

WINTER | SPRING 2022

VOLUME 3, ISSUE 5

NORTHERN HARDWOODS RESEARCH INSTITUTE'S QUARTERLY NEWSLETTER

THE LEAFLET

HARVEST KNOWLEDGE | PROMOTE GROWTH

FINANCIAL MATURITY OF TREES

Finding the balance between biological and financial maturity



Institut de recherche sur les feuillus nordiques Inc.
Northern Hardwoods Research Institute Inc.

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FOREWORD

Gaetan Pelletier, Executive Director Northern Hardwoods Research Institute



Hello and welcome to our joint winter/spring edition of the Leaflet; NHRI's main vehicle for communicating and sharing with members of the forest sector. It is odd we agree, to having skipped the winter edition all together and to publish this version at the dawn of summer. As some of you have been aware, our research centre has navigated through a difficult time with funding drying up, living the consequences of the pandemic and losing people because of all the uncertainty and the difficulties associated with working from home for long periods of time. But we persevered and are back on track resuming our activities and interacting with our partners again.

As we celebrate our tenth anniversary, we are excited of what the future holds. Our team has been rebuilt, we have invested in state-of-the-art technology and I believe that we are well equipped to tackle our third phase (NHRI 3.0) putting more emphasis on solving real problems out there in the forest products sector. Funding is being secured piece by piece and we anticipate a growth period in the near future.

Our private sector partners have stayed on-board and we are now working very closely with the New Brunswick Department of Natural Resources and Energy Development to tackle some of their priorities and challenges. Our partnerships with tech companies and Universities are very healthy and will be the key to our success. NHRI is happy to confirm the Northern Hardwoods Conference, that was postponed this year because of travel restrictions and the pandemic Covid19, is re-scheduled for August 2023 and will be hosted jointly between NHRI and UNB as planned.

Finally, we will be conducting mobilization activities next fall and winter as they are instrumental for our members and partners.

Thank you for your patience, your continued support and hope you enjoy this newsletter.

Gaetan Pelletier
Executive Director

CUT YOUR TIMBER, NOT YOUR PROFITS!

TRICKS FOR DETERMINING THE RIGHT TIME TO HARVEST YOUR TOLERANT HARDWOOD TREES

by Gaetan Pelletier



CUT YOUR TIMBER,
NOT YOUR PROFITS!



Above: Scaling sample tree after harvest- 2020 Digital Timberland, Activities 1

INTRODUCTION

One of the goals for silviculture is to provide financial returns for the landowner. In the case of long-lived species, understanding when a tree has reached maturity and starts to decline is important. We present a simple method to assess the financial maturity of trees and stands. This piece is an adaptation of an article published in the November 2021 edition of the [Atlantic Forestry Review](#).

CUT YOUR TIMBER, NOT YOUR PROFITS!

TRICKS FOR DETERMINING THE RIGHT TIME TO HARVEST YOUR TOLERANT HARDWOOD TREES

by Gaetan Pelletier



Forest landowners manage their woodlots for many reasons and values such as the maintenance of biodiversity and habitat, the sequestration of carbon, aesthetics and recreation, ecosystem services and, the production of timber. Those who put much emphasis on profits from timber and are privileged to have tolerant hardwood stands, will benefit from gaining an understanding of the concept of financial maturity of stands and trees.

The modern concepts of financial maturity in trees date from the middle of the last century. Much work was conducted in the United States to relate growth rates to financial returns. Methods were devised to assist landowners and forest managers in considering several factors such as species, quality, diameter, competition, health and vigor, risk of loss or damage, and state of maturity. Much effort was spent on developing ways of figuring out biological or financial maturity. Biological maturity is the determination of the time at which trees stagnate in growth rates, lose vigor, or start to show risk of declining in health. Financial maturity is the time when the rate or return has met the objectives of the landowner. The latter considers growth rates but also the evolution of value through time. For tolerant hardwoods such as Sugar Maple, Yellow Birch and Red Oak, value is highly correlated to the proportion of sawtimber or veneer logs a tree contains. The two types of maturity usually happen at different times in the life cycle of a tree or a stand. This is illustrated in Figure 1.

