

## Boreal forest presents unique challenges in forest management

Hierarchical planning approach ensures long-term sustainability of resource

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Modeling Specialist  
Timberline

The Boreal forest may not yet have attracted the world’s attention the way the Amazon rain forests have but the massive ecosystem that rings the globe’s northern hemisphere is gaining recognition as one of the world’s last frontier forests.

In Canada, where the forest covers nearly 60 percent of the land-base, stretching from the Yukon to Newfoundland and from the Arctic circle to the Great Lakes, its impact on the environment and the economy are profound. And anyone carrying out harvesting on the woodlands is subject to the scrutiny of a broad range of stakeholders.

It’s a significance not lost on resource management consultants Timberline who are prepared to be accountable for the decisions they make from the initial stages of planning. The Edmonton, Alberta-based forestry consultants work for industry, government and native communities, helping to develop forest management plans that balance conflicting criteria and optimally achieve overall planning goals.

“When you are dealing with a public resource - and one with global significance - everything you do, every action you take, comes under very close observation, so we have to be confident of the decisions we make,” explains Glen Foley, a modeling specialist with Timberline. “This can be especially challenging in the natural forest environment, unlike the plantations of warmer climates, because there is the added complexity of uncertainty – fires, pests, in particular.”

For clients like one major forest company with a license to 6.8-million hectares of boreal forest in the North-East of the province, Timberline works to create a timber supply analysis – part of an overall detailed forest management plan - that can meet harvest flow requirements over a long-term planning horizon while maintaining the biodiversity of the management area.

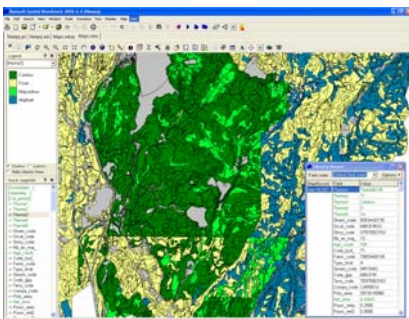
### Hierarchical Planning

Mr. Foley’s approach to achieving these goals utilizes an approach he learned as a university undergraduate more than a decade ago: Hierarchical planning – an approach that advocates using separate but linked planning models incorporating appropriate levels of spatial and temporal resolution.

Through a four-step hierarchical planning process a timber supply analysis is created that optimally meets the timber and non-timber values and forms the basis of annual operating plans. The software tools Mr. Foley uses for the job are the Remsoft Spatial Planning System.

In the first step, Remsoft forest modeling software is used to define a 200-year aspatial plan integrating both timber and non-timber values for the land base.

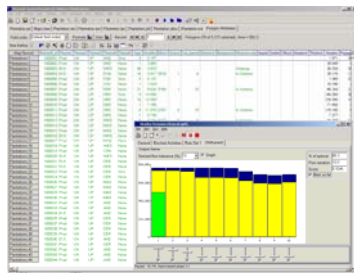
“The intent is to provide an aspatial management sequence that meets or exceeds all management objectives set out over the entire planning horizon,” Mr. Foley explains.



These objectives include sustainable timber volumes and flow, specifies mix and piece size as well as non-timber values like landscape structure and composition and the maintenance of overall ecosystem integrity.

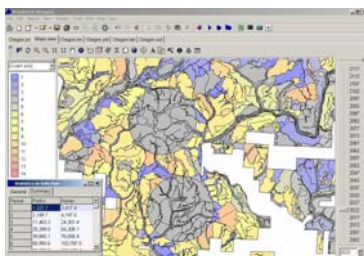
In the second step the effects of spatial planning are incorporated into the plan to illustrate the effects of spatial constraints - minimum and maximum block size and adjacency – and this is done for one-third of the of the planning horizon.

The third phase of analysis continues the spatial analysis with a direct focus on the first 15-years of the forecasted plan. The aim is to ensure that the spatial plan approximates operational plans.



“The harvest schedule we create using Stanley are based upon annual operating plans albeit at a courser level and I work closely with operational foresters to make the spatial plans operationally feasible,” Mr. Foley explained.

In the final step of the planning process, the spatial sequencing in the first 60 years is integrated back in to the long-term strategic model in order to assess the impacts of spatial scheduling on the aspatial indicators contained in Woodstock.



“One particularly nice feature of our approach is that it is systematic but is also inherently flexible which is a must when developing forest management plans in the boreal forest where our plans are in a constant state of flux and we are always facing some uncertainty,” he says, noting that modifications to plans sometimes have to be made on the fly – to harvest in fire vulnerable areas or to combat pest outbreaks, for example. “Any adjustments that have to be made at the operations level can easily be accommodated back into the strategic plan.”

In addition to planning for the deciduous harvest – used to supply pulp mills locally and out-of province - Mr. Foley also works with local quota holders who are licensed to harvest coniferous trees, helping them to plan their harvest and accounting for those activities in the ‘big-picture’ strategic management plan.

*“This approach has proven to work well for us and the integrity of the timber supply analysis which we develop using the Remsoft planning tools is key to the success of our forest management plan,” Mr. Foley adds.*

