

Ford Center Forest Forum:

Emerging Management and Research Issues in Northern Hardwood Forests of the Western UP

September 11, 2026

Meeting Notes and Agenda:

9:30-9:40 am Welcome and Introduction (each person introduces themselves)

- Maria Janowiak – Introduction to NIACS (www.NIACS.org)
 - Our focus is on making science more accessible to the management community and bridging the gap between science and management
- David Flaspohler – Introduction to CFRES
 - Our goal is to deliver transformative education to students
 - This meeting is part of an ongoing discussion about the future of forests and land management
- Mark Rudnicki – Welcome to Ford Center, orientation of space/safety
 - Welcome and welcome back to former students!
- Adrienne Keller –
 - Purpose of today's meeting:
 - Bring together researchers and forest managers from across the western UP to foster connections and professional relationships
 - Learn about new research and approaches for forest management in the region
 - Foster vibrant dialogue to deepen understanding of current research and management projects while helping shape future efforts in the region.
 - Let's think about how we can benefit from each other's knowledge and skills, rather than burrowing down and trying to always do more with less

9:40-10:30 am Manager Flash Talks

- **Rick Hill**, Western UP Timber Management Specialist, Michigan Department of Nature Resources, "Management in the Middle: Modernizing Hardwood Silviculture in the Zone of Maximum Impact"
 - Importance of advance regeneration is a key determinant of success for northern hardwoods
 - We have more considerable challenges in the southern UP – worms, deer, lack of regeneration – and we can't easily cut our way out of this problem
 - In the central UP we have some interesting opportunities to try new things – still plenty of sugar maple regen

- Trying new things!
 - DNR is abandoning Arbogast. We are looking at area regulation instead.
 - Thinning down to 60 ft² to create better conditions for seedling establishment and growth
 - Preserving more large trees for seed, balancing for economic maturity
 - Only place gaps where advance regen is present. And make bigger gaps once regen is established. 20% of the stand in gaps!
- Risks and Backups
 - Have to be patient for good seed years. Don't get discouraged.
 - Need buy-in from managers and foresters to try new things
 - Raspberry, sedge, ironwood, and ash could "win"
 - Don't cut yourself into a dead end. Keep flexible options. Think about cover type conversions from aspen to hardwood or from red pine to northern hardwood. Also conversions away from northern hardwoods.
- Questions
 - Why BA targets not diameter limit targets?
 - BA targets give a better opportunity to focus on quality improvement
- **Amber Marchal**, Co-General Manager, Lyme Great Lakes Timberlands, "Managing Northern Hardwoods Amid Changing Conditions: Balancing Long-Term Objectives with Operational Realities"
 - Similar issues to Rick and the DNR
 - Our lands were previously Mead, Verso, Plum Creek, now Lyme. Have to cope with changing philosophy over time. But all companies want to manage for economic sustainability and a healthy forest.
 - Prior owners expected to need softwoods in the future, so they emphasized those spp.
 - Establishing desired spp is less predictable than it once was (deer, invasive spp, competing vegetation, climate and disturbance, past mgmt., market constraints)
 - Operational realities (increased costs for everything, aging workforce, increased recreational use, volatile markets, seasonal access limitations, etc.)
 - Balancing long-term vision and short-term constraints
 - Help the loggers and maintain contractor relationships
 - Focus on desired future conditions