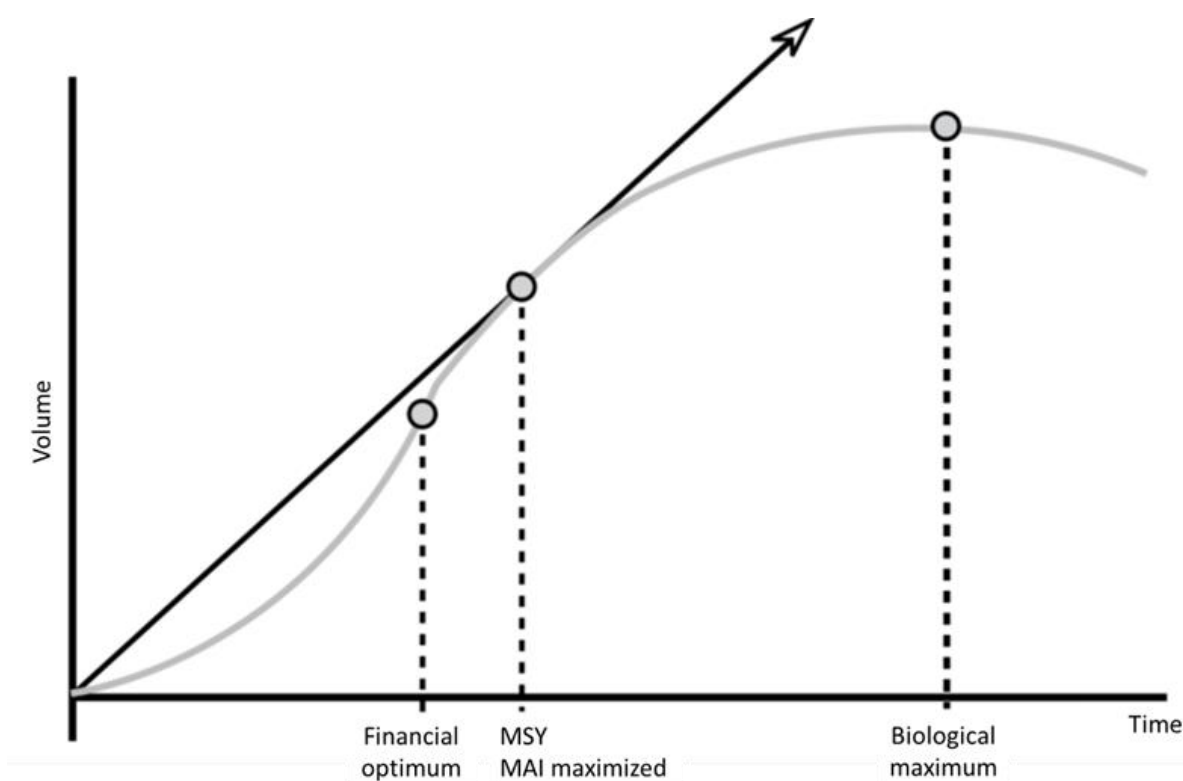


Figure 1 (above), Relationship between biological maturity and financial maturity, Michael Jacobson, Penn State University, 2008

CUT YOUR TIMBER, NOT YOUR PROFITS!

TRICKS FOR DETERMINING THE RIGHT TIME TO HARVEST YOUR TOLERANT HARDWOOD TREES

by Gaetan Pelletier



For landowners who are mostly interested at growing timber for financial returns, it is important to understand the concept of financial maturity where trees are financially mature when the rate of value (ROI, IRR, ROR etc.) falls below the expected yield and when other alternatives are more interesting. In our temperate climate, the horizon used to calculate those rates of financial return is usually 5-10 years. It requires a good knowledge of tree growth, change in tree vigor and, the evolution of products in a tree over time. But don't get intimidated with the complexity of those calculations and predictions; we will introduce simple ways of obtaining this information.

The steps to determine financial maturity of trees and stands for timber production include determination of tree and stand characteristics, predicting current product breakdown, predicting growth and vigor trajectories, and calculating financial performance. Let's explain this further by going through examples.

1- Tree and Stand Characterization

Species is significant because different species have different potential and inherent values. Lumber is a valuable product coming out of tolerant hardwood trees and that of Sugar Maple, Yellow Birch and Red Oak is most valuable and has higher yields from a tree. When these two factors are combined, the value of those top three species can be 4-5 times more than that of Red Maple and American Beech. Unfortunately, once very valuable species such as White Ash and Butternut are now threatened because of the emerald ash borer and butternut canker and

for timber purposes, should be harvested right away.

The next critical piece of information necessary to follow the process is an appreciation for the vigor of the tree. The Northern Hardwoods Research Institute (NHRI) has developed a system of classification for trees that includes the determination of Risk (of losing value). It is presented in Figure 2. The user makes observations on the subject tree and eventually gets one of four ratings as summarized in Table 1.

Figure 2 (left), Different bark appearance as a function of tree vigor, Upper row, from left to right: Yellow birch stem view at breast height (left=vigorous, middle=intermediate and right=less vigorous) and Lower row, from left to right: Sugar maple stem view at breast height (left=vigorous, middle=intermediate and right=less vigorous) (Adapted from: Gauthier and Guillemette 2017)



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Table 1, Definitions of the NHRI 4 Risk classes

Rating	Probability of mortality	Value (\$) projected in time	Probability of product downgrade
R1	Nil, > 25 years	Improve	Low
R2	Low, 15-25 years	Stable	Moderate
R3	Medium, 5-15 years	Deteriorate	High
R4	High < 5 years	Substantial loss	Very high

A tree rated R1 can be left to grow and even better, its crown released on three sides from competitors so that the growth rate increases. To the contrary, a tree rated R4 is destined to die soon or at least deteriorate in health rather rapidly. If it contains sawlogs, it should be harvested immediately but if not, the silviculturist can opt to leave it standing to provide ecosystem services if it does not compete with another crop tree. Another way to understand the current vigor of a tree (and relative age) is by looking at the bark. As illustrated in Figure 3 (page 8), for a given diameter, more vigorous trees have a smoother bark.

Given species, risk or vigor, and diameter at breast height (DBH) and using simple regressions such as those developed by the NHRI (Figure 4, page 9), the landowner can now predict the maximum theoretical sawlog material content of the tree. Naturally, a reduction factor must be applied to account for operational constraints such as local product specifications, operator skill etc. Finally, the trajectory in growth rate as a function of tree size and Risk class can be determined from graphs as presented in Figure 5 (page 9).

2- Calculate ROR

The previous step charts where the tree or stand are according to known development patterns. This is sufficient to make the decision if the landowner harvests or let grow for a few more years. The process can be repeated at any point in the future. But for those who wish to quantify it, the next step consists of calculating the financials for your tree or stand. We first compute the volume, value, and annual rate of return of standing trees. This is influenced by current log prices by top end diameter (dib) and grade (2, 3, 4 clear faces). Spreadsheets such as BANT-IC (Brooks and Neil Tree Investment Chart) are useful and automatically calculate volume, value, and annual rate of return for trees from 24 to 75 cm diameter breast height (DBH) having logs with 2, 3, and 4 clear faces (CF).

