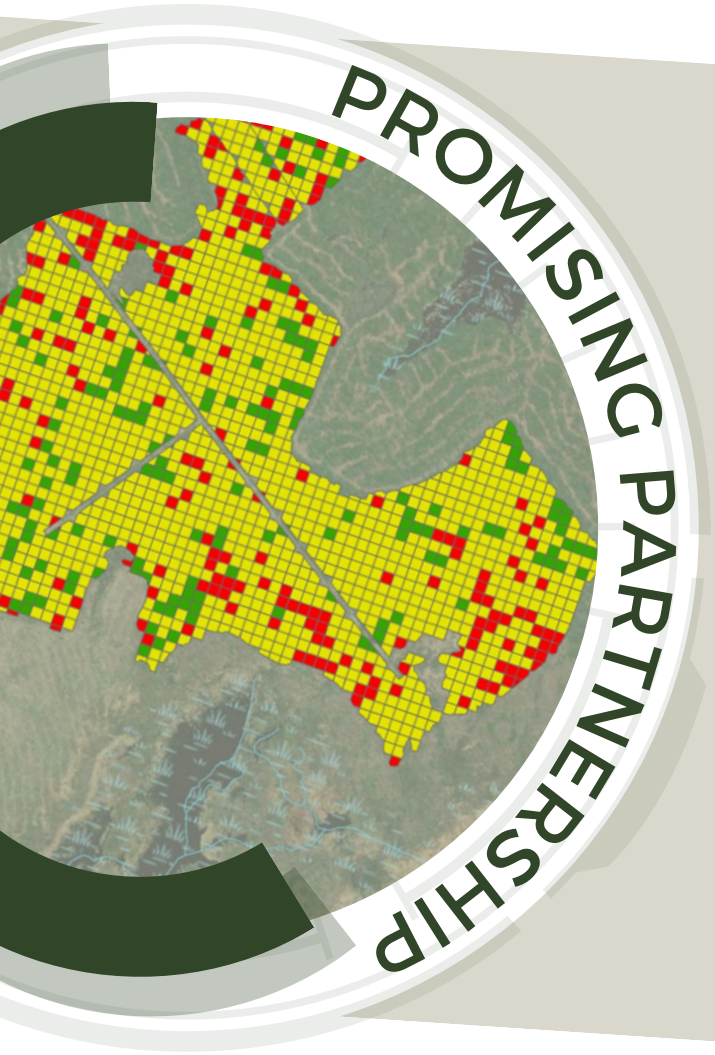

New Nouveau Brunswick
DNRED

Improving harvest schedules in PCT stands

The New Brunswick Department of Natural Resources and Energy Development (DNRED) has been a partner and collaborator since NHRI's inception.

Through the years, our teams have worked together to answer questions and find solutions to forestry issues on many occasions. During the summer of 2022, DNRED approached us to see if we would be interested in collaborating with their team, as well as foresters from J.D. Irving, Ltd., to develop a growth rate model that could be used to improve harvest planning in softwood dominated stands.

The case study was aimed at determining growth rates of stands that had been pre-commercially thinned (PCT) approximately 20 years in the past. Our team's mandate was to develop a tool that would forecast the rate of growth of these types of stands at the 10 m by 10 m pixel resolution. At the strategic level, the objective was to be better equipped to fine-tune and improve the accuracy of the annual level of cut. At the tactical level the objective was to help improve planning and harvest scheduling in hardwood stands.

IMPROVING HARVEST SCHEDULES IN PCT STANDS
Promising partnership with NB DNRED

"Inefficient scheduling of harvest operations, within a 10 to 20-year horizon, can have serious consequences on wood supply."

Making decisions on when to harvest these old PCT stands is now a major challenge for the forest sector in New Brunswick. Inefficient scheduling of harvest operations, within a 10 to 20-year horizon, can have serious consequences on wood supply. Scheduling operations in a block that is still vigorous and sustaining growth, while postponing harvest in stands that are in decline, has the effect of reducing wood supply at both ends – current and future.

Clear Sentinel-2 imagery started being available in 2017, which means that there is now 5 years' worth of quality imagery available. Using the multispectral data, and other stand characteristics, our team was able to predict basal area for a single year and then measure periodic annual increments. They were able to predict yearly growth rate by calculating basal area on the older image, calculating basal area on the newer image, subtracting one from the other and then dividing by the number of years. A good example of a practical problem solved through collaboration by using cutting-edge technology coupled with solid forestry knowledge.

Working with our partners, we also had to work out a way to validate these findings on the field. To accomplish this, we collaborated to develop a logic tree to be used for field interpretation of stands having received a PCT approximately 20 years in the past (see figure on page 19). Field validation by NB DNRED foresters, using the logic tree developed, showed that the predictions were accurate, and better than both the department's predictions made with LiDAR data and those based on the wood supply model.