- We are in an excellent wood basket! And we have diverse markets
- Keep learning and try new things
- Questions
 - How has the hardwood market been with the recent mill closure?
 - Pulp is oversupplied, but veneer is a bright spot right now
 - You are losing frozen ground in the winter, but are you gaining any access in other parts of the year?
 - Better conditions in Sept and Oct, but it's better to move wood in the winter because logs don't stain as much and markets are generally tight in the fall. Less stress overall in the winter, especially for logging crews.
- **Alex Helman**, Forest Project Manager, The Nature Conservancy , “Carbon Stewardship via Improved Resiliency in Northern Hardwood Forests”
 - Echoing mgmt. challenges from Rick and Amber!
 - Specific project: Carbon stewardship in older northern hardwood forests
 - Two areas: Slate River (hemlock hardwoods) and Wilderness Lakes (northern hardwoods lacking conifer component)
 - Variable density thinning – gaps, skips, and thinning (10% in gaps, 10% in skips) Gaps up to ½ acre.
 - Improving hemlock live crown ratio to improve their vigor.
 - Scarification in gaps to help many underrepresented spp and underplanting hemlock and white pine. Taking advantage of advance regen or desirable overstory.
 - Borrowing techniques from MN – tree fencing, tubes, and bud caps. One area is a deer yard, the other is not.
 - Scarification and underplanting include challenges – local capacity, costs, uncertain benefits
 - Questions
 - What are you doing to improve hemlock live crown ratio?
 - Low thinning and crown thinning to improve space around hemlocks, strategic gaps (but worried about shock). Leaving southern aspects shaded.
 - Scarification – what percent of northern hardwoods have organic horizons to move away?

- We are not in earthworm areas and we have dense leaf mats, so scarification does make a difference
 - Does TNC have a plan for hemlock wooly adelgid?
 - We do monitoring and this is our attempt to try and be proactive. I'm not sure what we would do if it showed up tomorrow. Other mgmrs in the LP are treating hemlocks along trees to keep streams shaded.
- **Sara Vial**, Silviculturist, Ottawa National Forest, *"Installation and Compliance of Hardwood Openings"*
 - Agree with all the difficulties! Intermediate spp (yellow birch, black cherry, basswood, northern red oak) are on the decline. Ottawa NF stands are older and generally have a lack of disturbance. We get great regeneration but we have a hard time recruiting seedlings to the midstory.
 - We are trying to do more to place focused gaps around spp we are trying to promote.
 - We have to communicate better with contractors, because we have high turnover and we have to retrain people every time.
 - We are moving forward with bole-to-bole measurement for gaps, which has greatly improved consistency and helps us achieve actually larger gaps that we hope for.
 - Individual tree selection doesn't allow sunlight to persist long enough!
 - We need to force diversity of spatial structure. That includes gaps as well as underplanting.
 - TSI to release desirable spp like hemlock, black cherry, paper birch, yellow birch, basswood.
 - Questions
 - What is your gap spacing?
 - We specify a number of gaps per acre (1 to 4) we are pushing pole to bole gaps of 100 to 150 feet on the large end.
 - How do you prioritize where you do things across the landscape?
 - We are constrained to work where we have approved NEPA. We are pushing NEPA projects to be larger so we can respond to areas of need.
 - Rx fire?
 - It is a disturbance event that operated on the landscape that has been excluded to a large degree. Full sun gaps helps break down finer fuels and accelerate nutrients. Spring burning and earlier soil warming can help with paper birch regen.

- It's planned, not implemented. Desire would be to create a mosaic of conditions, some areas will not carry at all and that is fine.