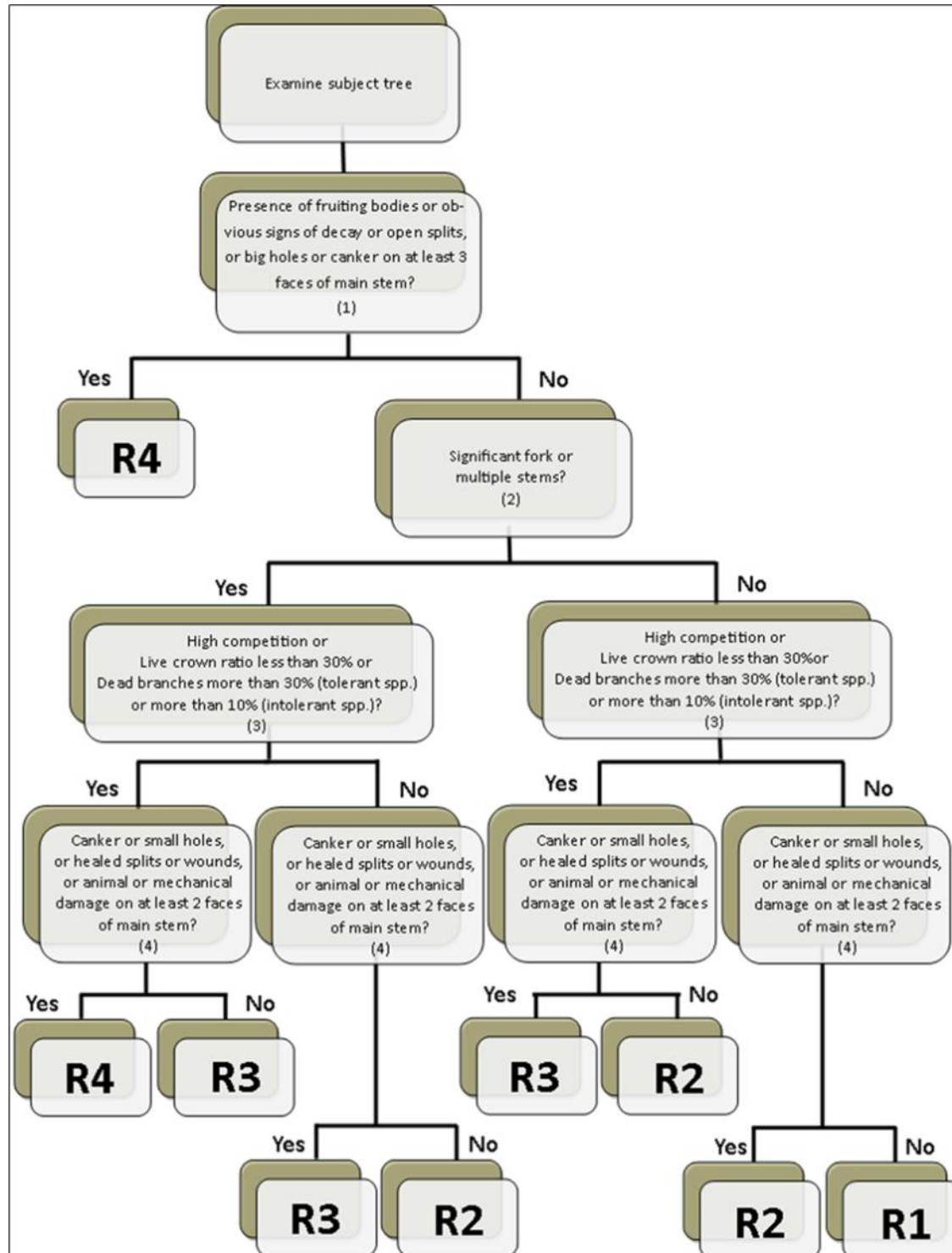
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Figure 3, The NHRI classification of Risk (of losing value and health)



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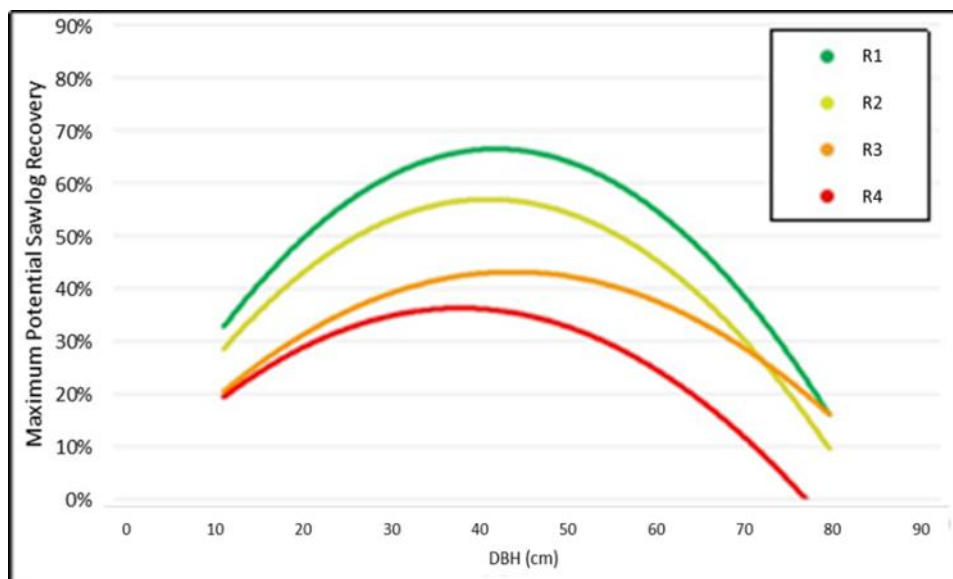


Figure 4, Maximum potential sawlog content as a function of DBH and Risk class for Sugar Maple.

