

Forest Management Products & Services

Northern
Hardwoods
Research
Institute





NHRI Services

NHRI's research and innovation capacity offers our clients a variety of forest management and applied forestry research services. Our efforts are always focused on delivering effective and timely solutions to our clients.

We are equipped with a flexible, and practical applied forestry research capability, which includes our inhouse research team, research partners, private sector players, and the boots on the ground expertise of our Precision Silviculture Team (PST).

Our team has the required experience to manage result-driven partnerships so that our clients can leverage the benefits of our extensive network of forestry experts and practitioners.

Client-driven forestry solutions



- Forest Management Consultancy



- Digitalization of the Forest Products Value Chain



- Precision Block Planning



- Precision Forest Inventories



- Hardwood Bucking Optimization



- Training





Forest Management Consultancy



- Design of management systems
- Elaboration of tactical and operational plans
- Determination of forest management scenarios
- Conception of framework for results-based forest management
- Simulation of harvest treatments using OSM

Digitalization of the forest products value chain



Framework for value chain digitalization: Development and improvement

- Accuracy of predictions
- Data integrity
- Seamlessness of process flow.
- Maturity of technology solutions available to users

Operational integration of state-of-the-art technology

- Artificial intelligence
- Machine learning and deep learning
- Network of study sites with high intensity imagery and data

Integration of harvester data into value chain

- Processes to integrate onboard computer data into value chain
- Visualization tools and simulations for operators

Cutting edge UAV and satellite imagery technology

- Drones with various sensors – Multispectral, LiDAR
- Remote sensing with satellite imagery
- Advanced data capture and analysis





Precision Block Planning



Stand Diagnostics

- Standard inventory and detailed stand characterization – species determination, quality, and vigour status.

Product Volume Predictions

- Prediction of harvest volume by product type and species group (hardwoods/softwoods) produced from inventory data and other precision forestry tools.

