment Station

Multi-year defoliations of oak-hickory forests in southern New England have been uncommon for the last three decades, as populations of the primary defoliator, gypsy moth (*Lymantria dispar*), collapsed in 1989 with the unanticipated appearance of gypsy moth fungus (*Entomophaga maimaiga*). Wet springs typically activate the fungal spores and limit defoliation events to single-year outbreaks. However, in 2015, a multi-year drought cycle began throughout Southern New England accompanied by repeated annual episodes of defoliation by gypsy moth caterpillars, a combination not seen since the 1960s. This combination of biotic and abiotic stressors has led to high mortality rates among oak trees throughout the region.

From 2018-2019 we examined 3046 trees on 27 forest research sites across Connecticut and Rhode Island to assess the extent of oak mortality. The study sites had been monitored since at least 2004, 11 years prior to the latest outbreaks, and contained either managed or unmanaged areas. Mortality rates are per three years to directly compare pre- and post-defoliation levels. Pre-defoliation stand level oak mortality averaged 2% and did not differ between stands that had been managed and unmanaged, nor among stands with subsequent no-low, moderate (single year or less than 50% defoliation), and severe defoliations (two or more years of 50% defoliation). Post-defoliation mortality did not differ between managed and unmanaged stands, but was much higher in severely defoliated stands (32%) than in stands with moderate (4%) or low-no defoliation (1%). Logistic regression indicated management had no effect on individual tree mortality, and unlike most earlier studies, mortality did not differ by canopy position.

Foresters need to prepare now for the desired future conditions of the properties they manage while also anticipating that oaks that had survived earlier multi-year defoliations may have high mortality rates in future multi-year events, possibly because trees are older.

Impacts of Asian Longhorned Beetle and associated eradication efforts on forest composition and structure

Olivia Box[1], Anthony D'Amato[1], and Kevin Dodds[2]

[1]University of Vermont Rubenstein School of Environment and Natural Resources
[2]United States Forest Service

Asian longhorned beetle, *Anoplophora glabripennis* (ALB), is an invasive forest pest that entered southern New England in 2008. Eradication efforts required the removal of all host trees, primarily *Acer rubrum* and *A. saccharum*, from invaded areas. Three primary treatments were used to address ALB: i) removal of all host species, ii) removal of all host species and stump removal, and iii) removal of all host species and herbicide treatment. These treatments were central to ALB eradication efforts in Worcester County, MA but it is unclear how this disturbance affected forest composition and structure and how these areas will progress over time following various management schemes. In 2018, sites treated for ALB were sampled following USFS Forest Health Monitoring protocols with the herbaceous layer, tree seedlings and saplings, coarse woody material, and overstory trees quantified in each stand. Red maple was the most abundant seedling and sapling overall but there was variation across forest type and treatment type. Invasive species represented a small component of the herbaceous layer and were highest in sites treated with herbicide. To provide broader context on the impacts of ALB across the northeastern US, ALB invaded sites in Clermont county, Ohio were sampled in 2019 to construct a comparison of forests post-eradication management. Comparisons between sites from the Massachusetts and Ohio quarantines suggest important differences in potential outcomes of ALB management. In particular, observational data from Ohio showed that there was a 91% increase in invasive species in the herbaceous layer compared to Worcester sites. These findings are particularly relevant as ALB invasions continue to be high-risk in areas across the United States, particularly in areas with host species and ports.

Building and retaining gender diversity at UMaine with SWIFT

Mindy Crandall[1], Kara Costanza[2], Jenna Zukswert[3], Laura Kenefic[4], Jessica Leahy[3], and Maggie Mansfield[3]
[1]Oregon State University
[2]University of New Brunswick
[3]University of Maine
[4]USDA Forest Service

Many employers, from private companies to the federal government, value a diverse and representative workforce, and would like to have the largest possible pool of skilled labor from which to select. University education represents a critical point along the forestry pipeline in which women might leave the profession. Yet engaging women to study forestry and ensuring that they complete school eager to join the workforce remains a problem. Groups that foster support and validation for women's experiences in the education portion of the training-to-workforce pipeline have the potential to help recruit and retain women while also boosting their participation in the forestry profession. Concerned with the low number of women graduating with bachelor's degrees in forestry from the University of Maine's School of Forest Resources, a group of faculty and students formed Supporting Women in Forestry Today (SWIFT) in 2016. An organization guided by literature on improving gender diversity in the workplace, SWIFT has taken an adaptive and evidence-based approach while hosting events throughout each academic year. Participant observation and surveys have guided both the adaptations of the group over time as well as provided key lessons learned for other groups to consider. This poster presents results of a case study of SWIFT, including participant observation and surveys collected in 2016 and 2019. Results indicate that SWIFT has been effective at helping participants increase awareness of gender-related issues, gain strategies, and develop connections, and this poster and accompanying paper forthcoming in the Journal of Forestry highlight these findings and key lessons learned over the last three years. Though challenges still exist for women in forestry, our results suggests that SWIFT is an effective model that could be used elsewhere to support the retention of women in the forestry profession.