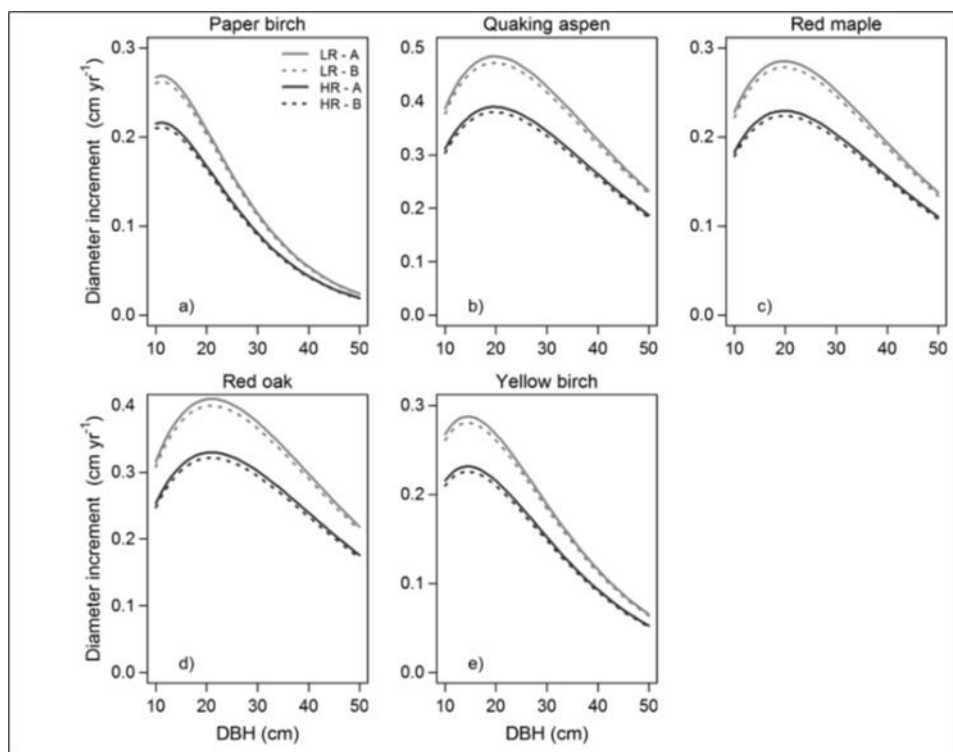


Figure 5, Growth rate prediction as a function of tree size and Risk class (Castle et al. 2018)

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In tolerant hardwood trees, the bulk of the value is in the first 5-6 meters and is very dependent on veneer logs and prime sawlogs. Including the value of logs above 6 meters would not increase the value substantially and would not change the rate of return.

The key to improving financial returns in the mid and long term is to harvest trees that are diminishing in growth rates and proportion of high-grade products and to release the crop trees that are vigorous, of good quality and still growing. Ideally, those trees that are removed are the ones at risk of losing value and vigor and not those of the right species and potential to yield high proportions of sawlog material in the future.

Conclusion

Forest landowners consider many factors in their forest management decision making and financial objectives are often important. We encourage landowners to investigate the concept of financial maturity as criterion to help decide when to harvest trees. We believe that using financial maturity in the decision making is compatible with managing for other values such as ecosystem services. Indeed, it offers a great tool for the woodlot owner to measure the trade-offs between various management objectives.

Financial maturity is different than biological maturity and usually occurs earlier in the life cycle. Landowners

clearly need to consider multiple factors before making forest management decisions; financial return is only one of these. This concept is very relevant in stands that include long-lived tolerant hardwood trees and highlights the importance of understanding health, vigor, risk of losing value and overall quality. All those features are time dependent and deteriorate as trees get older and larger. Finally, as a rule of thumb, it is safe to assume that higher quality will always bring higher value and the landowner must predict the point at which the trajectory will change towards a decline.

NHRI TOOL: Calculate annual rate of return, volume and value

Step 1:
Modify
prices if
necessary
??

Log Price for Sugar Maple (\$/m³)			Grade: Number of clear faces				
diameter at end	length	4FC	3FC	2FC	1FC	0FC	
20	0.30"	6.0	0	0	0	0	
22	0.30"	6.0	0	0	0	0	
24	0.30"	110	15	15	55	55	
26	0.30"	110	15	15	55	55	
28	0.30"	110	15	15	55	55	
30	0.30"	110	15	15	55	55	
32	0.30"	110	15	15	55	55	
34	0.30"	110	15	15	55	55	
36	0.30"	170	110	110	6.0	6.0	
38	0.30"	170	110	110	6.0	6.0	
40	0.30"	170	110	110	6.0	6.0	
42	0.30"	170	110	110	6.0	6.0	
44	0.30"	170	110	110	6.0	6.0	
46	0.30"	170	110	110	6.0	6.0	
48	0.30"	170	110	110	6.0	6.0	
50	0.30"	170	110	110	6.0	6.0	

Rate of return calculator

Year:	10
Begin value:	6.0
End value:	110
ROR:	6.2%

Step 2:
Selecting
grade ->

Select grade for log #1:

4FC

Select grade for log #2:

