

The Challenges Facing Northern Hardwood Research and Management

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SUMMARY

North America's northern hardwood forests have been the focus of silviculture research and management for nearly a century. Yet, a rangewide conference to discuss and summarize the current understanding of northern hardwood forests had not been held in nearly 30 years. Thus, we wanted to take advantage of the Northern Hardwood Conference (NHC) 2021 to capture the concerns, challenges, and insights of managers and researchers from across the northern hardwood range. To begin this process, conference participants were prompted at registration to submit the top three challenges they believe face the sustainable management of northern hardwood forests. The submitted challenges were wide ranging, including conundrums such as invasive species, inadequate tree regeneration, and climate change (Fig. 1). All participant answers were then grouped into 20 challenge categories.

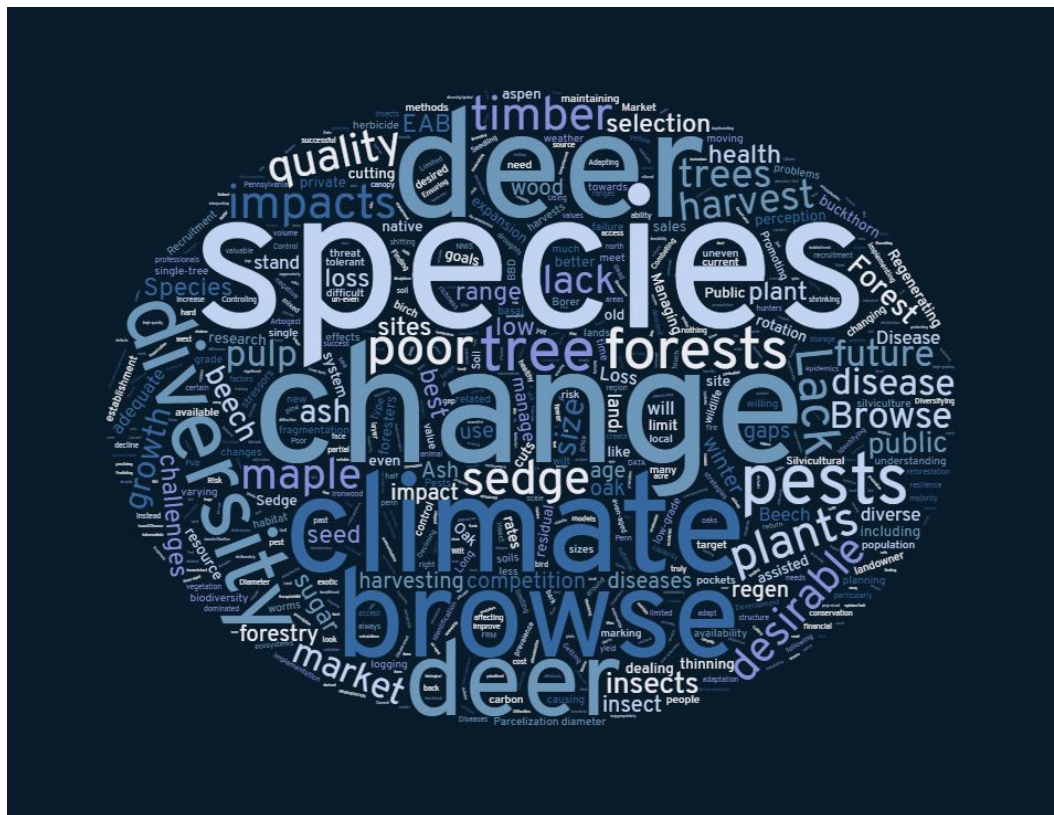


Figure 1.—Word cloud of top issues for northern hardwood forests submitted by participants of the NHC during the registration process (i.e., N = 403).

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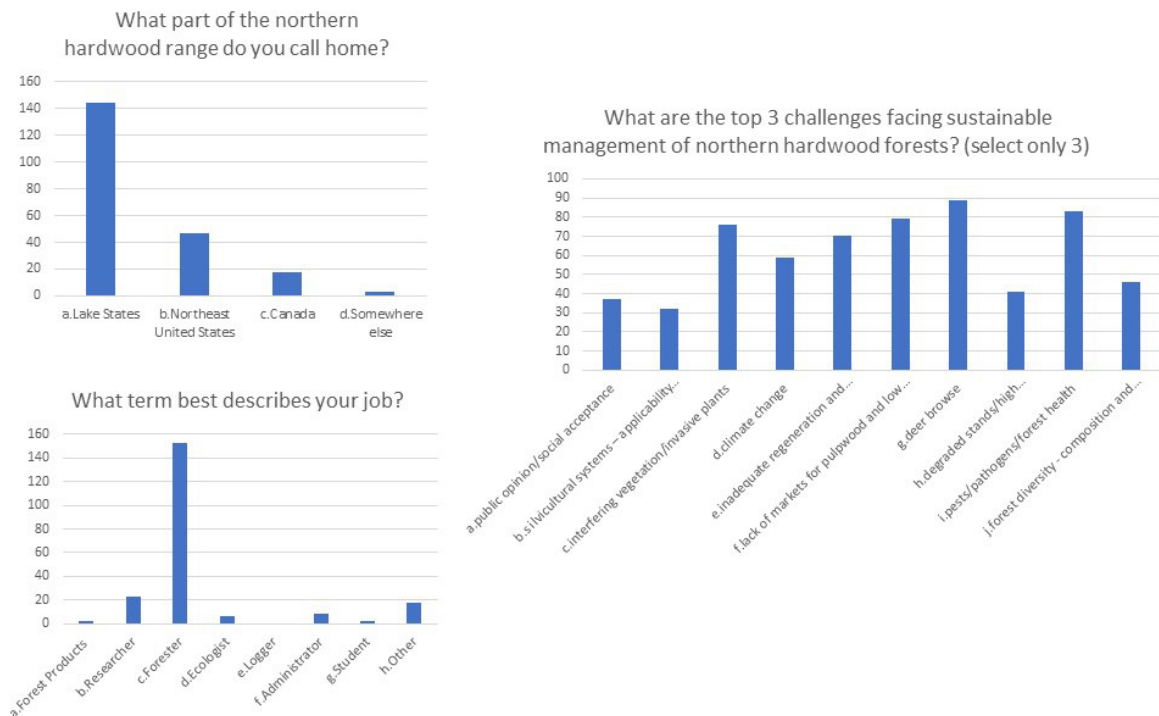