The role of timing in forest disturbance interactions

Danielle Tanzer[1], Robert Bagchi[1], Audrey Barker Plotkin[2], James Hurd[1], James Mickley[1], Keenan J. Rivers[1], Chandi Witharana[1], and Robert T. Fahey[1]

[1] University of Connecticut
[2]Harvard Forest/University of Massachusetts Amherst

Climate change has the potential to increase the frequency and severity of forest disturbances, likely resulting in an increase in disturbance interactions. These interactions can intensify disturbance effects on factors such as tree mortality, stand growth, and future forest resiliency. More research is needed to understand the influence of temporal patterns on forest disturbance outcomes. This study assesses how timing and severity of the interaction between recent drought and gypsy moth defoliation in southern New England influenced tree mortality and stand growth. We collected tree cores from over 900 trees across 30 temperate forest sites in eastern Connecticut and central Massachusetts, where oaks are the primary host species of gypsy moths. Samples include gypsy moth preferred and non-preferred host species and both live and dead trees. Using dendrochronological analysis, we are analyzing the patterns of disturbance and resulting effects on growth and mortality. The analysis considers severity of both disturbances and temporal patterns of defoliation including number of years a site was defoliated and amount of time between the start of drought to the onset of defoliation. Preliminary results show overall and oak-specific mortality rates vary with patterns of defoliation ($p = 0.024$ and $p = 0.002$, respectively) with greater mortality rates in sites experiencing multiple years of defoliation. By studying this disturbance interaction, we aim to increase our understanding of compounding disturbances and shape disturbance monitoring programs.

Bat Activity and Insect Abundance in Regenerating Forest Stands Over a 12-Year Period

Daniel Wright[1], Chadwick Rittenhouse[1], Katherine Moran[2], Thomas Worthley[1], and Tracy Rittenhouse[1].

[1] Department of Natural Resources and the Environment, Wildlife and Fisheries Conservation Center, University of Connecticut,
[2]Connecticut Department of Energy and Environmental Protection, CT

Harvesting trees to increase landscape heterogeneity is commonly used to assist wildlife populations that use young successional habitat. The morphological characteristics of insectivorous bat species allow for a range in foraging strategies in regenerating forest stands. Understanding how the activity of bats changes as forests transition in successional stage can improve efficiency of forest management actions designed to benefit bat populations. We measured activity of bats and their insect prey in forest stands regenerating from harvests with treatment dates ranging from 2007-2018. We selected 27 sites, which consisted of a regenerating stand and paired control stand in adjacent interior forest. Acoustic monitoring of bats was conducted from 5 May – 9 September, 2019, with a break from 1 July – 14 July so that monitoring clearly fell into pre- or post-volant timeframes. We monitored bat activity at each site for a minimum of two consecutive nights, and trapped insects on the last night of monitoring. Insect samples were collected using a blacklight UV funnel trap and identified to order. We quantified insects using dry weight biomass as a metric. Across all bat species identified, we found bat activity was significantly higher in regenerating stands versus control stands. Age of the regenerating stand significantly affected *Eptesicus fuscus* activity, which was higher in stands < 8 years old, reaching peak activity at 6 years post-harvest. A strong relationship between insect abundance and bat activity was not apparent, however an additional year of sampling may enhance our ability to detect a pattern. This study demonstrates that there is a relationship between bat activity and time since harvest in a 12-year period, and that bat activity is higher in regenerating stands within a heterogenous forest.

Determining the indicator value of understory plant species using niche modeling techniques

Nathan Roe[1], Mark Ducey[1], Robert A. Colter[2], Olivia L. Fraser[2]

[1]University of New Hampshire
[2]White Mountain National Forest

Understory species have often been proposed as indicators of environmental conditions for forest management and conservation. However, understory species' niches remain poorly understood, limiting our ability to use them as indicator species. Our study aims to improve niche modeling for understory species to determine how they can be used more effectively as environmental indicators. To accomplish this, we sampled 99 plots across the White Mountain National Forest. Species abundance data was collected for 214 vascular plant species and soils were analyzed by genetic horizon. A lidar-derived digital elevation model for the area was used to calculate predictor variables related to topography, including topographic wetness index as well as variables such as elevation and aspect. This data was used in multivariate statistical analyses like non-metric multidimensional scaling to determine what environmental variables drive forest composition. Preliminary results show C horizon chemical variables explain the most variation in forest composition despite our sampling being disproportionately represented by herbaceous species rooted above the C horizon. In addition, we developed ecological niche models to determine the relationship between individual species and suites of environmental variables. Ecological niche models provide a framework for using species as indicators of environmental conditions as well as developing species distribution models. We examined commonly recognized indicator species in New England, such as red baneberry (*Actaea rubra)*, as well as other species not currently used as indicators to determine their indicator value. In addition, topographic metrics were examined as predictors of community composition and diversity. These metrics are calculable anywhere with aerial lidar coverage, and therefore have the potential to create species distribution models across most of the White Mountain National Forest. Results from this study will improve our understanding of what environmental variables drive forest composition and how understory species can be used to indicate those conditions.

We would like to recognize the following sponsors and exhibitors who pledged their generous support for the 2020 NESAF Annual Winter Meeting, and we look forward to seeing them next year!

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Ethics Review ~ Lloyd Irland

SAF has been running a series of articles on professional ethics since last January, and for the convenience of NESAF members, they are listed below. Please read these thoughtfully as you get time, and even better, write up a Response to send in to the *J of F* if they stimulate some challenges to points made, or further thought on your part. Even better, could you contribute a shot case study like the one by Aaron Gilland that is cited at the end of this list? I hope you will do so. I am happy to offer editorial tips to anyone interested.