IMPROVING HARVEST SCHEDULES IN PCT STANDS
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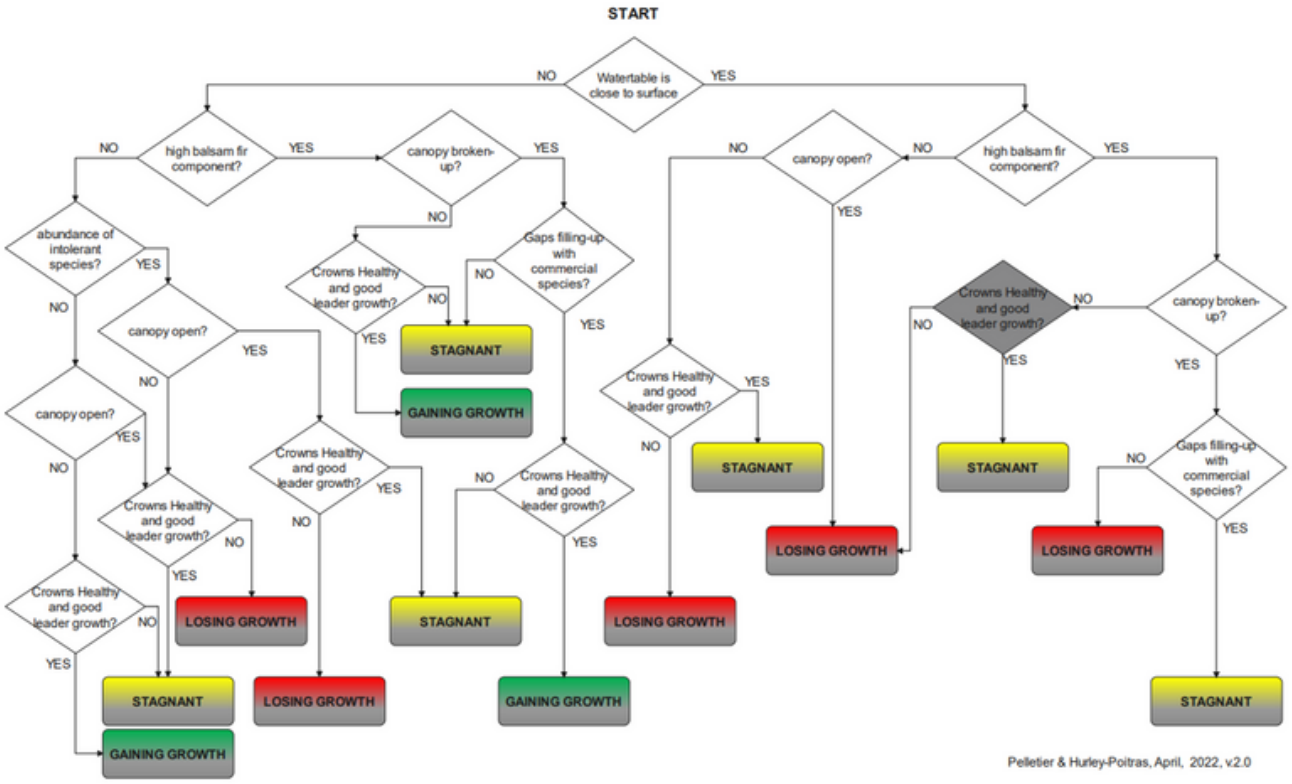
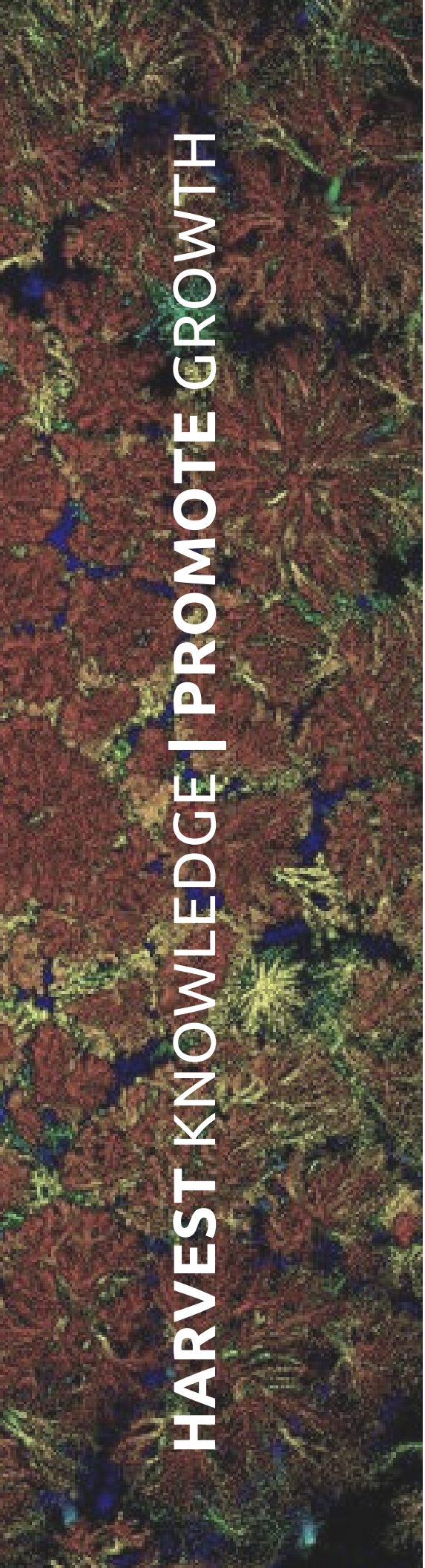
Logic for field validation of growth rates having received a PCT treatment > 20 years



This trial showcases our team's Agile mind set very well. In a very short time frame, we were able to come up with a couple of tools that, albeit not yet perfect, can be very useful from both a strategic and tactical standpoint.

By improving inventory data for old softwood dominated PCT stands, we were able to add a new decisional tool aimed ultimately at improving wood supply and harvest scheduling.

Some of the improvements we are looking to bring to the tool in the future are a better segregation of balsam fir and the ability to apply the model to a wider variety of stand types.



MORE THAN A THEORETICAL CONCEPT...

NHRI-IRFN

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