Climate Change and Forest Management in New England

Change is a constant that has always influenced the ways in which forest managers approach the stewardship of New England forests. The past several centuries have witnessed dramatic changes in forest conditions and tremendous ecosystem resilience as our landscapes have recovered from intensive land use and continue to form the dominant fabric of the region. Recent and projected future changes in climate, disturbance, and the prevalence of invasive species are creating increasingly challenging conditions for sustaining the many benefits we derive from forests and have created a need for management guidance to address these changing conditions and associated uncertainties.

This theme highlights several efforts in New England focused on developing adaptive strategies for forest managers to address these challenges, including the Climate Change Response Framework led by the USDA Forest Service Northern Institute of Applied Climate Science, the Manomet Climate Smart Land Network, and outreach efforts on forest resilience being led by UMass Extension. We also provide a summary of the results of a recent survey of NESAF membership on how climate change is being integrated into forest management in the region relative to the Pacific Northwest.
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Greetings from the Nutmeg State! ~ Jeff Ward, Incoming NESAF Chair

Welcome to 2017. I hope one and all had a joyous holiday season, albeit we could have used a little more snow in southern New England. For the 97th NESAF winter meeting on March 8-10, 2017 at the Cross Convention Center in Bangor, general Chair Kris Hoffman and Program Chair, Carol Redelsheimer have put together a great program which includes an interesting and varied range of topics around the theme “Adapt, Adopt, Advance: Resiliency in Natural Resource Management”. This year’s meeting will be a joint meeting with the Northeastern Forest Pest Council and the Maine Chapter of The Wildlife Society. Details of the meeting are in this issue of the News Quarterly, so be sure to save the dates and I hope to see you at the meeting.

It is truly an honor to have been selected to serve as your NESAF Chair for 2017. I have been a member of NESAF since 1987 when I arrived to take my first, and only, adult job at the Connecticut Agricultural Experiment Station as a scientist studying forest ecology and alternative methods of forest management. In past years I have served as Connecticut Chapter Chair, CT’s NESAF rep, NESAF Forest Science Chair, and Program Chair for the 2012 and 2016 NESAF winter meetings. If you haven’t already, I would strongly encourage you to become active in your local Chapter, Division, and NESAF. It is a great way to meet folks, make new friends, and strengthen our shared passion in the forestry community.

I would like to thank Fred Borman for his leadership as Chair in 2016 and for the long conversations we had in the two years we commuted together to the NESAF Executive committee meetings back in early 2000s. Fred has been an active NESAF member for several decades, has served in just about every position, is a great backup whenever a question or problem arises, and a good friend. Ditto for Paul Dolan who is stepping down from Immediate Past Chair, but who will hopefully continue as the Raffle King. Keven Evans (NH) is the new NESAF Chair-Elect and will serve as Chair in 2018. A special thanks to outgoing state representatives to the NESAF Executive Board – a Ken Laustsen (ME) and Andrew Reed (VT). I look forward to working with new and returning Executive Board Members Don Floyd (Canada), Mel Harder (CT), David Parker (ME), Bill Hill (MA), Jon Nute (NH), Rob MacMillan (RI), Mallory Bussell (Secretary), Donn Downey (Treasurer), Tony D’Amato (Forest Science Coordinator), Wendy Weisiger (Website Administrator), J.P. Barsky (News Quarterly Editor), Jas Smith (Policy Chair), and Si Balch (District VI Director).

The Executive Committee is still seeking a state representative from Vermont, Communication and Education Chair. If you are interested in any of these positions, please contact me or another Executive Board member for more information. Lastly, please contact me if you have any issues or concerns you would like NESAF to consider. My contact information is listed in the front of the News Quarterly.

See you in Bangor in March!

Jeff

The Big Winter Meeting Issue!

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And a farewell from the Granite State! ~ Fred Borman, Outgoing NESAF Chair

This is my final article as Chair of the New England Society. As of January 1, 2017, Jeff Ward will be your new Chair. Please give Jeff the same support you have given me over the past 12 months.

There are many people to thank for all they have done for NESAF and SAF over the past year. I would like to thank the members of your Executive Committee (EC) for all their hard work and dedication to our professional society. They put in a lot of effort behind the scenes to make sure that we continue to have a thriving and active State Society. I’d also like to thank Adam Moore, Jeff Ward, the arrangements and program committees of the Yankee Division for a successful winter meeting in Sturbridge. It takes a lot of coordination and prodding to pull off a successful meeting, and they accomplished that hands down. I would also like to thank Ken Laustsen, in particular, for his guidance and help during the year. Ken is NESAF’s institutional memory. We will miss him on the EC. Thanks also to Andy Reed for his service as Green MT. Division State Representative. The EC welcomes Kevin Evans of New Hampshire as the new chair-elect and Dave Parker as the new Maine State Rep.

One last reminder: at the upcoming winter meeting, a Leadership Academy will be held on Friday, March 10th. Ken Laustsen asks that each Division and Chapter EC nominate two or three individuals to attend the academy. For more information, please contact Ken at: ken.laustsen@maine.gov.

2017 will mark my 37th year as a Forester and member of SAF. I have enjoyed a varied and diverse career from my days as a consultant with Connwood Foresters, to my almost 24 years with the Connecticut Division of Forestry to my last nine years with UNH Cooperative Extension. I have met many great Foresters from around New England and the country. I am proud of our profession and you, the people, who have made my experiences so meaningful and fruitful. I hope I have served you well.

Best wishes for a successful, healthy and happy 2017!

Fred

SAF Board of Directors Report ~ Si Balch, District 6 Council Representative

Forestry student job shadow and mentoring: a way that works!

Maybe you already do this successfully, but I was failing. Every year, I would reach out to the faculty advisor and indicate that I would be willing to meet university students in the field and spend a day with them. I had one taker in three years. So it was obviously time to try something different.

The approach that now works for me has several key pieces. First, work directly with the President/Chair of your local student SAF society. Tell them to spread the word and try to recruit students for field trips. Second, take several students at once. This is often more comfortable for them and leads to better conversations throughout the day. And lastly, pick them up at the university—transportation can be an issue for many of these students. This may seem simple, but assisting students and other young professionals has many benefits. Whether you work for yourself or someone else, please try to find some time to take a student to the woods with you.

Student meeting attendance support

There are at least ten forestry/natural resource/urban forestry degree programs across NE and NY. It is very important that students receive encouragement and resources either in time and/or money to attend as many SAF meetings as they can. Please do what you can to accomplish this.

Thank you for your time to read and think about this.

Si
same job, new challenges: forest management for a changing climate

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Todd Ontl, Northern Institute of Applied Climate Science, USDA Northern Forest Climate Hub, tontl@fs.fed.us

As foresters, we understand the important role of forests to New England’s landscape and know that these systems provide important and diverse environmental, economic, and social benefits to the region. Our forests will increasingly be affected by a changing climate, making it critical that foresters and natural resource professionals integrate climate change considerations into management planning and activities. After all, forestry is a long-term enterprise.

The Changing Climate

Yes, the climate has always changed. Yes, New England was once under miles of ice. However, the changes that have occurred over the past century are much greater—and have occurred faster—than anything that has happened since the start of human civilization, causing important effects on our current environment.

Average annual temperatures have risen more than 2°F in New England since recordkeeping began in the late 1800s. Temperature increases are particularly evident the winter, which has warmed more than 3°F. Precipitation has also increased, with much more precipitation coming during fall and slight increases during spring and summer. Most notable is the substantial increase in extreme precipitation events over the past several decades.

Temperatures are expected to continue rising over the next century, with projected increases of 3 to 12°F in New England depending upon future greenhouse gas emissions. Precipitation change is harder to predict, but annual precipitation is generally expected to continue increasing. The greatest increases are expected during the winter, when warmer temperatures will result in more precipitation falling as rain instead of snow. There is uncertainty regarding whether precipitation will increase or decrease during the growing season. Regardless, plants may experience greater moisture stress during the growing season because higher temperatures will lead to greater water losses from evaporation and plant transpiration.

New England’s Changing Forests

Forests will experience both direct and indirect impacts from a changing climate. Although it is hard to anticipate all of the ways that forests could change, there is a growing understanding of how New England are likely to respond. This information must be combined with professional expertise to better grasp the impacts of changing environmental conditions—including climate, land use, management, and biological invasions—on a particular forest.

- **Northern species will face increasing stress from climate change.** Several northern and boreal species, such as black spruce, red spruce, tamarack, and paper birch, are expected to have reduced habitat and productivity by the end of the 21st century. The degree to which tree species decline will vary greatly by location and site conditions, with greater risk at southern locations and lower elevations. Although habitat suitability may decrease, established trees could respond positively to more favorable conditions during the next several decades.

- **Southern species will be favored by climate change.** Many tree species currently at the central or northern extent of their range are projected to have increases in habitat and productivity through this century. Species currently south of the assessment area are projected to gain suitable habitat in the region, but fragmentation may limit natural migration of these species.

- **Species and forest types that are more tolerant of disturbance have less risk of declining across the landscape.** Climate change is expected to increase disturbance over the next century. As hurricanes, storms, floods, pest outbreaks, or other events become more frequent or damaging, tree species and forest types that are better able tolerate these disturbances may be favored.