10:30-11:00am Manager Panel Discussion

- In the spirit of thinking about the connection between management and research, can you offer one example of where research specifically informed a management decision or practice?
 - Alex = Hemlock wooly adelid research from the NE and Canada to improve crown vigor as a proactive strategy
 - Rick = DNR's Big Hardwood Project drove many of our practice adjustments
 - Sara = research in Appalachian forests reinforced the idea that crowns close so quickly
 - Amber = similar, MTU trials showed the value of thinning to lower BA levels. Also research on deer wintering habitat and how to manage in Deer wintering complexes
- Many desired spp also have forest health issues (red oak, hemlock, etc.) what are you thinking about forest health issues?
 - Rick = we are also planning to plant white oak to break up red oak stands
 - Sara = planting bur oak to boost native populations and provide mast
 - Amber = thinking about what is healthy right now and try to work with that.
 - Alex = we recently saw the DREAM project in WI and we are using Tree Atlas to think about supplemental spp like white pine as an alternate to hemlock
- Future outlook is not great for many species with climate change. What about general resilience of the forest, not just the spp that exist today? What about shifting composition?
 - Alex = TNC hasn't done full scale assisted migration, but we are exploring new seed sources. SFI certification has some limits.
 - Rick = we have some pilot areas of AM but also constraints with certification. Lower BA and larger gaps will encourage diversity.
- Scarification – what natural disturbance is that replicating? Fire or wind? How can you mimic windthrow (microhabitats?)
 - Alex - Effectiveness of tip-up mounds is an area of research. But operators don't like creating tip-up mounds. We are leaving larger trees that might have otherwise been harvested, intending that those will blow down eventually.
 - Amber – harvest some areas during times of low snow to create more ground disturbance. But new equipment is pretty low impact.
 - Sara – we leave reserve trees, expecting that some of them will blow down.
 - Rick – yea, logger revolt! We are thinking about using area retention in NH rather than just relying on marking individual trees.
- Do you ever use herbicide? Will scarification create more competing veg?
 - Alex – no, we don't use it as a forestry tool.
 - Sara – we don't use it. We use mechanical control.
 - Rick – we use it in pine stands, but it has been tested in the Big Hardwood Study. Garlon-glyph mix worked better. Downstate it is more of a pressing issue.
 - Amber – Red pine and invasive spp treatment.
- Is anyone using brush barriers and how is it working?

- Rick – the Big Hardwood Study left jackstrawed tops to impede deer, and that worked for a few years. Not a long-term solutions
- Sara – we have a slash wall planned for the next few years, so we'll learn. We don't have a lot of deer issues in our most productive areas, so we're lucky. We are trying bud capping if needed. Index card stapled over the terminal bud.
- Amber – we tried a few slash walls and we are waiting to see how they work! We found a fawn inside of one wall.
- Alex – we will try to leave tops to deter deer. We are also looking at seeding balsam where we have gaps in hemlock stands to act as a companion and protects hemlock.
- Type conversions – would you do things differently if you knew it would be successful?
 - Rick – Red pine sites that are on northern hardwood ground. Pine straw provides enough soil cover for NH seedlings. Aspen stem density might protect some spp from browse. These things can be leveraged as tools.
 - Amber – this often is affected by prior philosophies of land managers who had goals for more softwood on the landscape. Also depends on deer browse and other stressors that are preventing or encouraging the change.
 - Sara – our Forest Plan dictates our overall landscape composition. We try to consider whether we are short or over our targets for each cover type in each MA. We have the luxury to think about managing this landscape “forever”.
- Wrap up: Stephen's key points
 - There's a spectrum of options, from “Work with what you have” vs. intervening hard to change the stand.
 - How much can you skate to where the puck is going to be?
 - Socioeconomics was a significant topic in the presentations, but it's a gap in the discussion right now!

11:00-11:20 am *Break*

11:20-12:00 pm *Research Flash Talks*

- **Chris Webster**, Professor, CFRES, MTU, “Using Silvicultural Experiments to Identify Bottlenecks and Maintain Species Diversity in Northern Hardwood Forests”
 - Canopy gap study – small gaps close really quickly and the fill up with ironwood and sugar maple. Also deer prefer to use the small gaps. Yellow birch only survived within the deer fences.
 - Yellow birch legacy tree project – central yellow birch trees with openings, sized by tree height. Too wet to scarify. Ponsse machines don't do much scarification. Yellow birch and hemlock does well on the southern edge of the gap and in the shadow of the legacy trees. Now we are getting ready to expand these gaps. Central legacy trees help prevent raspberry takeover. Changes the way the operator works, also!