Journal of Forestry

Ethics in SAF: A Preamble
David S Lewis

Journal of Forestry, Volume 117, Issue 1, 10 January 2019, Pages 72, https://doi.org/10.1093/jofore/fvy063

SAF's Committee on Ethics: An Overview of Processes and Procedures
Danielle Watson; Dayne Barron

Journal of Forestry, Volume 117, Issue 1, 10 January 2019, Pages 73–74, https://doi.org/10.1093/jofore/fvy068

How Has the Rewritten Code of Ethics Held Up?
Samuel J Radcliffe

Journal of Forestry, Volume 117, Issue 1, 10 January 2019, Pages 75–76, https://doi.org/10.1093/jofore/fvy066

Professional Credibility: Is Compliance Enough?
John Barnwell

Journal of Forestry, Volume 117, Issue 1, 10 January 2019, Pages 77, https://doi.org/10.1093/jofore/fvy062

Scientific Ethics: Roots of the Forestry Profession
Richard W Guldin, Dr.

Journal of Forestry, Volume 117, Issue 1, 10 January 2019, Pages 78–79, https://doi.org/10.1093/jofore/fvy064

MARCH 2019

Response to Radcliffe: How Has the Rewritten Code of Ethics Held Up?
Rene Noel

Journal of Forestry, Volume 117, Issue 2, 8 March 2019, Pages 178–179, https://doi.org/10.1093/jofore/fvy084

Forestry: Profession, Professional, Professionalism
James E Coufal

Journal of Forestry, Volume 117, Issue 2, 8 March 2019, Pages 180–181, https://doi.org/10.1093/jofore/fvy082

Professionalism: A Response to Jim Coufal's Essay
Ellie Lathrop

Journal of Forestry, Volume 117, Issue 2, 8 March 2019, Pages 182, https://doi.org/10.1093/jofore/fvy080

ACF Code of Ethics—Review Process
E Glen Worrell, Jr., ACF

Journal of Forestry, Volume 117, Issue 2, 8 March 2019, Pages 183, https://doi.org/10.1093/jofore/fvy083

July issue:

Vol 117, issue 4

Professional codes of ethics: lessons learned

Richard Burgess, II, Texas Tech

Ethics Codes of Professional Societies: A Quick Look
Lloyd C Irland

Journal of Forestry, https://doi.org/10.1093/jofore/fvz034

September

Do No Harm—Seeking an Ethical Balance
Carmine L Angeloni

Journal of Forestry, Volume 117, Issue 5, September 2019, Pages 525–527, https://doi.org/10.1093/jofore/fvz043

November

Ethical reasoning for Natural Resource professionals.

Chelsea Batavia and Michael Nelson, *Journal of Forestry*, Volume 117, Issue 6, Nov. 2019. Pages 632-637.
https://doi:10.1093/jofore/fvz055

FYI: Forestry Source

Lloyd C. Irland, 2019. Some sources of ethical guidance. *Forestry Source*, Jan. p. 15.

Aaron Gilland, Ethics in wood procurement. *Forestry Source*, August. p. 11, 15.

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Virtual Business Meeting

NESAF Members –

The decision for cancelling the Annual Meeting was an easy one. However, with it we have had to think through some administrative items that need to be addressed to keep the business side of NESAF operating relatively smoothly. Our Bylaws require an annual Business Meeting with at least 5% of the membership in attendance.

In order to accomplish this in a timely manner please plan on attending our "Virtual" Business Meeting on Thursday April 30th at 1p.m.

You may call in via phone only or join with video capabilities.
Please check your email for information on how to join the Zoom Conference Call!

Join from PC, Mac, iOS or Android: Or Telephone : 203-432-9666

The draft agenda is short at this point and is anticipated to include:
1) Review of Minutes 2019 Meeting
2) Review and Approval of 2020 NESAF Budget
3) Introduction and discussion of Bylaw Revisions
4) Other

Thanks,
Jake Metzler

Maine Division News ~ Anthony Filauro

Drones

The Maine Forest Service and the Maine Bureau of Parks and Lands use drones to help manage Maine's forestlands. The technology serves to reduce operating costs, save time, improve data collection and environmental monitoring, and helps serve the public. Grants have allowed for the purchase of five drones in recent years, with plans to purchase more units in the near future. Coupled with GPS technology, the units can enhance forest reconnaissance work and public safety.

Fall MESAF Meeting

The 2020 fall MESAF meeting is scheduled for Tuesday, October 13, at Wells Conference Center, University of Maine. The program agenda, which will focus on Carbon and Climate Change, is currently being developed. Please save the date on your calendar. Information about the meeting will be issued during the coming months and will also be available at the MESAF website.

Mining in Maine

The Canadian mining company, Wolfden Mt. Chase LLC, has requested that the Land Use Planning Commission rezone 197 acres on T6 R6 WELS, north of Mt. Chase, to allow for a mining operation on Picket Mountain. This request will be reviewed by the Commission and is subject to a public hearing. Further progress on the request will be governed by different state and federal agencies to ensure compliance with environmental regulations.