- **Low-diversity systems are at greater risk.** Studies have consistently shown that more diverse systems have increased resilience to disturbance, while low-diversity systems have fewer options to respond to change. There are many aspects to forest diversity—species, structural characteristics, and genetics—and each of these can help reduce risk and increase adaptability.

Forest Vulnerability

Climate change will not affect all forest species, communities, and parts of the landscape in the same way. Scientists and managers from across the region considered the existing scientific literature, models of future climate and forest change, and their personal knowledge and experience to assess the vulnerability of regional forest types to climate change (Table 1). Foresters and natural resource professionals can consider how vulnerable a forest type may be across the region, and then use their knowledge to evaluate climate risk in the specific places in which they work.

(Article continues on next page)
What can managers do?
Climate change creates uncertainty, which adds challenges for decision making. It can be tempting to wait until we know what the future holds, but this isn’t possible. Climate change models will never be able to predict what will happen in a particular place. Just like the present, the expertise and experience of forestry and natural resources professionals will be necessary to determine how to best meet a landowner’s objectives on a particular piece of land.

The Northern Institute of Applied Climate Science has worked with hundreds of foresters and natural resource professionals to develop real-world examples of forest management projects that take climate change into consideration. Nearly 200 Adaptation Demonstrations have been developed since 2010, providing examples of how managers across a diversity of forest types, regions, and ownership types are considering climate change in forest management (Figure 1). Below, we describe four principles for climate change adaptation based upon these demonstrations.

**Accept and Work with Uncertainty**
One of the greatest difficulties of climate change is that it makes it harder to guess what the challenges for forest management might look like in the next 50 or 100 years. At first glance, the variation across models of future climate might lead one to think that it’s impossible to decide what to do in the future. The truth is, however, that we’ve never been able to predict the future. There has always been uncertainty, whether it is related to the potential for extreme events, the impacts of current of unknown pests and disease, or fluctuations in markets. The way to deal with this uncertainty is to manage forests so that they have a greater capacity to adapt to a wide range of potential future conditions.

**Example: TNC St. John in Maine**
The Nature Conservancy manages more than 150,000 acres along the Canadian border in Maine on the St. John Forest Preserve. Management activities often emphasize increasing forest diversity and restoring conifer species like red and black spruce in forests where these species had been previously removed. At the same time, forest-climate models suggest that these cold-adapted species may be more vulnerable by the end of the century given warming conditions. In some stands TNC is planting commercially-valuable red spruce and black spruce now to increase the conifer component with the expectation that many of the trees planted today will survive for at least one generation. At the same time, TNC is increasing the capacity of the ecosystem to maintain forest productivity and critical wildlife habitat into the future by planting eastern white pine. These white pine plantings are in areas that are currently near the north edge of its range in order to establish a conifer that may become more important in this area in the future. [www.forestadaptation.org/TNCmaine](http://www.forestadaptation.org/TNCmaine)

**Table 1. Vulnerability of common forest types in New England and northern New York. (Source: Janowiak et al. in review)**

<table>
<thead>
<tr>
<th>Forest system</th>
<th>Potential impacts</th>
<th>Adaptive capacity</th>
<th>Vulnerability</th>
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<td>Moderate-Positive</td>
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<td>Low</td>
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</tr>
<tr>
<td>Lowland mixed conifer</td>
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<tr>
<td>Montane spruce-fir</td>
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<tr>
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<tr>
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Take Action, Focusing on Win-Wins

There are many threats to our forests—pests, diseases, invasives, land development, bad markets, and more—which makes it easy to push a long-term issue like climate change to the back burner. In many cases, preparing for climate change offers “win-win” opportunities because many adaptation actions are already fundamental practices of good forestry. Many adaptation actions can address forest stressors that foresters are already dealing with, such as invasive species and insect pests. Considering the long-term effects of climate change, however, also helps to identify small “tweaks” to improve management for future conditions and, occasionally, something that might be substantially different from current practice.

Example: Norcross Wildlife Sanctuary

The Norcross Wildlife Sanctuary includes 8,000 acres of upland forest and aquatic habitats on the border of south central Massachusetts and northeastern Connecticut. Multiple hardwood stands were harvested during the past year to improve forest habitats. These actions also had additional benefits for helping forests adapt to future conditions, even though the management didn’t look substantially different from “business as usual” on that ownership. For example, stands were thinned to remove diseased trees and release hardwood saplings in the understory; the thinning also provided the opportunity to favor species like red oak, white oak, hickories, and white pine—species that are expected to fare better under climate change in that location and provide important benefits for wildlife.

www.forestadaptation.org/norcross

Be Creative and Flexible

There is no silver bullet for how to make forests more resilient and better adapted to climate change, just as there is no one way to manage a forest. Forest management will continue to be grounded in the specific needs of a site and its landowner, even more so as conditions change. For this reason, foresters will need to be even more creative, combining both old and new tools in their approach. Combined with this creativity, foresters will need to be ardent keen observers, learning what works and what does not from past actions. This adaptive management approach will become increasingly important as foresters test out new ideas and actions across landscapes where environmental stressors will continue to change and intensify.

Figure 2. Across many adaptation projects, many of the most important actions are already common practices, which just become more important under a changing climate. Considering climate change, however, also allows identify small tweaks to current practices as well as new and different approaches that will help forests over the long run.

Example: Vermont Land Trust

Warmer, shorter, and more variable winters are creating challenges for winter logging across much of New England. Over time, it is likely that the duration of snowpack on the ground will decrease, and more logging will need to occur in the summer under conditions that often raise logging costs and increase the risk of damage to soils and the residual forest. The Vermont Land Trust implemented a summer timber sale on what would typically be “winter ground” to better understand these issues (Figure 2). A drier-than-average summer allowed for logging to take place, but the timber sale revenue was reduced because of the need for a temporary bridge (not necessary in winter) and more time spent on timber sale preparation and administration to avoid impacts to the site. As conditions change within forests, managers will have to address new challenges in different ways, while still maintaining the health and productivity of our forests. www.forestadaptation.org/atlas

Figure 3. Warmer, shorter, and more variable winters create challenges for forestry operations. In one location, the Vermont Land Trust explored the challenges of conducting a summer harvest in a forest that would typically be harvested in winter.
The Climate Smart Land Network: Helping Forestry Companies Navigate a Changing Environment

Jennifer Hushaw, Applied Forest Scientist, Manomet Center for Conservation Sciences jhushaw@manomet.org

In 2013, Manomet launched the Climate Smart Land Network (CSLN)—a membership organization for forestry companies interested in staying up-to-date with the latest science on forest response to climate change. At its heart, the CSLN is about helping network members better understand the risks and opportunities for their forests, their businesses, and their overarching management goals.

The CSLN distills the current research in a concise and accessible way and facilitates exchange of information among network members. Members use this information to inform their staff, respond to client and stakeholder questions, adjust their operations, and guide their long-term planning.

After an initial pilot in the Northeast, the CSLN expanded to ten member organizations that manage over 15.7 million acres across 24 states and Canada. The membership is diverse, ranging from investor-owned companies to conservation-oriented landowners, and growing toward a goal of 30 million acres enrolled in four years.

In recent years, network members have been called upon to answer an increasing number of questions about what climate change means for them and how they should respond. These concerns are raised at multiple levels, from clients to funders, investors, and even forest certification auditors. With busy schedules and other management concerns on the table, it can be challenging for managers to wade through the onslaught of new science and gauge the risk and uncertainty for themselves. The CSLN saves them time by evaluating the science and helping them answer these questions.

For instance, evidence from paleoecology (i.e. the study of fossil plants and animals) suggests that past abrupt changes in the earth’s climate brought about massive shifts in forest communities, but also revealed remarkable examples of resilience and stasis. The take home is that in times of global change (as we are in today) it pays to be nimble and prepare for a dynamic future.

The CSLN mantra is to use climate change as a new lens for viewing traditional forest management. In reality, climate change now colors everything we do and see in the woods—it is the context in which we work. The Department of Defense has called climate change a “threat multiplier”—a helpful characterization that holds true in the forestry sector as well. We expect the most immediate and drastic effects in the places where changing climate conditions (e.g. longer growing season, warmer temperatures, shifting precipitation patterns) interact with existing stressors (e.g. pests, overstocking, deer browse).

The CSLN also works to consider impacts on both the ecosystem and the enterprise because climate change can pose challenges and opportunities from both a business and ecological perspective. For example, issues of access (e.g. loss of frozen ground, heavy downpours damaging stream crossings, etc.) can be equally (if not more) important than ecological change, in terms of day-to-day operations.

Those interested in learning more about the resources available through the Climate Smart Land Network should visit the website at www.climatesmartnetwork.org or contact Eric Walberg, Jennifer Hushaw, or Si Balch.
Increasing Forest Resiliency for an Uncertain Future

Paul Catanzaro,
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Our forests are facing many challenges, including land conversion, invasive plants, insects, and diseases, heavy deer browse, and climate change. Of course, these stressors do not act in isolation. Rather, they interact with one another, increasing their negative impact. While there is uncertainty as to how our forests will react to these stressors, we can be confident that our forests will change.

We are fortunate in New England to have naturally resilient forests and, as foresters, we know that change in forests is natural and healthy. However, it is likely that we are at a time when the number of stressors facing our forests is greater than it has ever been. In addition, the pace with which the stressors are arising is increasing.

