



Fibre Connect n° 1

June 2022

Welcome to the first Canadian Wood Fibre Centre eBulletin!

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The Canadian Wood Fibre Centre (CWFC) is a research branch within the Canadian Forest Service (CFS). Its employees are located at all [five CFS Research Centres](#) and the [Petawawa Research Forest](#). We develop knowledge, tools and approaches aimed at reducing the risks to the forest fibre supply of Canada.

We support economic development, Canada's transition to a low carbon economy, effective stewardship of forest resources and the resiliency of forests to the impacts of climate change. Our innovative, sustainable, evidence-based solutions directly meet the needs of our end users.

In support of its research portfolio, the CWFC also operates the Petawawa Research Forest, which is available to scientists and collaborators from across federal and provincial departments, academia and industry.

Through its [contribution program](#), the CWFC supports projects that advance the Government of Canada's priorities in the forest sector.

The [Forest Innovation Program](#) (FIP), established to advance research, development and technology transfer activities in Canada's forest sector, directly supports the CWFC's work by helping the forest sector with its ongoing transformation through the adoption of emerging technologies ready for commercialization.



Is diversification a suitable option to reduce drought-induced risk of forest dieback? An economic approach focused on carbon accounting. A paper published by **Mathieu Fortin** and others in Environmental Modelling and Assessment. In this paper, the authors outlined that increased adaptation and timber returns comes at the expense of reduced carbon storage.

Full article: <https://link.springer.com/content/pdf/10.1007/s10666-022-09821-w.pdf>.



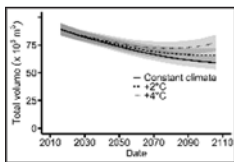
Opportunities and limitations of thinning to increase resistance and resilience of trees and forests to global change. A paper published by **Nelson Thiffault** and others in Forestry. In this paper, the authors reviewed the recent scientific literature to highlight the general benefits and limitations of thinning.

Full article: <https://academic.oup.com/forestry/advance-article/doi/10.1093/forestry/cpac010/6561434>.



Metadata analysis indicates biased estimation of genetic parameters and gains using conventional pedigree information instead of genomic-based approaches in tree breeding. A paper published by **Patrick Lenz** and others in Nature. In this paper, the authors used metadata analysis to demonstrate the overestimation bias when gain estimates are obtained using only pedigree information.

Full article: <https://www.nature.com/articles/s41598-022-06681-y>.



An alternative simulation framework to evaluate the sustainability of annual harvest on large forest estates. A paper published by **Mathieu Fortin, Derek Sattler**, and others in the Canadian Journal of Forest Research. In this paper, the authors present an alternative simulation framework to determine sustainable annual harvest which is much lighter in terms of computational resources.

Full article: <https://cdnsiencepub.com/doi/pdf/10.1139/cjfr-2021-0255>.



Breeding for adaptation to climate change: genomic selection for drought response in a white spruce multi-site polycross test. A paper published by **Patrick Lenz** and others in Evolutionary Applications. In this paper, the authors studied multi-trait genomic selections in white spruce.

Full article: <https://onlinelibrary.wiley.com/doi/full/10.1111/eva.13348>.



Economic impacts of short rotation woody crops in Canada. A paper published by **Tim Keddy, Derek Sidders**, and others in The Forestry Chronicle. In this paper, the authors analyzed the economic impact of using short rotation woody crops as a means to reducing GHG emissions.

Full article: <https://pubs.cif-ifc.org/doi/pdf/10.5558/tfc2021-029>.



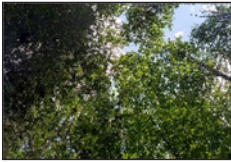
Mitigating post-fire regeneration failure in boreal landscape with reforestation and variable retention harvesting: At what cost? A paper published by **Nelson Thiffault** and others in the Canadian Journal of Forest Research. In this paper, the authors used a simulation model to assess the potential impact of forest regeneration failure.

Full article: <https://cdnsiencepub.com/doi/pdf/10.1139/cjfr-2021-0180>.



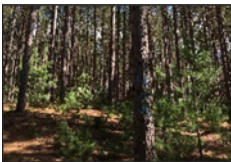
Variation of white spruce carbon content with age, height, social classes and silvicultural management. A paper published by **Cyriac Mvolo, James Stewart**, and others in *Energies*. In this paper, the authors used two popular evaluation methodologies to measure carbon concentration in white spruce under various silvicultural conditions.

Full article: <https://www.mdpi.com/1996-1073/14/23/8015>.



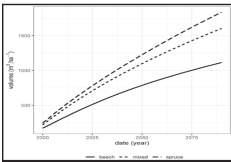
Twenty-six years of aspen regeneration under varying light conditions in a boreal mixedwood forest. A paper by **Nelson Thiffault** and others in *The Forestry Chronicle*. In this paper, the authors observed aspen regeneration under varying 'opening' types and concluded that aspen is best managed under the clearcut silvicultural system, with > 80% full light be recommended for long-term regeneration.