Project Learning Tree Teachers' Tours

Project Learning Tree will host two teachers' tours in 2020. During July 14-17, a tour will be held at the Birches Resort on Moosehead Lake near Rockwood. A second tour will be held July 28-31, on Millinocket Lake near Millinocket. The tours allow individuals in the education profession to interact with forestry professionals to learn about forest management and Maine's forest resources. MESAF members are encouraged to participate in the tours and help educate teachers and students about Maine's forestlands. Information about the tours is available from cj@mainetree.org or call 207-621-9872

Service to MESAF

MESAF is asking for volunteers to serve on the Executive Committee in 2021, in the position of Vice-Chair or Member-At-Large. This is an annual request for volunteers to serve. The Vice-Chair is a learning position that leads toward assuming the Chair's position the following year. A Member-At-Large serves for one year and helps with activities of the Executive Committee and with organizing one summer field tour.

Volunteers are also needed to serve in more long-term positions beginning in 2021: Treasurer and Division Manager. Dr. Bill Livingston currently serves as treasurer. Laura Audibert currently serves as Division Manager. Dr. Livingston and Ms. Audibert will work with their replacements to assure a smooth transition and to offer instruction about the work involved.

MESAF members are encouraged to accept leadership roles so as to improve their management skills, interact with their peers, perform a service to MESAF and to advance the profession. Questions about volunteering for service to MESAF can be addressed to the current chair, Carol Redelsheimer, at redelsheimerc@safnet.org

Summer Field Tours

Three field tours are being offered in 2020. **On July 23**, a field tour will be conducted near Bangor in vicinity of Rt.15 that will address the control of invasive plant species. The one-day tour will start with an indoor session that will focus on several plant species; the field component of the tour will address the control of giant hogweed. **On August 13**, a tour will be conducted in the Jackman area, on lands of Frontier Forest LLC that will address the issue of sugar maple decline. **On September 4**, a tour will be conducted in the Moosehead Lake area, in cooperation with IF&W that will focus on deer yard management.

Information about the tours is tentative prior to this publication of the Quarterly; however more information will be sent to MESAF members in June and information will also be available at the MESAF website www.mesaf.org

Ticks Abound

The Maine Center for Disease Control indicates there were more than 2,000 cases of Lyme disease reported in Maine in 2019. In addition to Lyme disease, there were 685 cases reported of Anaplasmosis and 138 cases of Babesosis. Both of these diseases cause significant medical problems. Precautions should be taken to repel ticks, any time ambient temperature is above 40 F.

In late 2019, Congress passed a law that was authored by Senator Susan Collins of Maine and Senator Tina Smith of Minnesota to fund more research, diagnostics, prevention and treatment of tick borne diseases. The U.S. Department of Health and Human Services will be developing a national strategy to deal with tick borne diseases, which may include a vaccine to control Lyme disease.

Green Mountain Division News ~ Ginger Anderson

Division Winter Meeting

The GMD Winter Meeting was held at Vermont Technical College in Randolph on February 14. About 75 people attended to learn about Bird-Friendly Sugarbushes, White Pine Health, Roadside Ash Management and Biomass fuel supply policy.

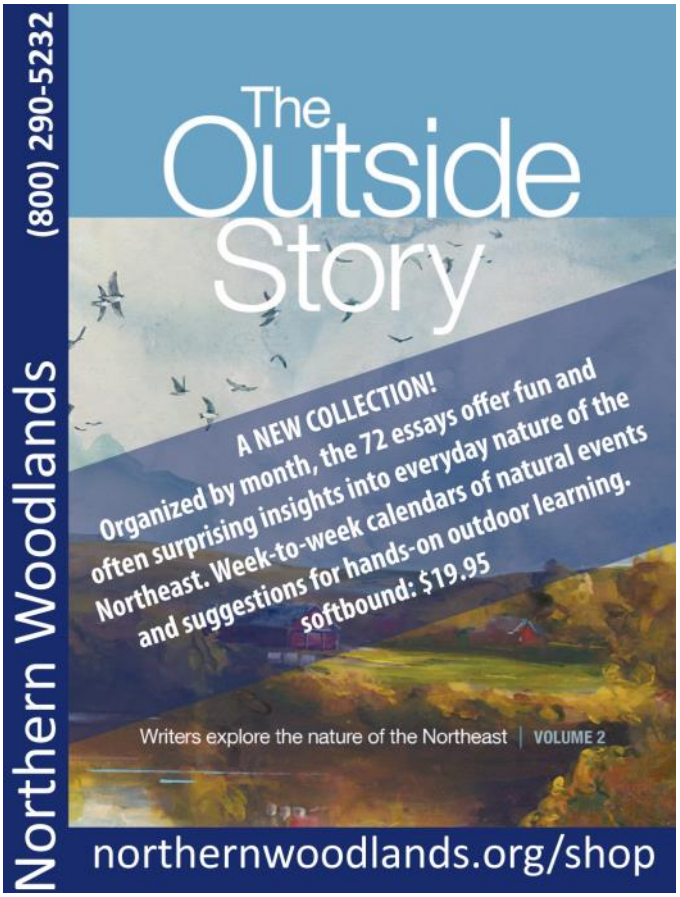
Going and Comings (*Gary Salmon*)

An interesting phenomenon occurred at the GMD Winter Meeting. Giving talks on white pine and introducing a new Field Manual for managing New England white pine health were Barb Schultz and Savannah Ferreira, both members of the Vermont Department of Forests, Parks, and Recreation and both SAF members. For Barb it was her last speaking engagement with the department as she will be retiring following a 40 year career seeking out "what's wrong with our trees". She retires as the department's Forest Health Program Manager but perhaps is best known for "Barb's Meeting", the annual get together for foresters interested in gaining the latest information on forest health related problems.