Our forests also have characteristics that can make them vulnerable to these stressors. Forest vulnerability threatens the personal benefits that forests provide to their owners as well as the many benefits they provide to the public. Foresters stand in a critical position to help maintain the many public and private benefits that forests provide by reducing forest vulnerability and increasing forest resiliency.

The new “Increasing Forest Resiliency for an Uncertain Future” publication provides a framework for addressing these stressors in an integrated way that is specific to your forest of interest and takes into consideration individual landowner goals, available time, and resources. This New England-wide publication suggests a number of actions that have a high likelihood of helping your forests reduce their vulnerability and increase their resiliency. Importantly, these actions will allow us the ability to adjust to new conditions and integrate new knowledge as we go forward. An extensive list of resources is provided at the end of the publication. The steps outlined in the publication have also been summarized on one poster.

To request a free copy(ies) of the publication and/or poster, contact Paul Catanzaro at paulcat@umass.edu or (413) 545-4839. To download a PDF of the publication, visit www.MassWoods.net.

(Same Job, New Challenges, continues from page 7)

Work Collaboratively with Others
Climate change is a challenge that is bigger than any single landowner, and actions to adapt to changing conditions will take place at different scales: locally, regionally, and globally. Even within a single scale, organizations and individuals with complementary expertise may be more effective working together rather than individually. Working with partners can increase the ability to make changes across a landscape, and different individuals and organizations can implement different actions based on their respective strengths and limitations.

Example: Trout Unlimited and Partners
Trout and other organisms that live in the cold water streams of New England are particularly vulnerable to climate change. Water temperatures are increasing in many streams, and this is made even worse in areas where riparian hemlock forests are declining from hemlock woolly adelgid. Extreme storms and rain destabilize channels, particularly when road crossings give way. In the North River watershed along the Massachusetts and Vermont border, Trout Unlimited is working with partners at state agencies, municipalities and land trusts to change riparian hemlock forests to include with other species that will provide future stream shading, as well as upgrade road crossing infrastructure to improve stream connectivity and resilience to extreme events. Increasing adaptation practices in both forests and streams will increase the overall effectiveness of these actions on the landscape.

Are you interested in adapting your forests to the future? We’d love to hear what you are doing and provide assistance if you need it!

Literature Cited

A Cross-Country Comparison of Forest Management for Climate Change: Practices, Motivations, and Barriers

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Anticipated climate change poses many challenges to successful forest management to protect and maintain expected ecosystem services. Examples of at-risk ecosystem services include carbon sequestration, timber production, habitat for rare or endangered species, regulating water flow and quality, and recreational opportunities.

Our current suite of forest management tools emerged from long experience with each landscape and reflected the environment, natural variability, and biological diversity within. However, as the biotic and abiotic are rapidly changing, a mis-match is emerging between management goals and the tools designed over the past century to achieve them. In addition, the social and political landscape is also rapidly changing and these changes may be as or more important than the anticipated biotic/abiotic changes.

Forest management policy is a critical tool for guiding forest management and encapsulates societal values at broad scales. Some policies now directly address climate change effects. For example, California established a market for trading carbon that includes carbon stored within forested landscapes. Sometimes a policy indirectly becomes important for managing forests under climate change. For example, the Healthy Forests Restoration Act (or Healthy Forests Initiative, HFI) of 2003 created a framework for reducing fuel loads, particularly in western US forests. Fuel reductions have the capacity to mitigate the size and severity of wildfires expected as a result of climate change, if they are implemented extensively and strategically. But other policies likely inhibit managing forests for climate change. For example, unrestricted development within forested landscapes severely restricts management practices. In the western US, air quality concerns confine prescribed burning to short windows of time each year. Consequently, the USFS devotes an enormous quantity of resources to fighting wildfires rather than preventing future wildfires. In the eastern US, unrestricted development creates a huge number of small parcels. Yet there are not comprehensive policies or management plans to comprehensively manage such parcels for change at the requisite landscape scale.

Successful management to reduce the negative effects of climate change will require substantial shifts in policies governing forest management. Institutional, political, economic, social barriers must be overcome. However, such barriers are not always obvious. Oftentimes, institutional inertia alone may prevent rapid adoption of climate adaptive policies and prognosis. Underinvestment in appropriate resources, particularly scientific and technical capacity, can be a pernicious barrier to change. And market-driven climate-centric policies—for example, carbon markets—can be undermined by uncertainty and inadequate insurance markets to accommodate financial risk. Too often, policy barriers are simply too numerous or too heterogeneous for scientists to fully understand.

We assessed policy barriers to climate adaptive forest management practices survey analysis. Specifically, we evaluated, compared, and contrasted actions and barriers in two distinct forested landscapes predicted to be impacted by climate change innumerable ways: northern California and New England. Northern California has an active and severe disturbance regime. It is dominated by federal ownership and institutions and its policies tend to be driven by ‘top down’ control. It also has access to an emerging carbon market. In contrast, New England is characterized by tens of thousands of small landowners, small-scale natural disturbances, and fewer landscape-scale policy mandates for climate adaptive forest management. Incentives for biomass harvesting—which may be climate-maladaptive—are a major concern and managers need a better understanding of how state and federal energy policies will influence the demand for woody biomass.

We conducted informal interviews with resource managers in each landscape. These informal interviews were followed by a formal survey distributed more broadly. The formal survey with the following questions:

1. Where is your primary location?
2. What are your primary institutional affiliations?
3. Who are your primary ‘clients’ for whom you conduct forest management planning or activities? What are your day-to-day activities?
4. Are you altering your forest management actions or activities now or in the near future to adapt to climate change? If so, what actions or activities do you envision taking?
5. What are your motivations for conducting climate adaptive management?
6. What barriers have you encountered to conducting climate adaptive management?
7. What is your primary source of information about climate adaptive management?
We targeted active forest managers, people who are making day-to-day decisions and also understand their institutional limitations. To the extent possible, we excluded high-level managers who would likely answer from the institutional perspective.

Because the survey was distributed via the web and email contacts, questions 3 and 4 were designed to determine whether the respondent was an active forest manager. For example, some respondents indicated that they were retired or were engaged in educational activities regarding climate change or managed programs, but were not actively managing forests.

Our survey respondents were primarily located in New England. Although the two land areas are roughly equal in size, New England has many more individual parcels of land and therefore many more active land managers.

The reasons for managing for climate change were very consistent for both locations: Awareness of climate change = maintain natural regeneration = provide for future generations > maintain sustainable yield > client demand > institutional motivation. Around 10% indicated that they are not currently managing for climate change nor considering such actions in the future.

Approaches to managing for climate change were dominated by fuel treatments in the west and both managing for natural regeneration and managing for riparian health in both NE and OR/CA. These results indicate a more passive approach to climate change management - using the existing tools at hand - as compared to the more active approaches such as purchasing new equipment or planting alternate species or increasing diversity. Only 10% indicated that they were not managing for climate change in the west versus 25% in New England.

Barriers to managing for climate change were similar for both locations although there were more barriers selected in the west overall and a greater emphasis on regulations and lawsuits in the west. The leading barrier to climate change management was uncertainty about possible climate change effects or actions. Lack of education and/or awareness from clients/institutions and economic costs were also important. About 15% indicated that they do not manage for climate change and 5% indicated there were no barriers.

(Article continues on page 14)
Northeast Silviculture Institute for Foresters: Coming to you in 2017 and 2018!

Charles Levesque,
Executive Director
North East State Foresters Association
levesque@inrsllc.com

Through a grant from the USDA Forest Service, State and Private Forestry, the North East State Foresters Association (NEFA) will be offering the **Northeast Silviculture Institute for Foresters** (Institute), a series of training workshops in graduate level silviculture, in 2017 and 2018. The team to deliver the program will be chosen by NEFA in early 2017 after proposals are received in response to an RFP that has been issued.

NEFA chose to pursue this project given significant new knowledge needed by foresters to make silvicultural decisions on the ground. Threats to forests in the northeast United States from fragmentation, invasive plants and insects, high-grading, climate change and shifts in wood utilization and manufacturing capacity have revealed gaps in the knowledge of, and learning opportunities for, working forest managers – especially in silviculture. Field foresters need updated and accurate information regarding new and emerging forest science to assure their silvicultural decisions made are as informed as possible.

The Institute workshops are designed to provide northeast U.S. foresters with the appropriate knowledge to make sound, science-based decisions for forest ecosystem management, harvests and regeneration. This project is designed so it can be used in the USDA Forest Service's National Advanced Silviculture Program (NASP) to provide landscape-specific materials for northeast forests. Such a curriculum does not exist at this time for the northeast under NASP. While good silviculture training has been available through state workshops and particularly through the Society of American Foresters (SAF) meetings, these have not been as in-depth and intensive as envisioned by the Institute. The Institute plans to offer a graduate program level of instruction.