3FC

Tree #	Log #1								Log #2							
	Step 3: Get top DOB with NHRI Tool Worksheet equation				Step 4: Get vol with NHRI R. Steele Script				Step 3: Get top DOB with NHRI Tool Worksheet equation				Step 4: Get vol with NHRI R. Steele Script			
	Top DOB (1 cm)	Top DOB (2 cm)	Log vol (m³) (n)	Log value (\$)	Top DOB (1 cm)	Top DOB (2 cm)	Log vol (m³) (n)	Log value (\$)	Top DOB (1 cm)	Top DOB (2 cm)	Log vol (m³) (n)	Log value (\$)	Total log vol (m³)	Total value (\$)	Rate of return	Break even vol. (m³) (10 cm top diam)
20	18.09	10	0.099	8.0	16.24	16	0.094	8.0	0.14857	8.0	0.14857	8.0	0.14857	8.0	0.197	
21	19.02	20	0.099	6.0	17.25	15	0.095	8.0	0.15163	8.0	0.15163	8.0	0.15163	8.0	0.216	
22	19.95	30	0.109	6.0	18.26	15	0.045	8.0	0.17589	8.0	0.17589	8.0	0.17589	8.0	0.240	
23	20.88	40	0.110	6.0	19.26	20	0.071	8.0	0.18196	8.0	0.18196	8.0	0.18196	8.0	0.243	
24	21.81	50	0.121	6.0	19.26	20	0.077	8.0	0.20509	8.0	0.20509	8.0	0.20509	8.0	0.280	
25	22.72	60	0.139	6.0	20.25	20	0.083	8.0	0.22107	8.0	0.22107	8.0	0.22107	8.0	0.315	
26	23.63	70	0.155	110	21.24	22	0.099	8.0	0.23427	110	0.23427	110	0.23427	110	0.240	
27	24.54	80	0.161	110	22.23	22	0.094	8.0	0.25742	110	0.25742	110	0.25742	110	0.347	
28	25.45	90	0.172	110	23.22	24	0.103	10	0.27165	110	0.27165	110	0.27165	110	0.397	
29	26.36	100	0.185	110	24.20	24	0.110	10	0.28597	110	0.28597	110	0.28597	110	0.425	
30	27.27	110	0.192	110	25.19	25	0.110	10	0.30028	110	0.30028	110	0.30028	110	0.460	
31	28.18	120	0.210	110	26.18	26	0.124	10	0.31459	110	0.31459	110	0.31459	110	0.490	
32	29.09	130	0.224	110	27.17	28	0.124	10	0.32890	110	0.32890	110	0.32890	110	0.524	
33	29.99	140	0.232	110	28.16	28	0.142	10	0.34321	110	0.34321	110	0.34321	110	0.550	
34	30.90	150	0.252	110	29.15	30	0.151	10	0.35752	110	0.35752	110	0.35752	110	0.585	
35	31.81	160	0.264	110	30.14	30	0.168	10	0.37183	110	0.37183	110	0.37183	110	0.620	
36	32.72	170	0.271	110	31.13	30	0.168	10	0.38614	110	0.38614	110	0.38614	110	0.671	
37	33.63	180	0.284	110	32.12	32	0.172	10	0.40045	110	0.40045	110	0.40045	110	0.710	
38	34.54	190	0.312	110	33.11	32	0.181	10	0.41476	110	0.41476	110	0.41476	110	0.751	
39	35.45	200	0.323	170	34.10	34	0.191	10	0.42907	240	0.42907	240	0.42907	240	0.793	
40	36.36	210	0.344	170	35.09	34	0.201	10	0.44338	240	0.44338	240	0.44338	240	0.834	
41	37.27	220	0.361	170	36.08	34	0.210	10	0.45769	240	0.45769	240	0.45769	240	0.880	
42	38.18	230	0.379	170	37.07	36	0.229	10	0.47200	240	0.47200	240	0.47200	240	0.926	
43	39.09	240	0.396	170	38.06	36	0.240	10	0.48631	240	0.48631	240	0.48631	240	0.973	
44	40.00	250	0.403	170	39.05	38	0.251	10	0.50062	240	0.50062	240	0.50062	240	1.021	
45	40.91	260	0.432	170	40.04	38	0.262	10	0.51493	240	0.51493	240	0.51493	240	1.071	
46	41.82	270	0.459	170	41.03	40	0.274	10	0.52924	240	0.52924	240	0.52924	240	1.121	
47	42.73	280	0.489	170	42.02	40	0.284	10	0.54355	240	0.54355	240	0.54355	240	1.172	
48	43.64	290	0.489	170	43.01	40	0.292	10	0.55786	240	0.55786	240	0.55786	240	1.225	
49	44.55	300	0.503	170	44.00	42	0.311	10	0.57217	240	0.57217	240	0.57217	240	1.279	
50	45.46	310	0.529	170	45.00	42	0.323	10	0.58648	240	0.58648	240	0.58648	240	1.339	

Caption: The NHRI has modified the BANTIC investment chart developed in the USA by Lamson and Mills that can be used to calculate ROR for single trees

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TRICKS FOR DETERMINING THE RIGHT TIME TO HARVEST YOUR TOLERANT HARDWOOD TREES
by Gaetan Pelletier



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THE LEAFLET

PAST ISSUES

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Bucking of hardwoods for value

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How can we increase %saw logs?

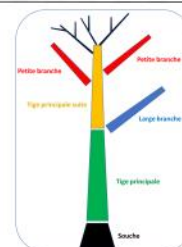
1. Understand specifications for products:

- Minimum diameters
- Lengths (integers, variable)
- Defects (rot, curves, etc.)



2. Recover the most volume possible:

- Cut low stumps
- Utilize tops and branches
- Process trees beyond main stem

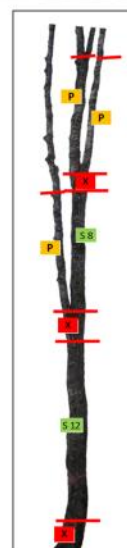


3. Strategies to maximize % saw logs vs pulp:

- Visualize and find total length of sawable material
- Determine how to fully utilize that length by placing saw logs
 - * Make longer logs
 - * Consider variable lengths

Some tricks and hacks:

- Beware of defects that downgrade part of logs into pulpwood
- Some butt rot? Don't hesitate to make a few cull cuts until you have met maximum rot allowed in a log



Remember...

Highgrade products (veneer and prime logs) are worth **10x more than** pulpwood?



IN THE SPOTLIGHT: SCENE SHARP TECHNOLOGIES INC

When knowledge and innovation are combined, the results are undeniable.