For Savanah it was her first official speaking engagement as she joins the department as a Forest Health Specialist and replaces Dr. Trish Hansen (retired last fall) in the forest biology lab located at Vermont Tech. Equipped with degrees from Maine and West Virginia, Savannah is now the "go to" person for identifying all unusual pests one just can't seem to identify "in-situ".

Forest Health Meeting Cancelled

The 2020 Forest Health Information Meeting scheduled for April 9, 2020 has been cancelled. The popular gathering, which has outgrown several venues, was scheduled for VT Technical College. It is expected to resume next year.



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Granite State Division News ~ Stephen Eisenhaure

Annual Meeting (*from Matt Chan)*

The Granite State Division of SAF held its annual meeting on February 20th in Concord with 162 foresters, natural resource professionals and forestry students in attendance. One of the highlights of the meeting is always the awards ceremony. Brad Simpkins, the New Hampshire State Forester, presented the Forestry Student of the Year awards. This award is given annually to students enrolled in the forestry programs at the University of New Hampshire. These students are the best of the best, representing the rising stars in our profession. The award recipients for 2020 are: Nathan Blanchard (Thompson School - Forest Technology program), Tanner Frost (baccalaureate program) and Heather Grybas (graduate program). In addition to this honor, each student received a $1000 scholarship. Don Quigley presented the Outstanding Forester Award given each year "*in recognition of outstanding service to the profession of Forestry in the state of New Hampshire*". This year's recipient is Matt Chagnon, recently retired Professor of Forest Technology from the Thompson School of Applied Science.

New Hampshire Directory of Sawmills and Lumber Wholesalers

The updated Directory of Sawmills & Lumber Wholesalers lists New Hampshire businesses that sell primary forest products and identifies the products available including types and species of lumber, chips, shavings, and sawdust, among others. The directory is a resource for local, regional, and international customers. Andy Fast, Forest Industry State Specialist, emphasizes that this resource "*highlights the importance of our state's sawmills and lumber wholesalers*." More details here.

In-State Happenings and Publications

(from Steve Roberge)

April 7, 2020 - Forest Carbon workshop offered by Granite State Division of the Society of American Foresters, UNH Cooperative Extension, the Society for the Protection of NH Forests, the NH Division of Forests and Lands, and the Spatial Informatics Group.

April 28, 2020 - 22nd Black Fly Breakfast

May 15, 2020 - 30th Annual Coos Foresters' Mud Season Breakfast

Forest Health: Hemlock Woolly Adelgid winter kill down and EAB and Hemlock scale populations are up

(Jen Weimer, Forest Health Specialist, NH Division of Forests & Lands)

Hemlock Woolly Adelgid populations in NH are rebounding due to the mild winter. Surveys for 2020 were done in 19 towns that border infested areas in NH. Towns surveyed included Dunbarton, Hooksett, Milton, Campton, Ashland, Claremont, Unity, Acworth, Lempster, Goshen, Newbury, Sutton, Wilmot, Andover, Franklin, Nelson, Stoddard, Marlow, and Pittsfield. Infestations were found in Dunbarton, Hooksett, Nelson, and Stoddard.

Elongate Hemlock Scale surveys for 2020 were done in conjunction with HWA surveys. Towns surveyed included Dunbarton, Hooksett, Milton, Campton, Ashland, Claremont, Unity, Acworth, Lempster, Goshen, Newbury, Sutton, Wilmot, Andover, Franklin, Nelson, Stoddard, Marlow, and Pittsfield. New infestations were detected in Dunbarton and Hooksett.

From Bill Davidson, Forest Health Specialist and Kyle Lombard, Forest Health Program Coordinator NH Division of Forests and Lands

Since the beginning of the year, emerald ash borer has been detected in nine new towns: Bradford, Dover, Langdon, Lee, Madbury, Merrimack, Middleton, Ossipee, and Plainfield. These detections bring the total number of infested towns in the state to 100. Infestations in the five southernmost counties (Rockingham, Hillsborough, Merrimack, Belknap, and Strafford) are now well established and widespread. Towns in the core of the infested area are starting to experience high ash mortality as symptoms of heavy emerald ash borer infestation are becoming widespread throughout the region. Although pockets of healthy ash trees can be found within these counties, landowners and forest managers in this area should move forward under the assumption that EAB is present. Even forests that are currently symptom-free will start experiencing dieback in the next year or two, followed shortly by heavy ash mortality. A full list of recommendations for anyone managing landscape and forested ash trees can be found at www.nhbugs.org. While EAB has been detected in Cheshire, Sullivan, Grafton, and Carroll counties, we are only seeing the early signs of infestation and no mortality has been observed at this time. The vast majority of these counties are still asymptomatic and could remain so for several years before EAB arrives, giving landowners more time to prepare by formulating a plan for the arrival of EAB.