The Institute workshops or five distinct modules to be delivered once in 2017 and again in 2018 will cover the following:

- NASP New England and Northern New York Overview (2 days)
- Northern Hardwood Forest Type (2 days)
- Mixed Oak Hickory Forest Type (2 days)
- Pine, Oak and Hemlock Forest Type (2 days)
- Spruce – Fir Forest Type (2 days)

Each of the forest type workshops will include at least:

1. Silvics of individual species & Stand Dynamics including land use history
2. Silvicultural Systems and Practices including growth, yield, quality and regeneration
3. Economics, utilization & markets
4. Forest Health
5. Wildlife Considerations specific to forest type
6. Soils
7. Site Quality and Productivity
8. Sample prescriptions
9. Legal, landowner objectives & carbon considerations
10. Field Trip into forest type

Pre-requisites – pre-work will be required of attendees.

The Institute curriculum presented during training modules will also be posted as online resources through the NEFA website. This will make the information available for all foresters in the region, whether they are able to attend the Institute training modules or not. There will be limited attendee slots available for the Institute workshops and an application will be required of foresters who are interested in participating in one or more of the Institute workshops. A modest workshop fee will be charged of attendees, and a formal announcement will be provided to foresters in the region when the Institute scheduling has been confirmed.
In Memoriam

Elwin Leysath, 95, passed away peacefully and comfortably in his sleep following an extended period of declining health, on Saturday, July 2, 2016, at his home in Brandon, VT. A sixth-generation Vermonter, Mr. Leysath was born in Springfield, VT, on August 25, 1920. He received a Bachelor of Science Degree in Forestry from North Carolina State University and a Master's Degree in forestry from Duke University. He was a member of NESAF for 73 years.

In 1950, he and his family moved back to Vermont where he accepted a position as Rutland County forester, settling in Rutland. Elwin's responsibilities in his career grew, and by 1968, he was in charge of all forest pest control for Southern Vermont. In 1976, he took an early retirement and moved to Michigan with his family, and began work as a private forestry consultant. In 1989, he and his wife moved back to Vermont to enjoy a life of semi-retirement, although both stayed active in their professions.

Elwin was a man of many interests and simple pleasures. He was a past master Mason of the Rutland Center Lodge, avid gardener, traveler, coin collector, Eagle Scout, choir singer, violin player, voracious reader, fern expert and Cribbage shark. A true Vermonter, Elwin was a man of few words but could say more with the twinkle in his eye than most people could communicate with paragraphs. He did not know the meaning of pretense or artifice. He found joy in everything he did, and kindness was the gift he offered to everyone who knew him. In his final years, he never complained of his growing limitations, but instead embraced his remaining pleasures even more passionately.

Terrence "Terry" Michael Caskins of New Durham, N.H., passed as he lived, at peace with the world on Monday, July 18, 2016. He was born July 24, 1942, and raised in Boston, Massachusetts. He is survived by his sisters, Carol Shaw of Westbrook, Maine, and Jacklyn Caskins of Porter, Texas. There were also several nephews, nieces, cousins, his dear friends Lisa and Jeff Roberts, and over 20 foster "kids" out there in the world who will forever be grateful for the loving guidance he gave them in their younger years.

Mike Dannehy of Woodsville, NH passed away at Dartmouth Hitchcock Hospital in Lebanon, NH on August 17th 2016 at the age of 82 following a brief illness. Born in Rutland, VT on June 27th 1934, he grew up in Fair Haven, VT and graduated from Fair Haven High School. Mike served in the United States Army Reserve. He received an Associate degree in Business Administration and Forestry from Nichols College followed by a Bachelor of Science degree in Forestry from the University of New Hampshire. He worked for over thirty years with the Soil Conservation Service of the United States Department of Agriculture where he was District Conservationist for Grafton County for twenty five years. After retiring from the USDA, Mike was self-employed as a natural resource consultant and forester working throughout New Hampshire and Vermont.

Mike was very civic minded, loved his community and was involved with various organizations including the following: The American Legion, Ammonoosuc Fish and Game Club, Grafton County Conservation District, Haverhill Conservation Commission, Haverhill Heritage Committee, Christmas Tree Growers Association of Vermont and New Hampshire, Granite State Chapter of the Society of American Foresters, past president of the New Hampshire-Vermont Soil Conservation Society of America, Newbury Vermont Planning Board, Woodsville School Budget Committee, Connecticut River Joint Resource Commission, past commissioner of the Woodsville Water and Light Precinct and member of the New Hampshire Wetlands Council.

He was an avid bird hunter who enjoyed training his dogs, hunting around New Hampshire and Vermont and taking hunting trips to the Mid-West with his close Nichols College friends. He also loved taking fishing trips to Quebec with friends from the local area. Mike had a Christmas tree farm in Newbury Vermont where he spent countless hours tending his trees and swapping stories with customers. He was happiest in the forests and fields that he loved. He was passionate about working with the farmers, land owners, loggers and others that he met through the years. Mike had an amazing sense of humor which always brought a laugh to those who listened to the endless stories he would tell. In his later years he worked on writing stories in writing groups at Dartmouth College and the Horse Meadow Senior Center in North Haverhill. His pursuit of knowledge was endless.

(Section continues on next page)
Conclusions:

The forest managers surveyed represent a broad spectrum of institutions and job descriptions but all were actively engaged in forest management. Their motivations were dominated by awareness of climate change and the desire to sustain forests generally. Economic concerns (sustained yield, client demand) were secondary. Institutional direction tertiary. Approaches to climate change management were dominated by ‘passive’ activities: management actions that might otherwise occur and do not represent a substantial change from prevailing practices.

Finally, uncertainty (for the managers) and lack of education/awareness (for the clients) were primary barriers to conducting climate change management indicating that the prevailing science is not getting transmitted either to managers or the public. To the contrary, client or manager attitudes against climate change were a minority. We might conclude that managers and clients are open to ideas for managing for climate change, but lack the necessary tools and information.

Roger Stephen Leighton, Sr. of Strafford, NH passed away Friday, August 19, 2016. He was born June 21, 1919, at home on the family farm in Strafford, N.H. Though sickly as a young child, he grew to be a strong man with a masterful mind who filled his 97 years with diverse interests: forester, historian, genealogist, surveyor, realtor, water dowser and gentleman farmer.

After high school, Roger planned to become a farmer like his father, but a dairy farmer he worked for convinced him to attend the University of New Hampshire, where he received a scholarship. In 1941 he graduated with a degree in forestry and with minors in botany and wildlife management, then enlisted in the Army Air Force and was trained as a meteorologist. He was stationed in India, part of the China Burma India Theater of Operations. He remained in the service from July 1941 until Christmas of 1945, rising to the rank of Master Sergeant.

After the war, Roger worked for NH Fish and Game, then for the Cooperative Extension Service for 21 years as County Forester in both Belknap and Strafford counties. In 1972, he moved to UNH as Program Leader for all of the state’s county foresters. Retiring in 1979, he began forestry consulting, with a particular focus on helping private landowners acquire and conserve large tracts of land. Through this work, he was instrumental in the conservation of thousands of acres in Strafford County. Roger served as a Strafford selectman and, as an unofficial town historian, was a primary force behind the formation of the Strafford Historical Society. True to his love of trees, Roger nurtured several Christmas tree plantations, planting his first seedlings right after the war, and serving loyal customers with his fresh trees for over 50 years.
Bats
The Maine Department of Inland Fisheries and Wildlife continues to solicit input from the public about bat colonies located in the state, in an effort to gather more information about bat populations. White-nose Syndrome has significantly depleted bat populations. If you know the location of a bat colony, regardless of size, you are asked to report the location to IF&W at http://www.maine.gov/ifw/wildlife/species/mammals/report-bat-colony.html or contact Cory Mosby at 941-4473.

Help for Biomass
In December, Maine regulators supported using $13.4 million in subsidies to support biomass facilities located in Ashland, Fort Fairfield, Enfield and Jonesboro. The Enfield and Jonesboro facilities have been closed for several months due to low oil prices. These two facilities, which were recently purchased by Stored Solar, will be renovated to expand their utilization and new products will be developed for market, as part of biomass generation.

The operation of these plants offers relief to logging contractors and forest landowners who have struggled financially during the past several months to maintain productivity and to properly manage Maine’s forestlands.

Degrading Our Forests
With the closing of paper mills and biomass facilities in Maine, landowners are having difficulty selling low quality wood products. This situation means that low quality trees are left at the wood-yard or are not being removed as part of harvest operations. Leaving low quality trees on the stump, will cause forest stands to be degraded over time.

It’s imperative that markets be developed that utilizes trees of marginal quality. It would help if the U.S. Environmental Protection Agency removes biomass as a greenhouse gas generator. Reclassifying this wood product would reopen markets that are currently closed and would help to support new research to use trees of low quality. MESAF members are encouraged to ask their Congressional representatives to support this change.

MESAF Fall Meeting
On October 28, MESAF held a meeting at the University of Maine that focused on “Up-to-the- Minute Reports on Forest Industry”. The program addressed economic problems confronting the forest industry and opportunities for the industry to move forward. Speakers during the morning session were: Dr. Mindy Cranall with the School of Forest Resources, Pat Strauch with the Maine Forest Products Council, Tom Doak with the Small Woodland Owners Association of Maine and Dr. Steve Shaler with the School of Forest Resources.

Dr. Creadall and Pat Strauch laid out the economic situation confronting forest industry and forestland owners. Tom Doak presented findings from work undertaken by the Economic Development Assessment Team (EDAT) convened by the Federal Government and Dr. Shaler outlined the development of new industries, or the expansion of existing facilities, to fill voids resulting from recent mill closings.

