

# TREE TIPS

Partenariat pour la recherche forestière FORESTRY Research Partnership

## RESEARCH SUMMARIES



### **Modeling Ontario's Stand Succession and Yield (MOSSY) Forestry Research Partnership Project #120-303**

#### **The Aim**

Forest management planning teams lack objective, evidence-based information to develop the succession rules and yield curves that must be used to project their forest into the future and determine long-term timber harvest and wildlife habitat supply. This project aims to provide estimates of yield curves and



natural succession that are compatible with current forest management planning based on temporary and permanent sample plots. MOSSY, a user-friendly program targeted for use by field-level staff, will be a projection model that can produce inputs for common computer applications that determine allowable cuts and habitat supply and analyze the sustainability of management alternatives in Ontario. This project will bring together many elements, creating efficiencies in forest management plan preparation. It will develop a first version of a computer-based model that will allow forest managers to generate more realistic projections of stand and forest growth by accounting for natural

succession, and to incorporate these projections into forest management planning models such as SFMM (Strategic Forest Management Model) and Patchworks.

#### **The Approach**

A pilot study was conducted to derive succession or transition rates for tree species that could be used in forest succession models to predict the future composition of existing forest cover with no stand initiating disturbance and also yield curves for all forest types found within Ontario's Area of the undertaking. All re-measured forest plots in Ontario have been used to develop the succession rules. 20% of these plots were randomly selected and reserved for model validation. All of Ontario's Growth and Yield Program's temporary forest plots plus plots from neighbouring provinces were used to develop the yield curve functions. Plots established in 2005 and 2006 were not used to develop the yield functions but were used to test the validity of the yield functions. The methods used have been reviewed by external experts. Review comments plus feedback from users have been used to revise the initial model and its outputs. The outputs of this model will interact with Patchworks, a spatial wood supply model, as well as the SFMM.

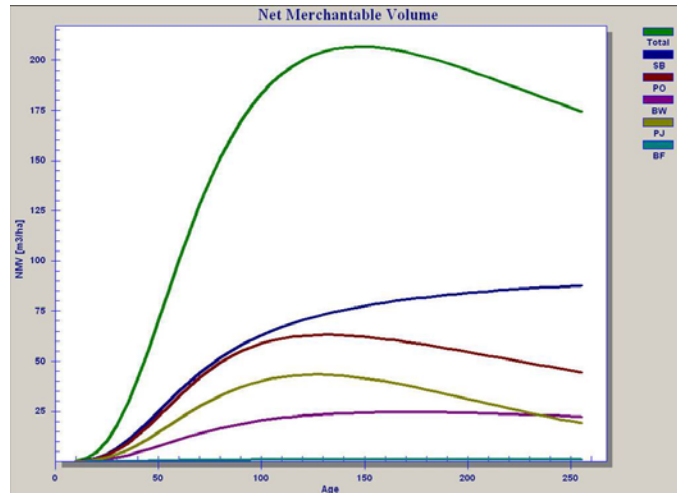
# TREE TIPS

## The Tree Tip

Changes in forest units through time play an important role in calculating the allowable harvest area, habitat supply, and landscape diversity of the land base, and have a significant impact on the projected future yield of forests. Growth and yield models that can accurately project the natural succession of forest stands over time are fundamental in calculating sustainable levels of timber harvest for forest management planning. These data-based methods will be more objective and transparent than current opinion-based methods. For the first time in Ontario the

succession rules developed in this project with data for stands that have not had a stand-initiating disturbance are useable by many forest management planning teams.

Growth and succession information are key to the economies of northern communities in particular, as their wood supply, fur harvest, etc. are based on various harvest, conservation, and regeneration scenarios from computer models. The data from such models will allow for more accurate prediction of forest productivity, and succession, providing improved information for sustainable resource management.



*A yield curve produced by MOSSY*

## The Team

**Fred Pinto**, Project Leader, OMNR

**Al Stinson**, Project Facilitator, CEC-FRP

**Dave Nesbitt**, Team Member, Information Management and Spatial Analysis Unit

**Margaret Penner**, Team Member, Forest Analysis Ltd.

**Daniel Kaminski**, Team Member

**Brian Naylor**, Team Member, OMNR

**Colin Arlidge**, Team Member, MITIG Forestry Services

**Tom Moore**, Team Member, Spatial Planning Systems

**Murray Woods**, Team Member, OMNR