In NH, it seems EAB population spread is largely happening through natural insect flight rather than accidental movement of infested ash logs or firewood. Attention to the BMP's related to transporting ash material will continue to help slow the spread.

Massachusetts Chapter News ~ Mike Fleming

Two Bills in Mass Legislature everyone should be following:

H 897 (Whipps Bill)

(https://malegislature.gov/Bills/191/H897): "*An Act relative to forest protection*"

H 853 (Provost Bill)

(https://malegislature.gov/Bills/191/H853): "*An Act to assure the attainment of greenhouse gas emissions goals in the alternative portfolio standard*"

A public hearing was held on the Whipps Bill back in September, but to-date it does not appear as though it will move forward (headed to "Study Committee"?). The presenter/primary sponsor of the Provost Bill has announced she will not seek re-election.

MA Chapter SAF and NESAF EC sent letters to the Massachusetts State Legislature (*see Jan 2020 NESAF News Quarterly*).

Update (3/9/2020): A Commission would be created by a new draft bill **H 4415**

(https://malegislature.gov/Bills/191/H4415): "*An Act to study forest management practices*",

which is the follow-up bill to H 897, H 853, **S 486** (Hinds Bill)

(https://malegislature.gov/Bills/191/S486/Cosponsor):

"*An Act to protect the public and private woodlands and woodlots in the Commonwealth*",

and H 3737 (Mark Bill)

(https://malegislature.gov/Bills/191/H3737): "*An Act relative to the harvesting of forest products*"

An online article was also published in "*Commonwealth Magazine*"

(https://commonwealthmagazine.org/opinion/2-simple-steps-to-address-climate-change/) related to the two Bills (H 897 & H 853) above.

The Massachusetts Forest Alliance (https://www.massforestalliance.net/) / Chris Eagan, Exec Dir. is in the process of drafting a response to the article for MFA.

Mike Flemming hopes to present a **NESAF Position Statement** that references the current *SAF Position Statements* on "Timber Harvesting on State, Federal, and Other Public Forest Lands", "Forest Offsets Projects in a Carbon Trading System", "Utilization of Woody Biomass for Energy", etc.. SAF is currently working on revision of "**Loss of US Private Forestland**" position statement, that should be completed in May/June this year.

Has everyone seen / read / or participated in webinar on the new publication on "**Forest Carbon: An essential natural solution to climate change**" (Paul Catanzaro / UMass & Tony D'Amato / UVM):https://masswoods.org/caring-your-land/forest-carbon? This publication is referenced in the NESAF Letter. Mike also plans to use this as a reference in the new NESAF Position Statement.

Also, everyone should read the most recent issue (No. 4 - 2019) of "Massachusetts Wildlife Magazine" (see article: "**Carbon and Conservation on MassWildlife Forest Lands**" by John Scanlon and Brian Hawthorne). I suggest you contact MassWildlife and ask to purchase the issue. https://www.mass.gov/how-to/massachusetts-wildlife-magazine.

Finally, I mentioned there was an article in the Greenfield Recorder on January 31st about the Wendall State Forest Timber Sale. The Logging Contractor has submitted a $30,000.00 Bill to DCR for work hours lost for disruptions caused by the protesters. See link: https://www.recorder.com/Loggers-requesting-nearly-$30-000-reimbursement-due-to-protester-disruptions-in-Wendell-State-Forest-32389949.

Additional useful links:

SAF/Advocacy & Outreach: https://www.eforester.org/Main/Advocacy_and_Outreach/Main/Issues_and_Advocacy/Issues_And_Policy_Overview.aspx?hkey=c184075d-cfe2-4ab0-9b91-2e67efb51151 (check out the "*Advocacy for SAF Members*" / "*SAF Priorities Handout*" / "*Position Statements*" links on the above webpage)

Forest Stewards Guild / **Forest Policy Statements**:

https://foreststewardsguild.org/policy-and-recommendations/

Find your **State Forest Action Plan** at:

https://www.stateforesters.org/forest-action-plans/

Find your **State Wildlife Action Plan** at:

https://www.fishwildlife.org/afwa-informs/state-wildlife-action-plans

United Nations links: **FAO** / Sustainable Forest Management (Check out the SFM Toolbox, Videos, and Publications)

Update: At the 2020 Yankee Division SAF meeting on February 13th, the Yankee Division established a Yankee Division SAF Working Group – "Managing Forests for Resiliency and Carbon". Mike Ferrucci was appointed Chair. The working group will develop the following products: (1) position statement (2) talking points, geared toward field foresters, to support and explain the policy, and (3) begin work on a forest resiliency outreach toolbox. The working group plans to complete their work in mid-May 2020.

Rhode Island Chapter News ~ Chris Modisette

New Members

Pat MacMeekin is the newest member of the SAF family. He works as a forestry consultant to the Wildlife Management Institute in Rhode Island and works in partnership with the Rhode Island Department of Environmental Management – Division of Fish and Wildlife (RIDFW) and the USDA Natural Resources Conservation Service (NRCS) to implement WMI's Young Forest Initiative, a project of the NRCS Regional Conservation Partners Program (RCPP).