Forest landowners, managers and planners rely on the best available forest inventory to sustain their resource while achieving high site productivity, protect against insects and diseases and, in planning for tending and harvesting activities. Without deep knowledge of the resource, any activity downstream of the forest products value chain cannot be optimized and provide the full financial benefits that could be expected. Traditional timber cruise inventories are only conducted at very low sampling intensity with a very limited suite of features being measured. The inventory cycles are very long, costly and the expertise to conduct this technical work is dwindling rapidly because of attrition and limited replacement options.

Scene Sharp Technologies has made a breakthrough in the area of Earth Observation and Remote Sensing utilizing artificial intelligence (AI). Scene Sharp is now offering a suite of services to landowners and managers around the globe that practice sustainable forest management. These services will materialize into benefits such as reduced costs of raw timber and feedstocks, improved profitability, increased forest growth and productivity, increased short- and long-term value, reduced risk and uncertainty as well as improved rates of returns.

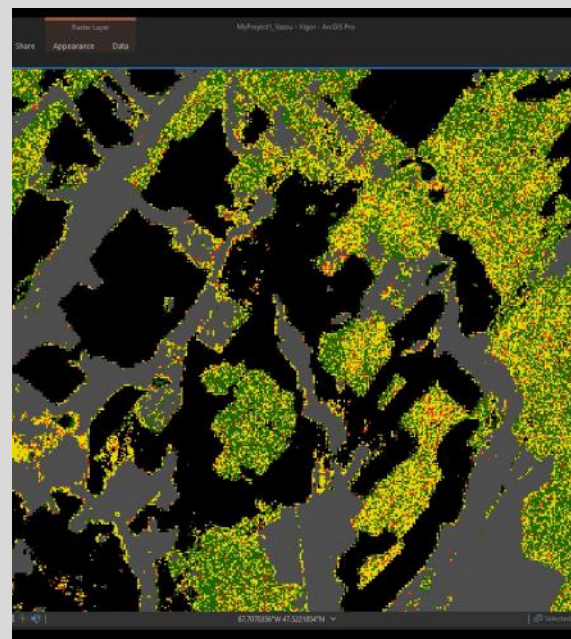
So now, "let's talk about forestry", says company CEO Rick MacPhee.

We formed a unique partnership with NHRI. They bring a body of knowledge that is top notch in forestry and research and we add innovative and state of the art AI, Machine Learning and Spectral Science technology. Together, we deliver services through a brand we call Fuze-go AI Forest.

Scene Sharp Technologies Inc. mission is to provide continuous quality improvement in image and data fusion using the scientific principles that ensures the best object detection and determination. Their vision is to be the standard by which all other object detection providers are measured.



SCENE SHARP
TECHNOLOGIES INC.



Scene Sharp Technologies Inc. mission is to provide continuous quality improvement in image and data fusion using the scientific principles that ensures the best object detection and determination.



Richard MacPhee, Chief Executive Officer

IN THE SPOTLIGHT: SCENE SHARP TECHNOLOGIES INC

When knowledge and innovation are combined, the results are undeniable.

Rakesh Mishra, CTO adds: “we are an Earth Observation and Remote Sensing services company. Our unique data fusion, data implement, and artificial intelligence based remote sensing allows Scene Sharp to deliver high-quality results”.

Data quality and Artificial Intelligence (AI) based analytics on the quality data is the focus, delivering 4 to 6 times improved quality for object detection. Our unique ability to increase data quality in all spectrums allows the capture of unique signatures (fingerprints) for forestry and crops along with natural and man-made materials.

The company has adopted an Agile software development process which refers to the idea of iterative development, where requirements and solutions evolve through collaboration. The Agile process enables them to deliver results faster, with greater quality, predictability, and aptitude to respond to change.

Scene Sharp Technologies produces digital precision forest inventories at the micro-stand scale down to 10 meter by 10 meter pixels. Branded under the Fuze-go AI brand, they produce basic inventory features such as proportions of 8 separate tree species, basal area and tree vigor.

It then measures change over time to provide predictions of periodic annual increments, detection of harvesting activity, forest health watch, insect infestations, climate stress and other important features.

The approach Scene Sharp Technologies uses to generate precision forest inventory features differs from the mainstream that rely exclusively or heavily on LiDAR data. While LiDAR-derived data is often fused with other sources in our models, we rely more on freely available high-cycle multi-spectral satellite data to overcome the shortfalls of laser scan data.

To date, basic inventory features developed under the Fuze go AI Forest brand has reached an accuracy of over 75% for Tree Species Determination, Basal Area Determination and Tree Vigor Determination in a market that requires accuracies of that magnitude.

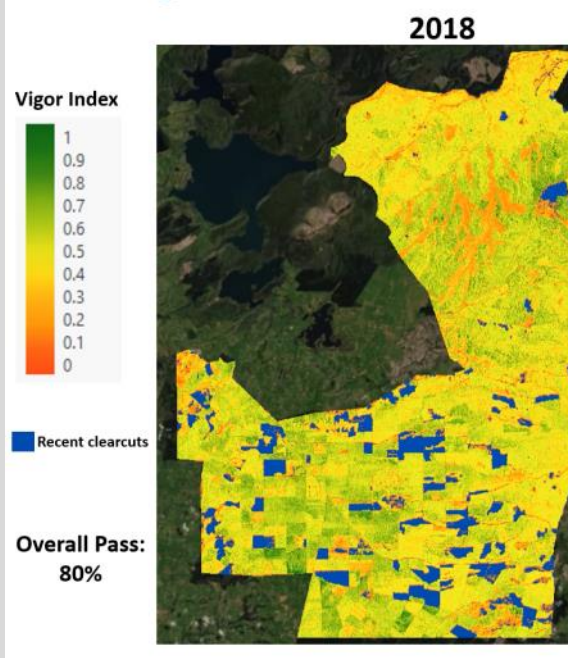


**Learn about Scene Sharp and their partnership
with the Northern Hardwoods Research Institute.**



Dr. Rakesh Mishra, PhD-Chief Technology Officer

Tree Vigor Results



Tree vigor results



Jeff Smith and the Scene Sharp Team

A NEW WINDOW ON CURRENT EVENTS

THE LATEST SCIENTIFIC PUBLICATIONS NOW AVAILABLE !