- NH Seed – artificial tip-up mounds did help underrepresented tree species, but they tended to be small. Operators hate it. Scarification was beneficial for YB and overall diversity. Seed addition and deer exclosures were the best at boosting diversity.
- Questions
 - Is there sun shock mortality on yellow birch in the gaps?
 - Some, but not much. We've only lost about 10/50 trees over 20 years. Most are doing well, crowns have expanded.
- **Christel Kern**, Research Forester, Northern Research Station, USFS, "Long-term and New Forest Service Research on Sustainable Management of Northern Hardwoods"
 - Value of experimental forests – established over 100 years ago, during the cutover era when silviculture was still an early science.
 - Residual BA study, partial cuttings = started in the 1950s. How do we get pole sizes up to sawtimber as fast as possible? Tested different BA levels – 90, 75, 60. 90 BA = lots of quality trees, but mostly sugar maple. 65 BA = less quality, but more diversity. 75 seemed to be the best tradeoff.
 - But after 65 years, the 90 BA is starting to lose some quality and the 65 BA is starting to improve quality and there is less defect, and less epicormic branching over 7 different entries. 75 and 60 BA had similar take-home. We have options!
 - Large-scale map of NH resource = sapling density is lower in some places in the UP, but not as risky as areas out east
 - DREAM = assisted migration, deer exclosure, competition control, etc. being tested.
 - Questions
 - What else can you share from the large-scale study?
 - Preliminary = eastern edge of NH range is more vulnerable, more forest health issues. Fewer problems here without beech!
 - Should we plant beech outside the range in the western UP?
 - Many potential conflicts. People want to preserve the spp but it can conflict with mgmt. goals. We are planting with elm and chestnut in the DREAM study.
 - What was the diameter distribution in the beginning of the Argonne stand?

- They were initially pole-size stands. We were working with just one age class initially, but a second age class comes in after the 7th harvest.
- **Julia Burton**, Associate Professor, CFRES, MTU, “Adaptive Capacity Through Silviculture: Managing Risk and Maintaining Ecosystem Services in Northern Hardwood Forests”
 - Climate change can introduce new vulnerabilities – more episodic or unreliable regeneration, drought risk, etc. Sugar maple suitable habitat is projected to decline in the UP. This is compounded by legacy conditions, deer, earthworms, invasive species, etc.
 - We need to test alternative mgmt. methods against the “no action” approach, which is also advocated.
 - We are in our third growing season, testing assisted migration and different harvest methods and tending methods. Which species will do well under which conditions?
 - Are there economic tradeoffs for these approaches?
 - Question
 - How did you consider economic tradeoffs when you were designing sampling design?
 - We considered the sale value of the harvest. The BAU treatment had the highest residual BA, and the transition has the lowest residual BA. Most revenue came from the transition treatment but it was the most costly to implement with planting and deer tubes. Too expensive for most managers. (\$4-5K per acre).
- **Tara Bal**, Associate Professor, CFRES, MTU, “Forest Health in Northern Hardwoods: From Forest Change to Management Action”
 - Oak wilt has spread to the north of Marquette for the first time. It’s coming to the WUP and we need to be ready.
 - Long-term monitoring of maple dieback. Sugar maple dieback and earthworm disturbance increased over a decade. Ground-layer spp also changed.
 - Oak wilt risk prediction – when and where will oak wilt appear? We already have the beetle vectors. Beetles show up weeks before they visit wounds. April 15 is our current cutoff for oak mgt, but this could be delayed in the UP with updated monitoring data.
 - We are testing disease-resistant beech trees in plantings. Promoting resistant genetics.
 - Question
 - Are trees resistant to beech leaf disease also resistant to beech bark disease?
 - No, unfortunately. But some treatments might benefit both issues.