Figure 2.—Selected polling results from top-issue categories for northern hardwood forests as voted by the participants of the NHC 2021 Round Table day 1 (i.e., N = 212). The y-axis represents the number of votes.

At the conclusion of day 1, participants engaged in an icebreaker about polling questions. The results are presented in Figure 2. The last question presented participants with an abridged list of the 10 most common challenge categories and asked them to vote for the three most important. Two hundred and twelve participants voted. Interestingly, all challenge categories received votes and no topic received exceptionally higher votes than the rest. The top three categories were deer browse/herbivory (i.e., 14 percent), pest/pathogens/forest health (i.e., 13 percent), and lack of markets for pulpwood and low-quality material (i.e., 13 percent). Close in 4th and 5th place were the related categories of interfering vegetation/invasive plants and lack of regeneration and recruitment, with a combined vote total of 23 percent.

At the end of day 2, a panel of experts discussed the top challenge categories identified by participants. The panel included three managers and three researchers, representing different regions of the northern hardwood range. From the Lake States, Forrest Gibeault (Steigerwaldt Land Services) represented management and Mike Walters (Michigan State University) represented research. From the northeastern United States, Nancy Patch (Vermont Department of Forest, Parks, and Recreation) and Laura Kenefic (USDA Forest Service, Northern Research Station) represented management and research. From southeastern Canada, Gaetan Pelletier (Northern Hardwood Research Institute) represented management and Frédérik Doyon (University of Québec en Outaouais) represented research.

It was clear to panelists that the top challenges represented various threats facing the sustainable management of northern hardwood forests. Walters said, “Many of the top challenges prioritized by the participants are disturbances that challenge successful regeneration and forest sustainability.” He noted that important to this broad theme is the predictability of regeneration outcomes after treatment. Also, this broad theme was supported by ideas that emerged during panel discussion: collaborate (researchers and managers working together), monitor our work, manage adaptively, and keep management practices diverse.

A couple panelists noted a common topic in the conference presentations was that successful, and failed treatments were often preceded by onsite evidence that had been overlooked by the prescribing manager or researcher. Patch noted, “In this conference, the science community really pointed out the nuances of what we thought worked but isn’t actually working.” She noted practitioners can’t keep doing the same thing and nuances may indicate a new approach is needed. Kenefic said, “Sometimes we get caught up looking at the overstory when preparing harvest prescriptions and we are then surprised by the outcome,” and she noted that being more ecological and connected with the larger professional community results in becoming more knowledgeable in the success of a planned treatment. Overall, the profession needs to pay attention to the entire stand and landscape situation to be creative and ultimately develop prescriptions with greater potential success in challenging conditions.

Collaboration between researchers and practitioners was another takeaway. Pelletier mentioned that working across science and practice has been challenging for decades. He cited a 1994 article by Gordon Baskerville in the *Forestry Chronicle* as the epitome of this conundrum. Panelists highlighted moving forward as a profession will require training new professionals, as well as educating and engaging with groups beyond the profession. Patch noted that we need social acceptance to conduct silvicultural treatments and to get that acceptance we must work with groups that we haven’t traditionally worked with in the past.

All panelists agreed that using diverse approaches to management is important. Adaptive management will be key to developing a variety of successful silvicultural practices under a changing climate. Doyon noted that new assemblages and processes may result from climate change or climate-informed management. Management practices such as assisted migration will likely result in unknown responses to local and landscape factors, such as deer browse. He noted, “...past empirical evidence has traditionally informed silvicultural practices, but today this isn’t possible—everything is changing...” Understanding ecosystem function at a fine scale will be important to predicting stand and landscape outcomes under these changing conditions. Gibeault supported the idea of current silviculture being based on the past but from a different angle—past markets. Today, markets are emerging in forest carbon and the silvicultural tools to manage carbon—while also meeting other management objectives—are unclear. Gibeault said, “Ecosystem service markets are developing and will provide incentives or markets to do treatments in ways we haven’t in the past. This provides strong support to build the toolbox for silviculture.”

The concerns of the conference participants revolved around sustainability, notably the threat of numerous disturbances on natural tree regeneration. The panel suggested paying close attention to stand conditions and landscape context, working together across disciplines and with the public, and keeping silvicultural practices diverse. This strategy will keep management options open and reveal new approaches to sustainability in the years ahead. In the end, the round table discussions epitomized the theme of the conference, “Bridging science and management for the future.” We look forward to furthering these discussions at NHC 2023 in New Brunswick.

LITERATURE CITED

Baskerville GL. 1994. **Gaelic poetry for deaf seagulls—encore.** *The Forestry Chronicle*. 70 (5): 562–564. <https://doi.org/10.5558/tfc70562-5>.

The content of this paper reflects the views of the author(s), who are responsible for the facts and accuracy of the information presented herein.

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