Michel Huot



Each new edition of the Leaflet will feature a compilation of scientific publications collected by Michel Huot. Michel is a forestry researcher and retired forest engineer of the Ministère des Forêts, de la Faune et des Parcs du Québec. He continues to monitor the rapidly developing literature in new fields of research including carbon, silviculture adapting to climate change, invasive species and ecosystem management. Happy reading!



Eric B. Searle^F, Wayne Bell, Jennifer Dacosta, Holly D. Deighton 2022. Effects of silvicultural treatments on post-harvesting residual tree mortality. *Forest Ecology and Management*. Volume 506, 15 February 2022, 119974.

[Read more](#)



Josh Weyrens, Rene Germain. 2021. Assessing the Economic Viability of the Mechanized Removal of Understory Beech during a Shelterwood Harvest. *Forest Science*, fxab055 .

[Read more](#)



Alexis Achim, Guillaume Moreau, Nicholas C Coops, Jodi N Axelson, Julie Barrette, Steve Bédard, Kenneth E Byrne, John Caspersen, Adam R Dick, Loïc D'Orangeville, Guillaume Drolet, Bianca N I Eskelson, Cosmin N Filipescu, Maude Flamand-Hubert, Tristan R H Goodbody, Verena C Griess, Shannon M Hagerman, Kevin Keys, Benoit Lafleur, Miguel Montoro Girona, Dave M Morris, Charles A Nock, Bradley D Pinno, Patricia Raymond, Vincent Roy, Robert Schneider, Michel Soucy, Bruce Stewart, Jean-Daniel Sylvain, Anthony R Taylor, Evelyne Thiffault, Nelson Thiffault, Udaya Vepakomma, Joanne C White. 2021. The changing culture of silviculture. *Forestry: An International Journal of Forest Research*, cpab047. [Read more](#)

A NEW WINDOW ON CURRENT EVENTS



Simon Bilodeau-Gauthier, François Guillemette, Steve Bédard, Hugues Power. 2021. Combien de Hêtres pouvons-nous tolérer sur pied après une coupe partielle sans compromettre la régénération en essences désirées? Avis technique SSRF-26. Gouvernement du Québec. [Read more](#)



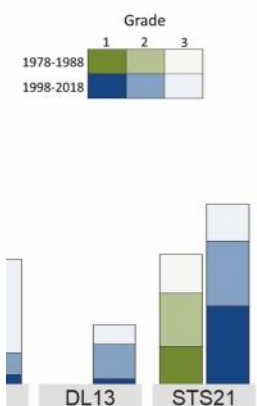
Reed, Samuel P., Royo, Alejandro A., Fotis, Alexander T., Knight, Kathleen S., Flower, Charles E., Curtis, Peter S. 2021. The long-term impacts of deer herbivory in determining temperate forest stand and canopy structural complexity. *Journal of Applied Ecology*. [Read more](#)



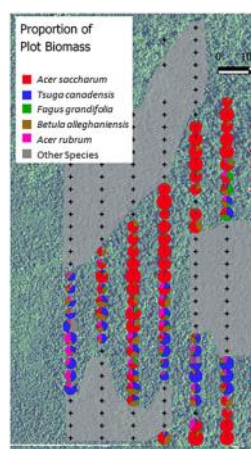
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Elizabeth M. Barnes, Andrew J. Burton. 2021. Sugar maple (*Acer saccharum*) Seedling Bank Response to Storm Disturbance and Single Tree Selection Harvest in the Southern Keweenaw Peninsula, Michigan. *The American Midland Naturalist*, 186 (2):274-290 (2021). [Read more](#)



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Kerry D. Woods, Christel C. Kern. 2022. Intermediate disturbances drive long-term fluctuation in old-growth forest biomass: an 84-yr temperate forest record. *ECOSPHERE* Volume13, Issue1. [Read more](#)

A NEW WINDOW ON CURRENT EVENTS



Emilie Champagne, Alejandro A. Royo, Jean-Pierre Tremblay, Patricia Raymond. 2021. Tree assisted migration in a browsed landscape: Can we predict susceptibility to herbivores? *Forest Ecology and Management* Volume 498, 15 October 2021, 119576.

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Girardin, P., Valeria, O. and Girard, F. 2022. Measuring Spatial and Temporal Gravelled Forest Road Degradation in the Boreal Forest. *Remote Sens* 2022, 14(3), 457.

[Read more](#)



The Friends of the Petawawa Research Forest. 2022. Winter Newsletter. January 2022, Issue #30.

[Read more](#)

DIGITAL TIMBERLANDS 20/20

NHRI's New Multi-Year Initiative



The Northern Hardwoods Research Institute has launched a multi-year initiative to develop solutions in the digital transformation of the forest products value chain for the forest sector in New Brunswick and beyond. One of these initiatives is the Digital Timberlands 20/20 project

ATLANTIC FORESTRY REVIEW

NHRI'S CONTINUED COLLABORATION WITH ATLANTIC FORESTRY REVIEW



Over the last two years the NHRI team has been working collaboratively with [Atlantic Forestry Review](#) to get the word out about managing northern hardwoods in a manner that delivers good financial returns for landowners and forest managers and long-term sustainability for the forest. This important collaboration has been very strategic for us and allows the magazine to share important information to their readers—based on the results of our various applied research initiatives. Below you will find links to the articles NHRI has produced collaboratively with AFR over the last two years. We encourage you to give them a read and give us some feedback.