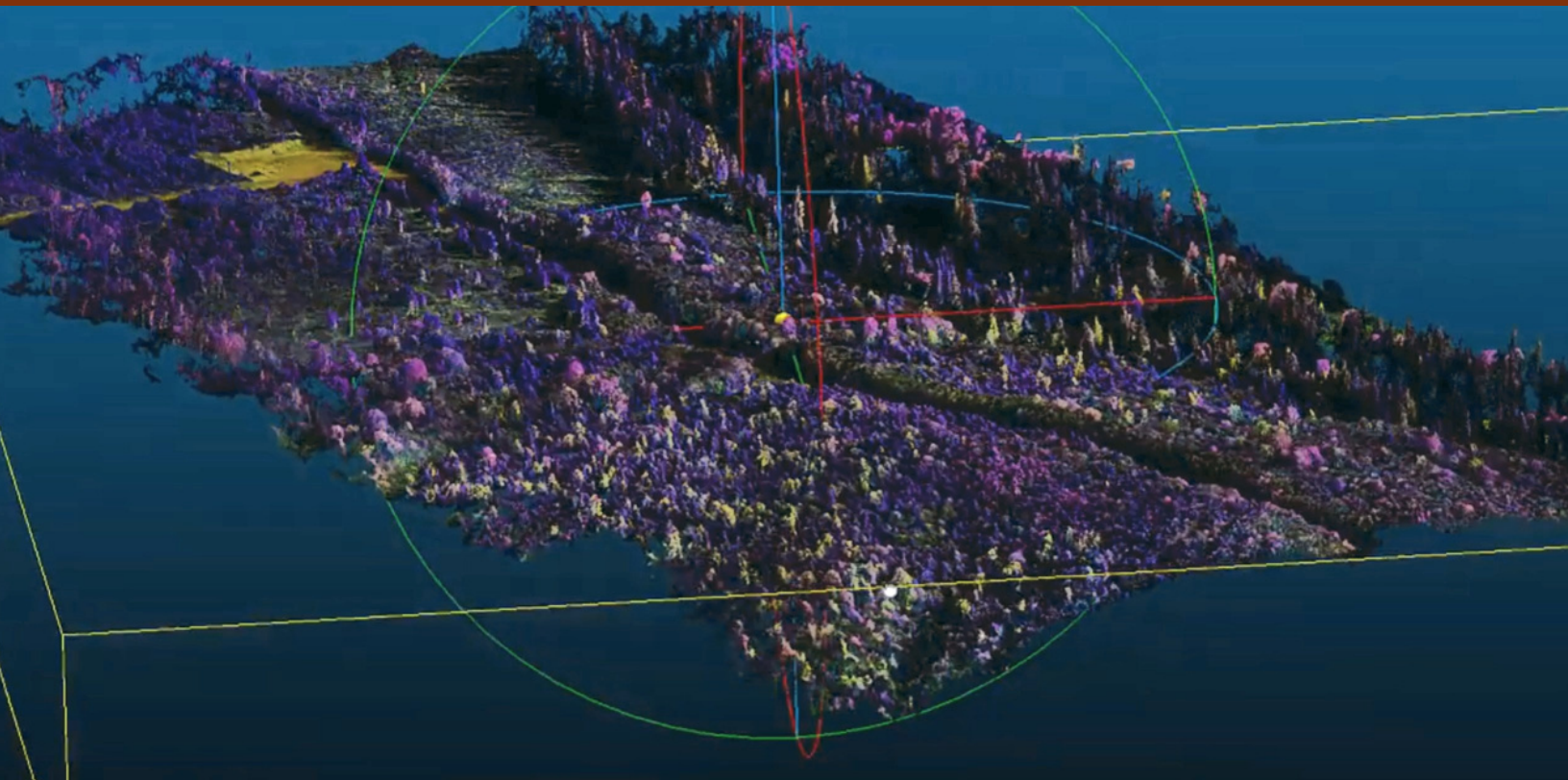
Silvicultural Prescriptions

- Assignment of silviculture treatments based on predetermined objectives for future stand type and composition.

Retrospective Analysis of Treatment Success and Regeneration

- Criteria-based assessment of treatment success and evaluation of regeneration in terms of desirable species and density.





Precision Forest Inventories



- Tree-level inventories derived from high density UAV/Mobile LiDAR
- Custom point cloud and multi-spectral outputs
- Plantation tree detection, mapping, and characterization
- Photogrammetry products from high resolution imagery (<10cm GSD)

Basic Forest Inventory Features at 10m X 10m pixel resolution using satellite imagery and other environmental variables.

- Tree species determination (currently 8 species grouping) expressed as a percentage of merchantable Basal Area
- Tree Vigor determination (% of healthy trees)
- Basal Area

Measuring change for selected features over time.

- Periodic annual increments (PAI) in Basal Area for managed stands
- Tree health watch (change in vigor)
- Forest composition
- Recent harvesting



Optimization of hardwood bucking and utilization

- Applied research and data analysis related to optimizing hardwood bucking
- Implementation of hardwood bucking best practices and field training
- Operator training on relationship between external defects and log/lumber quality



Expected Results:

Increased value of products harvested from hardwood stands.

Improved ratio of sawlog versus pulp.

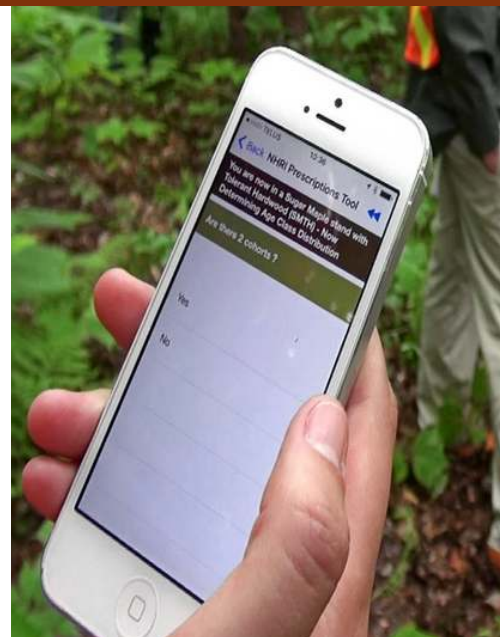
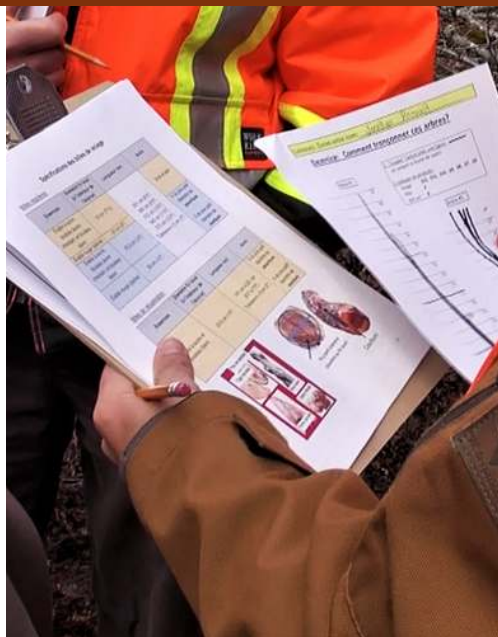
Better financial returns.



Training services

- On-site forest workshops
- One-on-one custom training
- Development of training material
- Production of videos and multimedia training tools
- Demonstrations and simulations
- Technology workshops





NHRI Products

Impactful knowledge and tools



Tree Classification System



Silviculture Prescription System



Technical Notes



Guides & Case Studies



Training Videos



Scientific Articles



Additional Tools



Northern Hardwoods Research Institute



www.hardwoodsnb.ca



1 506 737-4736



info@hardwoodsnb.ca



165, boulevard Hébert
Edmundston, N.B.
E3V 2S8