- What barriers, if any, do you encounter when trying to connect some of your research portfolio to applied forest management?
 - Chris - Identifying problems that are most pressing and where we can be most useful. How do we fund all the cool ideas? How do we get funding more monitoring and maintaining treatments through time?
 - Julia – I get to visit with managers a lot, and the communication is a great benefit.
- What's going to happen to forest service research with the reorg?
 - Christel – R&D is still part of the new organization, but we are still waiting for details.
- The Ottawa NF is watching oak wilt all around. How far out are we from seeing additional guidance or suggestions about treatment?
 - We are meeting across the state. Our next project will test new policies and learn from mgr policies in other places, Wisconsin has a 2-tier system, so does NY. Canada doesn't have any recommendations yet.
- Is there a push to genetically test resistance abilities?
 - Yes, people are working on ash, elm, hemlock all looking to identify the genes that lead to resilience. Hard to get funding, hard to compete with AG.
- Do you use FIA data in your work?
 - Christel's large-scale project is using FIA. But at stand scales it's not much useful. Tara used it to think about oak wilt risk across the UP. Julia has examples of testing "space for time" substitution using FIA data.
 - Also there are ways to look at species and structural diversity and connect that to overall resilience and productivity.
 - There are limits to think about stand conditions that contribute to disease risks.
- How do you deal with scale issues where small-scale results don't always apply to the large scale, or large-scale work that is hard to apply at the site level? How do you translate across scales?
 - Local inventory on managed land is less detailed and sometimes that's a barrier. We are trying to find a middle ground.

- We have to relax some of our data needs to help conduct research on managed lands, perhaps as pilot studies.
- Collaboration to get more people involved can help address issues in scale – a few sites in a lot of different places, with many contributors.
- Are there instances where research scales are too large? Too hard to make local connections?
 - Looking at specifics is sometimes more important than looking at board averages. Look for ways to give specific answers rather than broad generalizations.
- Is there a topic or an angle that you're interested to research next? What's on the fringe or what's catching your curiosity?
 - Chris – Rx fire in northern hardwoods historically happened. Hemlock and yellow birch can come in really well after fire on the right sites.
 - Christel – more interdisciplinary work with economics and genetics.
- Luke – how do we use long-term research when the world is changing so fast?
 - Chris – try to understand the basic mechanisms, even if the conditions are changing.
 - Tara - Highlights the importance of asking new questions and keeping a role for researchers.
 - Christel – monitoring detects the next set of issues. And in long-term studies, we actually have records of the stand history that is missing in many real-world situations.
- What is on the horizon for your research agenda in the coming years, particularly related to western UP hardwood forests? (Connecting back to the manager flash talks, where are there existing connections or potential for future connections between managers' interests and concerns and research?)
- Wrap up: Stephen's key points
 - Long-term research is vital.
 - Research needs to look backward (understand the mechanisms and how we got what we got) and also look to the future
 - You don't know what the final results will be when you initiate long-term projects, and in some cases you don't know the future values that will be used to judge the outcomes of the research! (economics vs. diversity for example)

12:30-1:30 pm Lunch Discussion

Identify one challenge managers are facing in managing hardwood forests in the western UP.

How could managers work with researchers to help address this challenge?

1. How to do viable management on small ownerships?
 - Research on economics, partnerships with neighboring lands, social risks, expectations management
 - subsidies for precommercial thinning to keep viable active management
2. How do we sustain public buy-in for management and get people to care?
 - Recognize the power of word of mouth communication but that information will spread slowly
 - More forums to get people in the woods and share information
3. Consequences of residual basal area treatments
 - Trials and modeling based on study sites with clear site histories
4. Socioeconomic concerns
 - Interdisciplinary research
 - Communications between mgrs. And researchers
5. Costs and research on industry lands
 - Continued research beyond ownership transitions
6. Small-scale landowners and parcelization and viability of management
 - Lower BA targets could help economic viability and can we have a guide on where to implement lower BA limits for best results?
7. Long-term monitoring goals aren't always aligned
 - Develop relationships that cross several goals
8. Small parcels and invasive species and communication difficulties
 - More workshops and training and potlucks
9. Regeneration in general and desirable regeneration and recruitment into sapling size
 - KBIC lands could be a great research opportunity to contrast the surrounding landscape
 - Early communication to identify questions that are plaguing mgrs.