Full article: <https://pubs.cif-ifc.org/doi/abs/10.5558/tfc2021-034>.



The changing culture of silviculture. A paper published by **Adam Dick, Cosmin Filipescu, Nelson Thiffault, and others in Forestry**. In this paper, the authors present an updated view of silviculture, arguing for an updated set of approaches. The authors propose a holistic view of silviculture around three emerging themes: observe, anticipate, and adapt, and suggest shifting from the application of empirically only approaches.

Full article: <https://doi.org/10.3929/ethz-b-000515804>.



The Salem simulator version 2.0: a tool for predicting the productivity of pure and mixed forest stands and simulating management operations. A paper published by **Mathieu Fortin** and others in *Open Research Europe*. In this paper, the authors present a new multi-platform tool called Salem simulator 2.0, which can help forest managers assess the potential benefits of shifting from pure to mixed stands from a productivity perspective.

Full article: <https://doi.org/10.12688/openreseurope.13671.2>.



A generic information framework for decision-making in a forest-based bio-economy. A paper published by **Mathieu Fortin** and others in *Annals of Forest Science*. In this paper, the authors present a methodological framework that both scientists and supply chain actors can mobilise to organise information at different scales of observation, and further make informed decisions regarding the supply and extraction of bio-molecules from forest biomass.

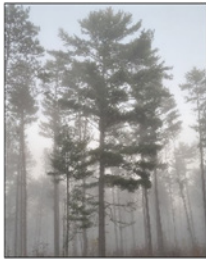
Full article: <https://doi.org/10.1007/s13595-021-01110-y>.



Genetic influence on components of wood density variation in white spruce. A paper published by **Patrick Lenz** and others in *Forestry*. In this paper, the authors demonstrated that pith-to-bark variation is under considerable genetic control.

Full paper: <https://academic.oup.com/forestry/article/95/2/153/6398537>.

Recent Technology Transfer



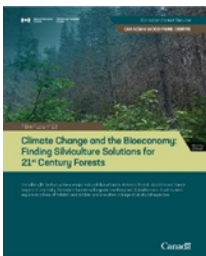
Petawawa Research Forest Virtual tour. The Canadian Institute of Forestry developed a virtual tour of the Petawawa Research Forest, the oldest living laboratory in Canada. Located in Chalk River, the PRF is managed by the Canadian Wood Fibre Centre.

Full tour: <https://www.cif-ifc.org/get-engaged/prf-virtual-tour/>.



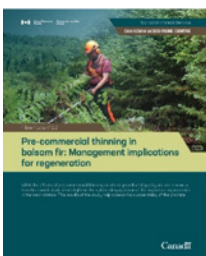
Fibre Fact n° 24. *New CT scan imaging increases lumber value recovery and sawmill efficiency.* Written by **Isabelle Duchesne, Dasvinder Kambo**, and others. This fibre fact provides an overview of how CT scanning technology can be used to increase lumber value and recovery.

Full issue: <https://cfs.nrcan.gc.ca/publications?id=40621>.



Fibre Fact n° 23. *Climate change and the bioeconomy: finding silviculture solutions for 21st century forests.* Written by **Jeff Fera, Nelson Thiffault**, and others. This fibre fact provides an overview of how salvage logging can provide an opportunity for the forest industry to supply Canada's bioeconomy with wood fibre as well as regenerate a forest.

Full issue: <https://cfs.nrcan.gc.ca/publications?id=40607>.



Fibre Fact n° 22. *Pre-commercial thinning in balsam fir: Management implications for regeneration.* Written by **Nelson Thiffault, Michael Hoepting**, and others. This fact sheet provides an overview of a study on the management implications of pre-commercial thinning in balsam fir. While the effects of pre-commercial thinning on stand growth and quality are well known, a New Brunswick study sheds light on the outstanding question of the impact on regeneration in the next rotation. The results of the study help assess the sustainability of the practice.

Full issue: <https://cfs.nrcan.gc.ca/publications?id=40464>.



Fibre Fact n° 21. *Managing Plantation Density for Red Pine: 60-Year-Old Spacing Trial Experiment.* Written by **Nelson Thiffault, Michael Hoepting, Jeff Fera, Jean-Martin Lussier**, and others. This fact sheet provides an overview of a red pine spacing trial experiment established in 1953 near the Petawawa Research Forest (PRF) in Chalk River, Ontario, Canada. The experiment provides valuable results to help foresters make decisions for optimal red pine planting density and thinning strategies.

Full issue: <https://cfs.nrcan.gc.ca/publications?id=40411>.



Fibre Fact n° 20. *Biomass Storage and Safety.* Written by **Anthony Bourgoin** and others. This fact sheet provides findings and considerations for pile management of forestry residues based on four recent scientific publications. Including, biomass storage safety, a comparison between bark and woodchip pile storage, differences in storing fresh and old woodchip piles, and pre-treatment strategies to control self-heating and optimizing biomass storage.