During the business meeting, several individuals were recognized for SAF membership:
- 60 Years – Everett L. Towle
- 50 Years – John C. Bozak, Jr.
- 40 Years – Alan B. Hunter, Douglas C. Jones, David E’Leiser, John K. Lutz, Robert S. Seymour and Donald T. Winslow
- 30 Years – Kevin M. Allcroft, Harold K. Burnett, Michael P. Heath, Alan C. Magrath, Elizabeth M. Ollivier and Peter F. Tracy
- 20 Years – John A. Daigle, Michael E. Day, Mark A. Doty, Joachim Maier and Pat J. Strauch
- 10 Years – Matthew C. Carroll, Gretchen A. Heldmann, Wilfred J. Mercier and Nathaniel D. Vir

Recognized MESAF Members: Alan Hunter, Wil Mercier, Alan Magrath, Don Winslow, Pat Straugh and Jack Lutz

Tours offered in the afternoon expanded upon presentations made during the morning session. Tour groups visited the Wheatland Geospatial Lab in Nutting Hall, the Advanced Structures and Composite Center and Forest Bioproducts Research Institute on the campus, and research plots on the University Forest focusing on white pine silviculture.

(Section continues on next page)
Winter Meeting
The winter meeting will be held on Feb 10, 2017 at the Attitash Hotel and Conference Center. Based on feedback from our members, we plan to alternate the meeting yearly with a location in Concord. This year the event will include updates on forestry happenings in the Granite State and a panel discussion on a topic of great concern, low grade markets. The panel includes:

- **Low Grade Wood Markets: How Did We Get Here?**: Lloyd Irland, The Irland Group
- **The New England Perspective**: Eric Kingsley, Innovative Natural Resource Solutions, LLC
- **Shifting Federal Policies on Energy and Carbon Reduction and Their Implications**: Al Steele, U.S. Forest Service

SAF members will receive a discount but all are welcome. For more information, visit the Granite State Division website, [http://www.nesaf.org/new-england-society-american-foresters-divisions-granite-state.asp](http://www.nesaf.org/new-england-society-american-foresters-divisions-granite-state.asp).

Farm and Forest Expo: Feb 17th and 18th
Members and Non-Members! Come visit us at our Farm and Forest booth #315 and enter to win a gallon of tree marking paint. [http://www.nhfarmandforestexpo.org/](http://www.nhfarmandforestexpo.org/)

Engaging students
Our division continues to focus on supporting students. Our newest partnership with 4H encourages foresters, through a suite of programs with varying levels of time commitment, to mentor and engage young people interested in forestry.

So far the program has been successful in generating interest in our membership. If you are interested in participating or getting more information please contact either Kate Guerdat, KateGuerdat@unh.edu or Andy Fast, AndrewFast@unh.edu, or go to: [https://extension.unh.edu/articles/Volunteering-4H-Growing-Partnerships-Forestry](https://extension.unh.edu/articles/Volunteering-4H-Growing-Partnerships-Forestry).

Forest Health (*From Jen Weimer, Jennifer.Weimer@dred.nh.gov*)
Needlecast diseases on white pine were the primary damaging agent again this year, seen throughout the state early summer and mapped on 12,000 acres during our aerial surveys. In addition drought conditions were significant throughout the state and we saw an increase in brush fires with about 1,000 acres burned statewide. We also saw an increase in defoliation from caterpillars which was most likely due to the absence of active fungal biocontrols which require wet conditions to be effective. Forest tent caterpillar defoliated just over 9,000 acres in the White Mountain region and maple leafcutter, maple trumpet skeletonizer, and beech leafroller were abundant in the southern part of the state.

Although states south of us were experiencing the highest level of gypsy moth defoliation in over 30 years we had only a few reports in southern NH and our fall egg mass surveys indicate levels in NH should remain low. While Maine is bracing for the next spruce budworm outbreak, traps at 40 sites throughout the north country indicate populations remain at endemic levels in NH. We also trapped for southern pine beetle at 25 sites with pitch pine and all traps were negative.

In addition, Hemlock Woolly Adelgid can now be found in 124 towns within eight counties, Elongate Hemlock Scale can be found in 42 towns within six counties, and Red Pine Scale can be found in 14 towns within four counties. Emerald Ash Borer (EAB) also continues to spread and can be now found in 20 towns within four counties. The good news is that we have recovered larval parasitoids that were released as EAB bio-control indicating they have established and may help to control EAB populations. For maps and more information on forest health in New Hampshire, visit [www.NHBugs.org](http://www.NHBugs.org), follow New Hampshire Forest Health on Twitter or like New Hampshire Forest Health on Facebook.

(Ticks)
Tick borne diseases are an increasing problem in Maine. Anaplasmosis, a bacterial disease spread by the Deer Tick, has resulted in more than 200 cases of the disease reported in 2016. Symptoms appear about a week after being infected and can cause fatigue, fever, muscle pain, chills, nausea, cough and confusion. The disease is typically treated with antibiotics; however if left untreated, the disease can cause serious medical problems.

Babesiosis is another tick-borne disease that’s become more prevalent in recent years. The disease is caused by a parasite that produces flu-like symptoms similar to Anaplasmosis. The disease also attacks red blood cells, which can cause anemia.

Tick activity can increase as winter temperatures moderate. Outdoor workers should be attentive to field conditions and take precautions as necessary.
**CTSAF Leadership**

As of 12/19/16 elections for 2017 officers have not been held. Nancy Marek, current chair elect, will move to chair on Jan 1, and Nick Zito as Sec/Treas. As of Jan 1, chair elect will be vacant, with chair Jeremy Clark moving to Maine.

**Spring Workshop** submitted by Nancy Marek

Jerry Milne from the Pleasant Valley Field Office suggested a vernal pool workshop for our group next spring to be held at the People’s State Forest. This workshop would be co-sponsored by the Friends of American Legion and People’s State Forest. The workshop would be free for SAF members and Friends group folks, with nonmembers paying a small fee. CEUs will be available.

**Yale Student Chapter** submitted by Connor Hogan, co-president

Greeting from the SAF student chapter at the Yale School of Forestry. Our chapter serves as a focal point for forestry-related activities, hosting field skills workshops, leading silviculture and forest operations tours, and helping coordinate new faculty candidate reviews.

Recent events include our annual Harvest Fest which included a cross-cut saw competition, beekeeping demonstrations, and a blue grass band. We also conducted our annual Christmas tree harvest at the Yale-Myers Forest where forty students cut trees in our student-managed tree farm. Sales from the trees directly support our SAF student activities, such as travel to conferences and forestry field trips. Over the coming winter/spring semester, we look forward to trip Milford, PA to tour the Pinchot family home at Grey Towers and see the historic Yale Camp where our predecessors conducted field work during the first quarter of last century.

**27th Annual Urban Forest Council** submitted by Chris Donnelly

On October 26, the Connecticut Urban Forest Conference / Forest Forum was held in Southington, CT. The event was jointly hosted by the Connecticut Urban Forest Conference and the Connecticut Forest and Park Association. The keynote speaker, Dr. Leslie Brandt of the US Forest Service, spoke on climate change and outlined a framework of adaption of forests to the changes being brought to them. The bulk of the day was spent in breakout sessions, with topics ranging from “The Management of Invasive Insects” to “Forestry for Bats and Backyards”, and from talks on “Modeling the Future of Urban Forest Landscapes” to “Enhancing Native Diversity, One Plant at a Time”. The wrap-up speaker, John Parry of the Forest Service, spoke on “Storms Over the Urban Forest: Disaster Readiness, Response and Recovery”.

The conference also provides the CT Urban Forest Council an opportunity to present annual awards. The awards presented this year include:

- The Fred Borman Urban Forestry Professional Award to Brian Carey, Conservation Director in Fairfield
- The Outstanding Urban Forestry Volunteer Award to Jack Hale, Chair of the Hartford Tree Advisory Committee
- The Outstanding Urban Forestry Community Award to the Town of East Hartford
- The Special Achievement Award to Katherine Beechem, Field Program Director at the Urban Resources Initiative in New Haven
- The H. Sharon Ossenbruggen Award for Meritorious Service to Dr. Robert Ricard of UConn
- The Urban Forestry Leadership Award to the Millane Family, owners of Millane Nurseries

Outstanding Project Awards were also presented to MetroCOG in Bridgeport, for their six-town mapping and analysis of the tree canopy cover in the greater Bridgeport Region, and to UConn, the CT Agricultural Experiment Station, Eversource and others, for their work on Stormwise.

Members of the Yale SAF Student Chapter at the National SAF Convention in Madison, WI (Left Photo), and Robert Ricard being presented with the Meritorious Service Award (Above Photo)
Mohawk Trail Woodlands Partnership May 2016 Update:
A Forest-Based Economic Development and Conservation Project

Purpose: The intent of the Mohawk Trail Woodlands Partnership Project (MTWP) is to bring recognition and additional financial and technical resources to the 21 municipalities in northwestern Massachusetts, primarily via special designation by the U.S. Forest Service and the Massachusetts Executive Office of Energy and Environmental Affairs to:
- Increase economic development related to forestry and natural resource based tourism
- Support the expansion of sustainable forestry practices and forest conservation on private lands
- Improve fiscal stability and sustainability of the municipalities

MTWP Study Area: The forested area in the northwestern corner of Massachusetts is the focus of the Mohawk Trail Woodlands Partnership Project. The 21-town area encompasses Adams, Cheshire, Clarksburg, Florida, New Ashford, North Adams, Peru (added October 2015), Savoy, Williamstown and Windsor in Berkshire County, and Ashfield, Buckland, Charlemont, Colrain, Conway, Hawley, Heath, Leyden, Monroe, Rowe, and Shelburne in Franklin County.