By way of introduction, Pat was formerly the *Community Wildfire Forester* for the West Oregon District, Oregon Department of Forestry (ODF). He received a *Bachelor of Science degree in Forestry from Southern Illinois University-Carbondale* in 2012. Additionally, he has over five years of experience in forestry at the professional level, including three years implementing private landowner assistance forest management programs.

Pat can reached at (401) 822- 8851 or pat.macmeekin@usda.gov.

RIDEM Hires new Urban and Community Forestry Program Coordinator

Robert "Lou" Allard joined the Rhode Island Department of Environmental Management last Fall as the Urban and Community Forestry Program Coordinator. Lou worked as a forester for the Massachusetts Department of Conservation and Recreation on the Greening the Gateway Cities Program, coordinating tree planting programs for energy conservation in the cities of Fall River and New Bedford, MA. He also previously worked for the DCR on the Asian Long horned Beetle Eradication Program in Boston and Worcester, MA. Lou earned a BA in Environmental Science from Saint Anselm College in Manchester, NH and an MS in Applied Ecology and Conservation Biology from Frostburg State University in Maryland.

For more information about Rhode Island's U&CF Program you can reach Lou at:

Robert (Lou) Allard, Urban and Community Forestry Program Coordinator
Division of Forest Environment– RIDEM
401-222-2445 x2056
Robert.E.Allard@dem.ri.gov

Report Offers Further Evidence the Rhode Island Forests are Ecological and Economic Engines

A project of the RI Tree Council and Forest Conservation Advisory Committee, The Value of Rhode Island Forests report spotlights the benefits provided by forestlands and recommends strategies to encourage conservation

A 138-page study produced by the RI Tree Council and the RI Forest Conservation Advisory Committee titled The Value of Rhode Island Forests, outlines the benefits provided by forestland and recommends a suite of potential strategies to encourage conservation. It was funded through the Department of Environmental Management (DEM) with a grant from the US Forest Service.

More than 50 percent of Rhode Island is forested, with most forest land owned by private citizens who face increased pressure to develop it for other uses. The most common forest health threats are from development or through fragmentation of large forested parcels into smaller parcels, making sustainable forest management difficult. Rhode Island has lost nearly 2,000 acres of critically important core forestland – tracts of forested land of at least 250 acres– between 2011 and 2018. The Value of Rhode Island Forests report makes clear that conserving Rhode Island's forests is essential to preserving the values forests provide to our communities.

Rhode Island's forests are also ECONOMIC ENGINE. More than 500 firms in the forestry and wood products sector generated a total economic impact of $715 million and 4,800 jobs in Rhode Island in 2016. An estimated 503,000 people participating in wildlife-related recreation each year bring $348 million to the state's economy through fishing, hunting, and wildlife watching.

The report recommends numerous strategies for promoting forest conservation in Rhode Island, such as creating dedicated funding sources, incorporating smart growth principles into land use planning and permitting, supporting market-based incentives, and actively managing rural and urban forestland to maximize forest value. For more information on the report or to download a copy visit http://dem.ri.gov/programs/forestry/forest-value.php.

The Economic Impact of Rhode Island's Forestry and Wood Products Sector

In collaboration with the Rhode Island Forest Conservators Organization, other RI forestry-focused non-profits, and the RI Department of Environmental Management, the University of Rhode Island (URI) produced the first report of its kind for the RI Forestry and Wood Products Sector, in which economic impacts are estimated by hand-counting the gross sales and jobs estimates of individual businesses. URI estimates that these 513 firms were responsible for over $400 million of gross sales and almost 2,500 jobs in 2016. Including economic impacts across the state economy, we estimate the RI Forestry and Wood Products Sector is responsible for $716.4 million of economic output and 4,844 jobs throughout Rhode Island. For more information or to download a copy of the report visit:

https://www.riepr.org/posts/ri-forestry-impact-study

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New England Leopold Conservation Award Seeks

Know a farmer or forestland owner who goes above and beyond in their care and management of natural resources? Nominate them for the 2020 New England Leopold Conservation Award®.

Sand County Foundation presents the Leopold Conservation Award to private landowners in 20 states for extraordinary achievement in voluntary conservation. In New England the $10,000 award is presented annually with American Farmland Trust and New England Forestry Foundation.

Given in honor of renowned conservationist Aldo Leopold, the award recognizes landowners who inspire others with their dedication to soil health, water quality and wildlife habitat on private, working land. In his influential 1949 book, *A Sand County Almanac*, Leopold called for an ethical relationship between people and the land they own and manage.

Nominations may be submitted on behalf of a landowner in Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont. Landowners may also nominate themselves. The application can be found at www.sandcountyfoundation.org/ApplyLCA.

The application deadline date is July 15, 2020, and they can be emailed to award@sandcountyfoundation.org.

Applications will be reviewed by an independent panel of agricultural and forestry conservation leaders.

"*Leopold Conservation Award recipients are at the forefront of a movement by America's farmers, ranchers and foresters to simultaneously achieve economic and environmental success*," said Kevin McAleese, Sand County Foundation President and CEO.

The New England Leopold Conservation Award is made possible through the generous support of American Farmland Trust, New England Forestry Foundation, The Ida and Robert Gordon Family Foundation, Wildlands and Woodlands, David and Ann Ingram, Whole Foods Market, the Yale School of Forestry and Environmental Studies, and Farm Credit East.

