



SILVICULTURAL PRIZE WINNER 2023

FEATURE

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TOWARDS NEW TREE MARKING GUIDELINES FOR NORTHERN HARDWOOD FORESTS

The 2023 Percy Stubbs and John Bolton King and Edward Garfitt Prize for Silviculture (Silvicultural Prize) has been awarded to Guillaume Moreau^{1,2*} for the article 'Simplified tree marking guidelines enhance value recovery as well as stand vigour in northern hardwood forests under selection management', published in *Forestry: An International Journal of Forest Research*. Here, Guillaume presents a short summary of the prize-winning paper developed with Catherine Chagnon², Malcolm J.L. Cecil-Cockwell¹, David Pothier², Alexis Achim², Steve Bédard³, François Guillemette³ and John Caspersen¹.

In northern hardwood forests, tree markers select the trees to be harvested during logging operations using classification systems that assign harvest priorities based on the presence of a wide range of individual defects. According to the most recent advances in our understanding of the impact of defects on both tree vigour (the risk of mortality or decline in growth) and quality (the potential for recovering valuable sawlogs), tree markers should adopt a simpler classification system that considers fewer defects than the current operational practice, and they should prioritize the removal of trees with crown dieback. Since the probability of developing defects and dying increases substantially with tree diameter, tree markers should also favour the removal of larger trees that have maintained their quality. However, these recommendations were developed based on tree-level analyses.

To provide further validation at the stand scale, we compared stand improvement and value recovery under three tree marking regimes: a new, simplified regime based on the recommendations above, and two regimes used in the province of Quebec, Canada. To do so, we conducted tree marking simulations and value recovery assessments in 14 managed stands of distributed across the northern hardwood range of Quebec. Our results confirmed that the simplified tree marking regime not only facilitated stand improvement by removing a greater proportion of low-vigour trees, but also recovered significantly more value (17% on average) at the stand scale. By prioritizing the removal of trees with crown dieback, the simplified regime was superior at salvaging the current value of low-vigour trees before they die or decline in quality. Based on our results, we propose simplified and empirically-validated tree marking guidelines for northern hardwood forests. The harvest priorities are #1: trees with crown dieback $\geq 15\%$, #2: trees with defects related to both vigour and quality (cankers and fungi), #3: trees with defects related to quality (cracks, cavities, and decay) that are crowding vigorous trees without defects, and #4: trees with no defects that have reached financial maturity (> 45 cm DBH), defined as the diameter at which there is no financial gain in leaving trees to grow, taking into account the risk of mortality as well as a decline in quality.

To conclude, our results suggested that adopting the proposed guidelines, or modifying existing guidelines, would provide numerous benefits in northern hardwood forests. First, the simplified guidelines are expected to make tree marking more efficient, which could substantially

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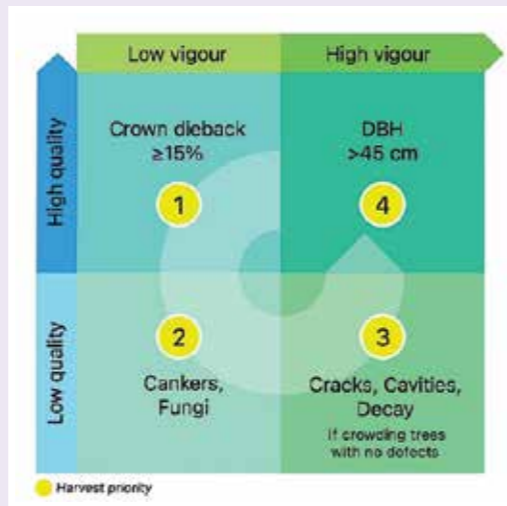


Figure 1: Simplified and empirically-validated tree marking guidelines, including an additional spacing priority (#3) for marking close competitors of trees with no defects (not included in the simulations). Close competitors are only to be removed if they have one of the defects that have been shown to reduce quality (Cecil-Cockwell & Caspersen 2015, Havreliuk et al. 2014), including cracks, cavities, and decay. Cankers and fungi were combined into a single priority (#2) to preserve a total of four priorities.

reduce its cost. Second, our results indicate that the simplified guidelines increase both value recovery and stand vigour, presenting a win-win opportunity for making selection silviculture more profitable in both the short- and long-term. This outcome is particularly relevant for the management of degraded northern hardwood stands, where the implementation of single-tree selection is seldom profitable in the short-term using the current tree marking guidelines. Third, our results indicate that exempting low-quality trees from the diameter limit may serve to meet existing guidelines for retaining large wildlife trees, presenting a win-win opportunity for balancing stand improvement and value recovery with the provision of wildlife habitat. Finally, by excluding defects that showed no demonstrable effect on vigour or quality, the simplified guidelines may reduce variability among tree markers, and increase the consistency of stand improvement and value recovery.

Institute members benefit from a free subscription to *Forestry: An International Journal of Forest Research* and can read the full paper online by visiting doi.org/10.1093/forestry/cpad045

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DEVELOPING A STRONGER VOICE FOR THE SECTOR



FEATURE

Elaine Harrison MICFor, National Manager for Wales, Confor

As part of the Institute's Emerging Leader Programme, delivered in partnership with Clore Social Leadership, programme participants received a training bursary to augment their personal development. Here, Elaine Harrison MICFor shares an insight into her personal development journey.

Wondering how to use my Emerging Leader Programme (ELP) bursary played on my mind for some months. I wanted to use the time and money on something that could make a difference, and the more I thought about it the more worried I was getting. During the course, I had a fantastic mentor and we talked through what I wanted to work on, my strengths and weaknesses, and how I could utilise the bursary effectively.

I really wanted to work on my presentation skills, but after investigation with my coach I realised I didn't want to present – I wanted to use my creativity and explore influencing, storytelling and inspiring to bring my messages to life. As it happened, she knew someone who would work well with my energy and would understand this quest. My contact turned out to be the Head of Voice at London's Guildhall School of Music and Drama, Annemette Verspeak. We initially met over Zoom to discuss a format for a one-day workshop and whether this could help achieve my development goals. I wanted to explore spaces and how to get encourage engagement in a room, in person, and online. I wanted to better understand barriers in communication and create a toolkit which I could use in multiple situations.

For the workshop I travelled into London to the Guildhall School of Music and Drama, entering via the stage door alongside all their music and drama students (and feeling a little intimidated by the energy and grandeur) where I was taken to a drama workspace. Annemette confessed she didn't do one-on-ones regularly and it was often CEOs and business from the city who seek her out, but she was intrigued by my story and wanted to help. Initially we went through many exercises from

posture, loosening up, walking, delivering the voice and breathing, the foundations of communication. Building on this, I learnt to create gaps in speech and maintaining the voice to the end of the sentence, looking further into rhythm and pace.

I have a lot of energy and Annemette was able to channel it more evenly, giving me permission to mellow and slow down. With planning, we went through how to map a presentation through themes instead of script. I learnt how to create sustained engagement with online meetings and how to set up a room prior to a meeting to gain greater engagement. I explored my story and why I am here, which helped build my authenticity and know when to use it. I remember Annemette's parting wisdom which has remained with me – just keep being you, that's what the world needs.

I found the exercise thoroughly useful and would recommend it. I am enjoying putting what I learnt into practice for the benefit of the sector – it will take time, but I am enjoying the journey.

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