This area contains extensive natural resources. The Deerfield and Hoosic Rivers flow through expanses of northern hardwood forests, with farms and homes interspersed along mostly rural roads. The woodlands of this area provide a variety of opportunities and benefits. People are drawn to the area for its natural resource-based tourism activities such as hiking, skiing, camping, fishing and snowmobiling. A significant number of people make their living off the woodlands, whether running recreation-based businesses, cutting and selling firewood off their woodlots, harvesting timber for furniture or flooring, working as foresters or tapping sugar maples and selling maple syrup. In addition, forests provide critical ecological services including water supply recharge and protection, wildlife habitat and diversity, water and air purification, and carbon storage.

Upcoming Activities: The ultimate success of the Mohawk Trail Woodlands Partnership depends on the evolving partnerships that have been developed through the initial planning process. The next steps are intended to continue to strengthen those partnerships:
- Continued MTWP Advisory Committee meetings
- Continued meetings with U.S. Forest Service officials
- Continued community meetings with each municipality’s Select Board / City Council in 2016 to determine support for the special designation. With support from a substantial number of the 21 communities, seek State legislation creating a State designation
- Once State legislation is passed, each town would have the opportunity to “opt-in” to formally join the Partnership via a vote of the Select Board or Town Meeting

If enough of the 21-towns opt-in, Federal legislation would be pursued that would be based on the State legislation

Significant Accomplishments: The Mohawk Trail Woodlands Partnership has already yielded immediate benefits and has leveraged these grants:
- Regional Conservation Partnership Program (US Department of Agriculture): In January 2015, Massachusetts DCR was awarded $637,860 from the U.S. Department of Agriculture’s Regional Conservation Partnership Program (RCPP). The funding will support the communities in the region and local landowners by helping to integrate sustainable forestry, enhanced forest habitat and energy practices.
- Massachusetts Department of Energy Resources (DOER): DOER initiated its $350,000 feasibility study to work with the MTWP-town region to evaluate the potential for expanding the use of energy efficient renewable wood heating systems and the feasibility of establishing a community-scale wood pellet manufacturing facility to support local demand for energy efficient wood heat.
United States Forest Service: The Massachusetts Forest Alliance was awarded $250,000 from the U.S. Forest Service to create a Wood Energy Action Team. The program will reach out to potential users of wood energy in the MTWP-town region to explain why wood energy is beneficial as well as economical, and will produce web-based marketing materials geared toward residential and commercial installations of high-efficiency wood heating systems.

For more information contact Peggy Sloan, FRCOG p Sloan@frcog.org or Tom Matuszko, BRPC tmatuszko@berkshireplanning.org

The plan can be viewed at http://frcog.org/program-services/land-use-planning-zoning/ or http://berkshireplanning.org/projects/working-forest-conservation-program
### Continuing Forest Education Update ~ Andrew Fast, UNH

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<tr>
<td>10-Feb</td>
<td>Granite State SAF Winter Meeting</td>
<td>Bartlett, NH</td>
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<tr>
<td>16-Feb</td>
<td>Invasive Forest and Agricultural Insects in Massachusetts</td>
<td>Hadley, MA</td>
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<td>2-Mar</td>
<td>Biological Control of Invasive Forest Insect Pests</td>
<td>Hadley, MA</td>
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<td>7-Mar</td>
<td>Community Tree Conference</td>
<td>Amherst, MA</td>
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New England SAF - 97th Winter Meeting  
Northeastern Forest Pest Council - 79th Annual Meeting  
Maine Chapter of The Wildlife Society – 41st Annual Meeting

Adapt, Adopt, Advance: Resiliency in Natural Resource Management  
March 8 – 10, 2017  Cross Convention Center - Bangor, Maine

**TUESDAY - MARCH 7TH**

<table>
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<tr>
<th>Time</th>
<th>Activity</th>
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<tr>
<td>1:00–5:00</td>
<td>NESAF Executive Committee Meeting – Residence Inn conference room</td>
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<tr>
<td>6:00–8:00</td>
<td>NEFPC Executive Committee Meeting – Residence Inn conference room</td>
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**WEDNESDAY - MARCH 8TH**

<table>
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<th>Time</th>
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<tbody>
<tr>
<td>8:00–5:00</td>
<td>Registration – Exhibitors’ Foyer</td>
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</table>

9:45–12:00 - OPENING PLENARY – Ballrooms 1-4

- **Welcome!** - Kyle Lombard, NEFPC Chair; Kara Moody METWS President; Jeff Ward, NESAF Chair

- **Mast Trade to Modern Times: Markets and Resiliency in the Maine Logging Industry** – Richard Judd, University of Maine

- **Using New Technology and Data to Improve Forest Management: Venom or Panacea?** – Aaron Weiskittel, University of Maine

- **Exploring Potential Futures of the New England Forest Landscape** – Kathy Fallon Lambert, Harvard Forest

- **Educating Environmental Leaders in an Interdisciplinary, Global Future** – Ingrid Burke, Carl W. Knobloch, Jr. Dean, Yale University School of Forestry & Environmental Studies

- **Panel Discussion and Q&A** – Moderator TBD

12:00–1:30  Box Lunch and Business Meetings

Ballroom 7   NESAF Business Meeting – Jeff Ward, Chair

Ballroom 5   NEFPC Business Meeting – Kyle Lombard, Chair

Ballroom 6   METWS Business Meeting – Kara Moody, President

1:30–2:00  Break and Visit with Exhibitors – Exhibitors’ Foyer

2:00–3:30  CONCURRENT SESSIONS 1:

**NEFPC 1 – Ballroom 5 - Gerald N. Lanier Graduate Student Forum**  
Moderator: Dr. William H. Livingston, University of Maine

Hear six graduate student presentations on research into current forest health issues in New England forests.

**METWS 1 – Ballroom 6 - Rare Species / Rare Natural Communities**  
Moderator: Steve Walker, Maine Coast Heritage Trust

Four presentations followed by Questions & Answers and Session Summary

**NESAF 1A – Ballroom 7 - Mixedwood Silviculture**  
Moderator: Tony D’Amato, University of Vermont

2:00  A Cross-border Examination of the Silviculture of Northern Hardwoods - Tony D’Amato, University of Vermont and Steve Bedard, Quebec Ministry of Forests, Wildlife, and Parks

2:45  A Cross-border Examination of the Silviculture of Spruce Mixedwoods - Laura Kenefic, USFS Northern Research Station and Patricia Raymond, Quebec Ministry of Forests, Wildlife, and Parks

**NESAF 1B – Meeting Rooms A-B - Outreach Tools for Working with Small Woodland Owners**  
Moderator: Jessica Leahy, University of Maine

2:00  Increasing Forest Resiliency – Paul Catanzaro, University of Massachusetts – Amherst

2:30  MyLandPlan for Beginning Landowners - Ian Anderson, University of Maine

3:00  Lessons Learned Engaging Tree Farmers with Forestry for the Birds – Jessica Leahy, University of Maine
NESAF 1C – Meeting Rooms C-D - Evolutions in Remote Sensing for Forestry
Moderator: Wil Mercier, J.W. Sewall Company
2:00  A Forester’s Guide to Advancements in Remote Sensing Technology - Wil Mercier, Sewall
2:30  Aerial Platforms and the Use of Photogrammetric Structure from Motion Products, Point Clouds 
and Lidar to Assist in Landscape Level Management - Carter Stone, Barbara Wheatland Geospatial Programs, University of Maine
3:00  From Strategic to Operational: An Enhanced Forest Inventory for New Brunswick - 
Adam Dick, New Brunswick Department of Energy and Resource Development

3:30-4:00    Break in Exhibitors’ Foyer
4:00–5:30  CONCURRENT SESSIONS 2

NEFPC 2 – Ballroom 5 – Emerald Ash Borer Management in the Northeast
Moderator: Kyle Lombard, New Hampshire Division of Forests and Lands
4:00  Emerald Ash Borer in North America - Nate Siegert, US Forest Service
4:45  New Hampshire’s Statewide EAB Management Concepts - Bill Davidson, NH Division of Forests and Lands

METWS 2 – Ballroom 6 - Mammals
Moderator: Cory Mosby, Maine Department of Inland Fisheries & Wildlife
Four presentations followed by Questions & Answers and Session Summary

NESAF 2A – Ballroom 7 - Tribal Forestry
Moderator: Ben Stevens, University of Maine
4:00  Integrating Harvesting, Sugaring, and Hunting on Passamaquoddy Trust Lands in Maine - 
Ernest Carle, Passamaquoddy Forestry Department
4:30  Mapping Wabanaki TEK: Identifying Basket Quality Brown Ash Habitat in Northern Maine - 
Suzanne Greenlaw, University of Maine and member of the Maliseet Tribe
5:00  Wabanaki Youth in Science: WaYS Forward - Tish Carr, University of Maine Wabanaki Center

NESAF 2B – Meeting Rooms A-B - Larch in New England
Moderator: Lloyd Irland, The Irland Group
4:00  Genetics of Exotic Larch – Mike Greenwood, University of Maine Faculty Emeriti (invited)
4:20  Operational Experience – Dan Simonds, Mixedwood
4:30  Growth/Yield and Stand Table Projections – David Maass, Consultant
4:45  Market Experience – TBD
5:00  Economics of Exotic Larches – Mindy Crandall, University of Maine (invited)
5:15  Long-term Studies – Justin Waskiewicz, University of Vermont

NESAF 2C – Meeting Rooms C-D - Tech Café
Facilitator: Jennifer Hushaw, Manomet
Bring your favorite gadget (i.e. handheld, tablet, smartphone, apps, pens & pencils) to share. 
An informal gathering to network with others, share what works for you & maybe learn a new tip or two.