FINDING THE SWEET SPOT FOR HARVESTING HARDWOODS: Optimum timber value precedes biological maturity. Atlantic Forestry Review, November 2021.



COMMITMENT ISSUES?: Do your homework before hiring a harvest contractor. Atlantic Forestry Review, January 2021.



SEVEN SILVICULTURE PRINCIPLES: Don't lose sight of the fundamental concepts that should guide treatments in mixed and hardwood forests. Atlantic Forestry Review, November 2021.

On a regular basis, we will be producing a series of articles dealing not only with silvicultural aspects of forest management, but also with game changing technology that is continually evolving in its practicality. These candid articles will bring light to the very promising applied research that is currently happening in the field of forest operations and the digitalization of the forest products value chain. Having publications like [Atlantic Forestry Review](#) for the forestry community fills a gap with regards to mobilizing knowledge so that landowners and forestry professionals can benefit. If you are a member of the forestry sector we encourage you to subscribe to [Atlantic Forestry Review](#), for your benefit and the benefit of the Atlantic forestry community.



NHRI PUBLICATIONS

Check out new publications from the NHRI

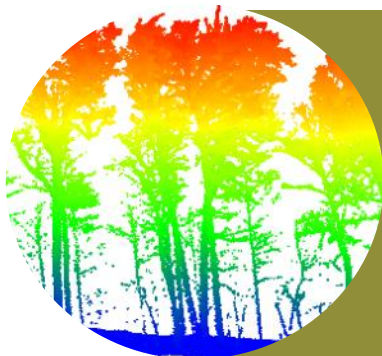


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Alex Noel, Jules Comeau, Salah-Eddine El Adlouni, Gaetan Pelletier, and Marie-Andrée Giroux. 2021. Exploring the Recruitment Dynamics of Sugar Maple and Yellow Birch Saplings into Merchantable Stems Following Harvesting in the Acadian Forest Region of New Brunswick, Canada. *Canadian Journal of Forest Research* • 15 December 2021

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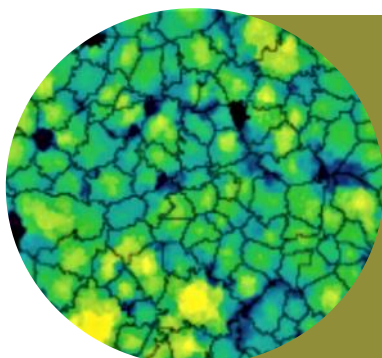
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Mohammed Henneb, Gaetan Pelletier, Mathieu Fortin, Nelson Thiffault and Marie-Andrée Giroux. 2021. Modeling tolerant hardwood sapling density and occurrence probability in the Acadian forests of New Brunswick, Canada: Results 14 years after harvesting. *The Forestry Chronicle*. Volume 97, Number 02, June 2021.

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Advancing the application of remote sensing for forest information needs in Canada: Lessons learned from a national collaboration of university and government stakeholders. N.C. Coops, A. Achim, P. Arp, C.W. Bater, J.P. Caspersen, J.-F. Côté, J.P. Dech, A.R. Dick, K. van Ewijk, R. Fournier, T.R.H. Goodbody, C.R. Hennigar, A. Leboeuf, O.R. van Lier, J.E. Luther, D.A. MacLean, G. McCartney, G. Pelletier, J.-F. Prieur, P. Tompalski, P.M. Treitz, J.C. White, M.E. Woods. *The Forestry Chronicle*, 2021, Volume 97, no.2.

UPCOMING EVENTS



NHC 2023 NORTHERN HARDWOOD CONFERENCE

Bridging Science and Management for the Future

August 1-3, 2023

Northern hardwood forests occupy millions of hectares in the eastern United States and Canada, representing one of the most economically important and ecologically diverse forests in eastern North America. Northern hardwood silviculture is diverse and complex as well and has been the focus of extensive research for over 80 years. Today, managers continue to seek innovative sustainable management solutions to address the expanding challenges facing this forest type, including serious threats such as invasive species, inadequate tree regeneration and shifts in composition, degraded timber quality, herbivory, climate change, nitrogen deposition, and forest fragmentation. The 2023 Northern Hardwood Conference (NHC) will give researchers, academia, and forest managers from across the range of northern hardwoods a forum to learn, share, and discuss cutting edge science and innovative management practices to sustain healthy and productive northern hardwood forests.

The conference will be developed under the framework of “leveraging technology to improve silviculture and the digitalization of the value chain”; an innovative Canadian initiative in which New Brunswick will be the pilot and NHRI will be involved in a leadership role. This conference will illustrate key steps to the restoration and sustainability of hardwood and mixed wood forests in the northeast of North America.

The showcase forest site will be used as a state-of-the art educational and training tool to demonstrate adaptive silviculture techniques focused on problem solving and finding solutions at the operational level. The demonstration forest is also a site for training foresters and technicians from UNB, l’Université de Moncton, the Maritime College of Forest Technology, and the University of Maine.

The event partners include the Province of New Brunswick, AV Group, UNB, l’Université de Moncton and the Canadian Forest Service, as well as private landowners and forest managers.

HARVEST KNOWLEDGE | PROMOTE GROWTH

APP UPDATE

LATEST VERSION OF NHRI SPS 2.0 NOW AVAILABLE !



An updated mobile phone application is available for both I-Phone and Android devices. The App was designed with an easy to use interface through which you can rapidly obtain a prescription for a given hardwood stand. The user simply answers a sequence of questions about the characteristics of the stand which ultimately leads to the recommendation of a specific prescription. All that is left to do is to consult the silviculture framework and prescription tearsheets to ensure stand eligibility, management objectives and operational conditions are respected.

Downloading or update the App is easy!

- Search “NHRI SPS” in Apple App Store
- Search “NHRI TOOLS” in Google Play
- Visit our website www.hardwoodsnb.ca/tools



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