Full issue: <https://cfs.nrcan.gc.ca/publications?id=40353>.



Fibre Fact n° 19. *Petawawa Research Forest: Remote Sensing Supersite.* Written by **Joanne White**. This fact sheet provides an overview of the Petawawa Research Forest remote sensing supersite that was established in 2019. The supersite contains new and emerging remote sensing technologies, resulting in a large collection of data including airborne imaging systems, Light Detection and Ranging (LiDAR) data, and data from Earth Observation satellites such as Landsat and Sentinel.

Full issue: <https://cfs.nrcan.gc.ca/publications?id=40356>.



FI-X Report n° 23. *Forest vegetation management: Key functions, alternatives to chemical herbicides and challenges.* Written by **Nelson Thiffault**. This report is adapted from a brief that was delivered in May, 2021 to the Standing Committee on Climate Change and Environmental Stewardship, an all-party committee of the New Brunswick Legislature. It was drafted in response to an invitation for proposals on the use of pesticides and herbicides, including glyphosate, in the province.

Full issue: <https://cfs.nrcan.gc.ca/publications?id=40528>.

Recorded Webinars

Growth models and forest management planning: a love-hate relationship. Speaker: **Mathieu Fortin**. This presentation summarizes the evolution of growth models over the past few decades and their current use in forest management planning.

Full webinar: <https://www.facebook.com/GLFC.CFS/videos/557059828912954/>.

Regeneration issues for adaptive silviculture [in French]. Speaker: Nelson Thiffault. This presentation summarizes Nelson's work on silviculture, specifically in using new tools for climate change adaptation.

Full webinar: <https://www.youtube.com/watch?v=sYokGYpHQPo>.

Adoption of CWFC/CFS forest technology development practices contributes to reforestation and afforestation. Speaker: **Derek Sidders**. This presentation summarizes Derek's work on short rotation woody crops.

Full webinar: https://cif-ifc.adobeconnect.com/_a1112870713/p6omczdm1afc/

Applied tree breeding: planting the right tree at the right place. Speaker: **Patrick Lenz**. This presentation summarizes Patrick's genomic and tree breeding research. It summarizes potential genetic x environmental interactions that will lead to higher long term survival.

Full webinar: https://cif-ifc.adobeconnect.com/_a1112870713/p3zmw4b9bo0m/.

TreeSource: your one-stop portal for wood quality data. Speaker: **Sébastien Clément**. This presentation summarizes TreeSource, which is the largest collection of wood quality data online. It is a web-based, bilingual and freely accessible resource for all forestry stakeholders (federal and provincial governments, academia, and industry).

Full webinar: <https://www.facebook.com/GLFC.CFS/videos/glfc-seminar-series-treesource-your-one-stop-portal-for-wood-quality-research-da/430116745273654/>.

Towards a digital ecosystem: opportunities, research, and innovation for the Canadian Forest Sector [in French]. This presentation, given by **Dan Mazerolle** and other, summarizes the transition and future opportunities for research for Canadian forest ecosystem.

Full webinar: www.youtube.com/watch?v=z_fXU8t7nJc&list=PL9Sro7G6My3rmlZDJbdoJrbzDBdmq_Ssu&index=1.

Annual LiDAR / EFI cross country check up. This webinar, organized by **Adam Dick**, is a combination of nine speakers across the country outlining each province's work on emerging LiDAR data.

Full webinar: https://cif-ifc.adobeconnect.com/_a1112870713/pd8wzjt9hc0q/.

The Digital Forester. This podcast with **Adam Dick**, outlines Canadian Wood Fibre Centre's work on lidar enhanced forest inventory and digital supply chains in forestry.

Full podcast: <https://podcasts.apple.com/us/podcast/adam-dick-canadian-wood-fibre-centre/id1572752103?i=1000554101908>.

What's Happening in CWFC?

NEW DIRECTOR GENERAL



As of November 15, 2021 Amélie Roberge has been named the new Director General of the Canadian Wood Fibre Centre. Prior to her appointment as DG, Amélie worked as a Director with the Strategic Science Policy and Engagement Division of the Canadian Forest Service at Natural Resources Canada. In that capacity, she held responsibility for federal, provincial and territorial relations, foresighting as well as strategic science and policy integration. Prior to this position, she was a senior policy analyst with the Canadian Forest Service, and worked on a variety of issues, such as climate change and cumulative effects.

Amélie holds a B.Sc. (Biology) from the University of Ottawa and a B.Sc. (forest management) from Université Laval. She also holds a Ph.D. in Forest Science, with a specialization in forest policy, from the same institution.

If you would like any additional information or would like to discuss any of the highlighted projects, send us an email at fibrecentre@nrcan-nrcan.gc.ca

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