5:30–7:00  Student Quiz Bowl – Ballrooms 1-4
5:30–7:00  Icebreaker Reception, Poster Session, Visit with Exhibitors
7:00    Dinner on your own

THURSDAY - MARCH 9TH
7:00-8:00  Continental Breakfast – Exhibitors’ Foyer
7:00-8:00  Working Group Meetings – locations tba
7:00-8:00  Student Meeting Cross-disciplinary – All are welcome – location tba
8:00–5:00  Registration – Exhibitors’ Foyer
8:00–9:30  CONCURRENT SESSIONS 3  

**NEFPC 3 – Ballroom 5 - Spruce Budworm (SBW)**  
Moderator: Allison Kanoti, Maine Forest Service  
8:00  Spruce Budworm around the Region & Lessons from Quebec – TBD  
8:30  Mass Moth Dispersal: The Achilles Heel to a Spruce Budworm Containment Program? – Rob Johns, Natural Resources Canada  
9:00  Landscape Level Forest Management and Spruce Budworm Outbreak Severity – Daniel Kneeshaw, Université du Québec à Montréal  

**METWS 3 – Ballroom 6 - Birds**  
Moderator: Linda Welch, United States Fish & Wildlife Service  
Four presentations followed by Questions & Answers and Session Summary  

**NESAF 3A – Ballroom 7 - Understanding and Managing Drought Impacts in Northeastern Forests**  
Moderator: Jennifer Hushaw, Manomet  
8:00  The 1960s Drought in Perspective - Ray Bradley, Ambarish Karmalkar, Dan Miller, University of Massachusetts  
8:30  Northeastern Forest Response to Drought at Multiple Scales - Adam Coble, University of New Hampshire  
9:00  Strategies for Managing Forests to Increase Drought Tolerance - Tony D’Amato, University of Vermont  

**NESAF 3B – Meeting Rooms A-B - Mini-Tools for Engaging Landowners – TELE Case Studies**  
Moderator: Mary Tyrrell and Katherine Hollins, Yale F&ES  
Presenting the basics of TELE and a few case studies of how projects and partnerships are using the tools.  

**NESAF 3C – Meeting Rooms C-D - Rehabilitation Silviculture**  
Moderator: Brian Roth, Cooperative Forestry Research Unit  
8:00  Rehabilitation Silviculture: Someone Ate the ‘Seed Corn’ - Now What? - Lloyd Irland, The Irland Group  
8:40  Industrial Perspective: Operational Experience with Rehabilitation of Diseased Beech Stands - Nick Baser, Seven Islands Land Co.  
9:00  Early Stand Tending inDegraded Northern Conifers: Long-term Outcomes - Laura Kenefic, USFS Northern Research Station  

9:30-10:00  Break in Exhibitors’ Foyer  

10:00–11:30  CONCURRENT SESSIONS 4  

**NEFPC 4 – Ballroom 5 - State and Province Updates**  
Moderator: Colleen Teerling, Maine Forest Service  

**METWS 4 – Ballroom 6 - Herptiles**  
Moderator: Derek Yorks, Maine Department of Inland Fisheries & Wildlife  
Four presentations followed by Questions & Answers and Session Summary  

**NESAF 4A – Ballroom 7 - Tackling the Climate Conversation: Tips & Tricks for Talking with Clients and Colleagues**  
Moderator: Jennifer Hushaw, Manomet  
Panelists: Maria Janowiak, Northern Institute of Applied Climate Science; Richard Carbonetti, LandVest; Christine Cadigan, American Forest Foundation; Karrah Kwaski, USDA Northeast Climate Hub; Sandy Wilmot, Vermont Dept. of Forests, Parks and Recreation  

**NESAF 4B – Meeting Rooms A-B - Northeast Logging Capacity & Markets: Present and Future**  
Moderator: TBA  
10:00  Loggers of the Northeast: Are They Thriving, Striving or Just Surviving? – René H. Germain, SUNY College of Environmental Science and Forestry  
NESAF News Quarterly

NESAF 4C – Meeting Rooms C-D - Northern Forest Regeneration
Moderator: Laura Kenefic, US Forest Service
10:00 Long-term Regeneration Dynamics in Tolerant Forests of the Northeast - Nicole Rogers, University of Vermont
10:30 Red Spruce Regeneration in a Managed Mixedwood Forest: 15-year Research Overview and Future Prospects - Daniel Dumais, Quebec Ministry of Forests, Wildlife, and Parks
11:00 How Does the FIA Regeneration Indicator Inform Forest Regeneration Management in New England? - Will McWilliams, USFS Forest Inventory and Analysis

11:30–1:30 NESAF, NEFPC, METWS AWARDS LUNCHEON – Ballrooms 1-4
1:30-2:00 Break in Exhibitors’ Foyer
2:00–3:30 CONCURRENT SESSIONS 5
NEFPC 5 – Ballroom 5 - State and Province Updates (continued) and Other Defoliators
Moderator: Rosa Yoo, New Jersey Forest Service
2:00 State/Provincial Reports continued
3:10 Bioclimatic Envelope-based Suitability Mapping of a Bark Beetle Vectored Exotic Blue-stain Pathogen, Endoconidiophora polonica – Kishan Sambaraju, Canadian Forest Service

ME TWS 5 – Ballroom 6 - Invertebrates & Fish
Moderator: TBA
Four presentations followed by Questions & Answers and Session Summary

NESAF 5A – Ballroom 7 - Climate-informed Management - Real World Climate Adaptation Stories
Moderator: Maria Janowiak, Northern Institute of Applied Climate Science & US Forest Service
2:00 Managing Forests to Build Resilience to Changing Conditions - TBD
2:30 Planting Future-adapted Species: Challenges and Opportunities - Christopher Riely, Providence Water
3:00 Forest Adaptation in Action: Climate Change Adaptation Projects in Northern Forests - Todd Ontl, Northern Institute of Applied Climate Science & USDA Northern Forests Climate Hub

NESAF 5B – Meeting Rooms A-B - Invasive Plants: Rules and Standards, Tools for Mapping
Moderator: Ronald Lemin, CPS
2:00 SFI/FSC Certification Standards for Invasive Plant Management - TBD
2:30 Rules to Control the Sale of Terrestrial Invasive Plants in Maine and Other States - Gary Fish, Maine State Horticulturalist
3:00 iMapInvasives: A Tool for Invasive Plant Mapping and Management - Nancy Olmstead, Maine Natural Areas Program

NESAF 5C – Meeting Rooms C-D - Considerations for GIS Mapping
Moderator: Wil Mercier, J.W. Sewall Company
2:00 Tools for Assessing and Designing Color Maps for the Growing Population of Color Impaired Viewers - Dave Hobbins, University of Maine at Fort Kent
2:30 Title TBA - Lance Case, Huber Resources (60 minute presentation)

NESAF 5D – Meeting Rooms 1-2 - The Future of Forests and Forest Science
Facilitator: Carol Redelsheimer, SAF
2:00 SAF recently hosted a series of dialogues around the country, including a group in Concord, NH, to get a sense of the challenges facing America’s private and public forests in the coming decades. Seeking a diversity of ideas, we wanted to gain a clearer awareness of how SAF might work with others to build a stronger, broader community of interests about sustainable management of forests and the science needed to do so. This 90-minute session will share preliminary results, explain how the information will be utilized, what will come next, and offer the opportunity for comments and further dialogue.