Editor's Note: Please forward any NESAF member obituaries to Nesafnq@gmail.com.

Benjamin F. Hoffman, Jr.--Navy officer, logger, forester, surveyor, professor, writer, organic farmer, putterer deluxe, drummer, and model railroad/WW2 buff passed away in the comfort of his home in Radford among family on Saturday, December 28th, 2019. Born in Hagerstown, Maryland on February 11, 1930, Ben received his B.A. from the University of Virginia in 1951 and, after a four year interruption in McHale's Navy, his MF from Yale in 1957.

During his time in the Navy he reacquainted with and married his college girlfriend, Marjorie E. Erickson, from Hamden, Connecticut. They started their family and life together and never looked back. After twelve years in federal and state government service and eight in private industry, consulting, and logging, Ben taught forest management and timber harvesting at the University of Maine for thirteen years. He completed his Ph.D. at Yale in 1982. In 1990 he retired Professor Emeritus and spent the next eleven years in British Columbia and Alaska as a volunteer teaching forest technology for Covenant Life College. When not teaching, he was a consultant in forestry and wood products for nine US, Canadian, and Russian church communities and the states of Alaska and Colorado. He authored a logging handbook, *'How To Improve Logging Profits'*, and over three hundred published articles on forestry, agriculture, wood energy, cross-country skiing, snowmobiling, US Navy Beach Jumpers, and the Ma & Pa Railroad. A licensed Maine forester, SAF Certified Forester, and Vermont land surveyor, he returned to Maine in 2001 to dabble in consulting and writing and play with trains.

A church ceremony was held among his Bradford family, community, and friends, followed by a private family ceremony. "*To a forester, every day is Earth Day*". True to his word and a good man to know when the chips were down, Ben will be missed.

David B. Kittredge, Jr. moved forward with amazing grace from this world to the next on March 13, 2020 following a life full of love, fun, fulfilling travel and adventure. Dave was born in New York City, NY on April 20th 1956.

Dave earned his professional degrees from the University of Vermont (Forestry) and Yale University (M.S. Forest Science/Silviculture and Doctor of Philosophy). He retired in 2017 from his faculty position at the University of Massachusetts, Amherst, Department of Environmental Conservation where he enjoyed 30 years of service with a 3-part appointment including: (1) professor of undergraduate courses and mentor of more than 20 graduate students; (2) research design and implementation with a focus on forest owner attitudes and behaviors and forest policy; and (3) as the Massachusetts Extension Forester design and implementation of outreach activities for timber harvesters, practicing foresters, conservation experts, and private landowners. For more than 20 years, Dave also enjoyed a part-time appointment as the Forest Policy Analyst at the Harvard Forest, Petersham MA. Dave authored/co-authored about 70 refereed research publications, 40 editorially reviewed publications, 4 peer-reviewed book chapters, 15 invited publications in proceedings, 20 extension publications, and 20 research grants. Dave received 30 honors and awards during his career including the recent 2019 Charles H. W. Foster Award for Exemplary Academic Leadership in Land Conservation.

At various times throughout Dave's professional career, he was elected or appointed as: Chair of the Massachusetts Forester Licensing Board; Chair of the New England Society of American Foresters; Chair of the Yankee Division Society of American Foresters; President, Vice-president and Board Member of the Temagami Lakes Association; Editor and Editorial Board Member of various scientific journals; Board Member of the Petersham Curling Club; and Member of The Shutesbury Open Space Planning Committee.

In lieu of flowers, contributions may be made in Dave/Chip's memory to one of his favorite charities (canoe camp, land trust, music) or another of your choosing:

Keewaydin Temagami https://keewaydin.org/keewaydin-foundation/give/
East Quabbin Land Trust, PO Box 5, Hardwick, MA 01037 or on-line https://eqlt.org
1794 Meeting House, 26 South Main Street, New Salem, MA 01355 https://1794meetinghouse.org/product/donate/

Dave specifically requested that no formal services be scheduled following his passing from this splendid life to the next. Dave's hopes are that his friends, colleagues and relatives will honor his request by spending time individually or in small groups enjoying, watching or participating in one or more of his favorite activities including: canoeing, curling, reading, biking, hiking, skiing, birding, fly-tying, fishing, live music, travel, and mountain climbing. Whenever you are on the ice, trails, rivers, lakes, roads, music venues, or wandering the forests of this world, Dave's one true hope is that you will think and speak of him often.

NEWS QUARTERLY,
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New England Society of American Foresters

Our mission as foresters is to be responsible stewards of the earth's forests while meeting society's vital needs. The challenge of our mission lies in keeping forest ecosystems healthy and intact while concurrently drawing on their resources. We will meet this challenge by carefully monitoring and managing the effects of natural and human forces on the forest. Our decisions will be guided by our professional knowledge, our compassion for all living things, our desire to improve citizens' lives, and our respect and concern for the entire forest ecosystem. By advancing forestry science, education, technology, and the practice of forestry, NE SAF will provide the leadership to achieve its mission.

Have an idea for a project or program that is in need of financial support?

The NESAF Grants Program will fund approved projects developed for the following purposes:

- ***To educate NESAF's many publics about professional forestry, and,***
- ***To advance the role of the profession in society by promoting the role of foresters in forest resource management.***

Interested? Contact any EC member on page 2 with questions!