3:30–4:00 Break in Exhibitors’ Foyer
4:00–5:30  **CONCURRENT SESSIONS 6**

**NEFPC 6 – Ballroom 5 - White Pine Issues**
Moderator: Dr. William H. Livingston, University of Maine

- 4:00  Current Health Status of *Pinus strobus* (Eastern White Pine) across Eastern North America – Kara Costanza, *University of Maine and Thomas Whitney, University of Georgia*
- 4:30  Soil and Stocking Effects on Caliciopsis Canker of *Pinus strobus* L. – Isabel Munck, *US Forest Service*
- 4:50  Impacts of White Pine Needle Damage in New England and Response to Silvicultural Thinning Treatments – Cameron McIntire, *University of New Hampshire*
- 5:10  History and Current Conditions of Pine Leaf Adelgid in Maine – Allison Kanoti, *Maine Forest Service*

**METWS 6 – Ballroom 6 - Impacts of Forestry Practices on Wildlife**
Moderator: Henning Stabins, Weyerhaeuser

- Four presentations followed by Questions & Answers and Session Summary

**NESAF 6A – Ballroom 7 - State of the Forest Products Industry in and around Vermont**
Moderator: Emily Meacham, Vermont Department of Forests, Parks & Recreation

- 4:00  Title TBA - Christine McGowan, *Vermont Sustainable Jobs Fund*
- 4:30  Title TBA - Rob Riley, *Northern Forest Center*
- 5:00  TBA

**NESAF 6B – Meeting Rooms A-B - Invasive Plants: Additional Factors, Integrating Control Into Your Business**
Moderator: Nancy Olmstead, Maine Natural Areas Program

- 4:00  Invasive Plants and Deer: Cumulative Impacts - Tom Rawinski, *USFS invited*
- 4:30  Integrating Invasive Plant Management into Your Business or Wood Lot - *TBD*
- 5:00  Invasive Plant Control Methods and Strategies - Ronald Lemin, *CPS*

**NESAF 6C – Meeting Rooms C-D - Flashtalks**
Moderator: Bob Seymour, University of Maine

- 4:00–5:30  Hear a range of speakers and topics in this eclectic collection of short presentations.

**6:30  Alumni Receptions – locations TBA**

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**FRIDAY – MARCH 10TH**

7:00-8:00  Continental Breakfast – Exhibitors Foyer
7:45  Box Lunch pickup for field tours – Exhibitors Foyer
8:00-12:00  FIELD TOURS – departing the Cross Center at 8:00; transportation on your own.

**Field Trip 1: JD Irving Sawmill - Ashland, ME**
Host: Toby Pineo
Experience one of the most modern sawmills in North America, operating the fastest trim line on the continent. Limited to 20 attendees. 2 hours and 45 minutes north of Bangor

**Field Trip 2: White Pine Silviculture: Research and Practice – Old Town, ME**
Hosts: Keith Kanoti and Bob Seymour
Join Forest Manager Keith Kanoti and Silviculture Professor Bob Seymour for a tour of the School of Forest Resources’ Demeritt Forest focusing on silviculture of eastern white pine. Attendees will visit: 1) a white pine weevil resistance trial, 2) a low-density thinning trial, and 3) operational irregular shelterwood silviculture. 30 minutes north of Bangor

**Field Trip 3: Advanced Structures and Composites Center/Forest BioProducts Research Institute – Orono**
Hosts: Russell Edgar (ASCC) and Amy Luce (FBRI)
See first-hand the latest research in wood science from Cross Laminated Timbers for wooden skyscrapers, Structural Testing, and Bridge in a Backpack, to Nanocellulose applications, which are revolutionizing the composites industry. Limited to 60 attendees. Parking passes for the campus will be provided. 30 minutes north of Bangor.
Field Trip 4: Eastern White Pine Health and Responses to Environmental Changes – Orono, ME
Host: Bill Livingston, University of Maine
Cooperators from the USDA Multistate Research Project report on recent work, plans for a management guide, and priorities for future work. 204 Nutting Hall, University of Maine. Contact: Bill Livingston (207-581-2990). Limited to 20 attendees. Parking passes for the campus will be provided. 30 minutes north of Bangor

Field Trip 5: Pride Manufacturing - Burnham, ME
Host: Randy Dicker
Pride is a long-time specialty hardwood manufacturer of golf tees, cigar tips, and now Lincoln Log wooden toys. Limited to 20 attendees. 1 hour south of Bangor

Field Trip 6: TWS - tba
Host:

Field Trip 7: TWS - tba
Host:

8:00-12:00 WORKSHOPS AT THE CROSS CENTER
Box lunches will be available for workshop attendees to pick up at 10:00 in the Exhibitors’ Foyer.

8:00–10:00 Practical Ethics Workshop – Meeting Room A
Leader: Marianne Patinelli-Dubay, SUNY-ESF Northern Forest Institute
This workshop will introduce a variety of approaches to ethical problem solving. Learn about six of the primary methods that we employ every day when faced with ethically weighted situations. Following a discussion about each approach, its central ideas, and an overview of how the method works, use those techniques to reach consensus on a series of case studies/project situations provided by participants. With greater awareness of how you “intuitively” navigate a fraught or conflicted situation, comes a heightened ability to “interrogate” your own thinking for bias and to reflect more ably on your decision making process. Limited to 32.

8:00–4:00 Professional Forester Training – Meeting Room B
Leader: Dan Jacobs, MFS District Forester; Thomas Gilbert, MFS Water Resources Forester; and Ted Shina, Huber Corporation, Senior Operations Forester
This session will be roughly split into equal indoor and outdoor components. Primary focus is to review Maine Forestry Laws, BMPs, and other regulations (e.g., Shoreland Zoning) that a Maine Licensed Forester needs to understand and implement. The intent of the session is to provide the knowledge needed to pass the Maine-specific portion of the Maine Licensed Forester exam. An additional fee ($25) will be required to offset the cost of rulebooks, other handouts, and group bus transportation to field sites. Contact Kenneth Laustsen for additional information and the draft agenda - call (207-287-3135) or e-mail (ken.laustsen@maine.gov). Limited to 45.

8:00-12:00 Forest Technology Demonstrations – Meeting Room C
Leader: Tony Guay, Barbara Wheatland Geospatial Lab, University of Maine
Mobile demonstrations of the technology being used by the Geospatial Lab -LiDAR, high resolution imagery, UAV applications, georeferenced PDF’s, mapping, and handhelds. Limited to 38.

8:00-12:00 TBA – Meeting Room D
Leader: Maine Chapter of The Wildlife Society

8:00–12:00 NESAF Leadership Training Seminar – Meeting Room 1
Leader: Kenneth Laustsen, Maine Division Representative to NESAF
A NESAF Leadership Training Seminar is being held for invited members from the representative New England divisions and chapters. Seminar is projected to run from 8:00 AM to Noon, and is provided at no cost. A waiting list will be offered to all other interested SAF members on a first come – first served basis to fill in any remaining slots. Seminar will accommodate 12 – 20 attendees. Kenneth Laustsen can be contacted for additional information - call (207-287-3135) or e-mail (ken.laustsen@maine.gov).

8:00–12:00 TBA – Meeting Room 2
Leader: Maine Chapter of The Wildlife Society
NESAF Member Registration Form

**Name (Name Tag)**

**Organization**

**Address (Street/PO Box)**

**City**

**State**

**Zip**

**Phone**

**Fax**

**email**

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<th>Program Category</th>
<th>By Feb 20, 2017 (early rate)</th>
<th>By Feb 28, 2017 (normal rate)</th>
<th>After Feb 28, 2017 (Walk-in rate)</th>
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**Program Options**

- # of Tickets
- Unit Cost
- Total

- Additional Thursday Buffet Ticket (Purchased by February 20th) $35.00
- Friday Workshop – Professional Forester Training **ONLY**: additional fee for bus transportation. $25.00

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**Please note: Buffet tickets and conference materials may not be available after February 20, 2017. Displayed rates are non-refundable.**

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**REGIESTER by Mail:**
Laura Audibert
11 Leopold Street
Fort Kent, ME 04743-1700
Phone: 207-834-6773 E-mail: La4568@roadrunner.com (Info ONLY)

**Questions/FMI**
Ron Lemin ronald.lemin@cpsagu.com
or 207-287-3135

**Hotel Reservations:** Rooms have been reserved at four locations. Attendees will need to call the number listed and reserve rooms based on availability. The Residence Inn and Hollywood Casino Hotel are adjacent to the Cross Center, while the Fairfield Inn and Quality Inn (formerly Days Inn) are located a short distance away on the Odlin Road. Parking at the Cross Center is free. One can park behind the Cross Center or park in the parking garage across the street. Make your reservations early, as room rates are only guaranteed until **February 5, 2017**! If you have problems please email Ron Lemin at ronald.lemin@cpsagu.com.

**Special Needs and Accommodations**

- ☐ Please check here if you prefer vegetarian, gluten-free, or other dietary needs; a representative will contact you.
- ☐ Please check here if you have additional special concerns and a representative will contact you.

**Payment Method:** *(On-line registration and credit card processing will be available January 15, 2017 through www.NESAF.org)*

- Check or Money Order enclosed (Make payable in US Funds to – Maine Division, SAF)

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<td>22 Bass Park Blvd</td>
<td>(207)-433-0800</td>
<td>King studios</td>
<td>Tues 10; Wed 25;</td>
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<td>Group: Society of American Foresters</td>
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<tr>
<td>Hollywood Casino Hotel</td>
<td>500 Main Street</td>
<td>(877)-779-7771</td>
<td>80% doubles, 10% kings</td>
<td>Tues 10; Wed 60;</td>
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<tr>
<td>Fairfield Inn and Suites</td>
<td>300 Odlin Road</td>
<td>(207)-990-0001</td>
<td>Doubles</td>
<td>Tues 30; Wed 50;</td>
<td>$91.00 Fed Rate!</td>
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<td>Quality Inn formerly Days Inn</td>
<td>250 Odlin Road</td>
<td>(207)- 942-8272</td>
<td>Doubles</td>
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+ **Grand Total**
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.