

Forest Co-op Inventory & Modeling Pilot Project

Forest Ecosystem Science Co-op

Science Day

April 12, 2006

Pilot Project Background

- The MNR and Bowater agreed to participate in a joint forestry pilot project to examine mechanisms to improve Ontario's approach to forest information and wood supply analysis in order to achieve a broad range of objectives through forest management planning

Pilot Project Themes

In an effort to organize the work associated with the pilot project, three broad theme areas were created :

1. Forest Information Theme: Enhanced Forest Resource Inventory
2. Modeling and Analysis Theme: Spatial Modeling
3. Management Scales Theme: Landscape Level Planning (MU, Eco-district or Eco-Region)

Pilot Project Theme Members

Overall Project Leads

- MNR – Ron Waito
- Bowater – John MacGillivray

Forest Information Theme

- OMNR Section – Inventory Monitoring and Assessment
 - Lead – Joe Kapron
 - Bowater – John MacGillivray

Modeling and Analysis Theme

- OMNR Section – Forest Management Planning
 - Lead - Dirk Kloss
 - Bowater – John MacGillivray

Management Opportunities and Scales Theme

- OMNR Section – Forestry Policy Section
 - Lead – Michael Gluck
 - Bowater – John MacGillivray

Pilot Project Structure

- A formal structure was developed to consider how results and recommendations could be incorporated into the FMP framework
- The three theme areas are not stand alone projects, but come together to form part of an integrated package
- The Project Team will ensure that the theme area are integrated so that the results will feed into the MNR's planning system

Enhanced FRI Theme Objectives

- Evaluate and test the use of remote sensing technology such as high resolution imagery and/or low level aerial photography to create the base information provided by the Forest Resource Inventory (FRI)
- Evaluate the base level information required to support the forest management needs of today
- Identify and assess methods of inventory update and maintenance including partial re-inventory methods and/or the use of growth models
- Make recommendations relative to the incorporation of new inventory information into current plans

Enhanced FRI Theme Progress

- Acquisition and interpretation of satellite imagery & large scale photography (LSP) acquisition and interpretation completed
- Two versions of the inventory completed
 - FIM compliant WG based inventory
 - Enhanced inventory with additional attributes (i.e. diameter distributions)
- Field check methodology developed and sample areas selected

Enhanced FRI Theme Results

- Results show the potential of Individual Tree Crown (ITC) classification for FRI
- Valuable additional attributes – species height & diameter distributions, volume estimates
- Rapid production time
- Scalability
- Repeatability & ability to improve results with new data

Enhanced FRI Theme Next Steps

- The enhanced FRI of the Forest Information ‘Theme’ has been completed
- Field checks will begin in April, 2006 to verify the accuracy of the inventory
- Provide input/advice to FRI branch to help develop requirements for enhanced FRI’s

Spatial Modeling Theme Objectives

- Test spatial model using objectives commonly encountered in an FMP
- Develop a streamlined approach to allow for the use of models and tools
- Develop approaches to document inputs, model assumptions, and outputs so that common minimum standards of use are identified for all tools

Spatial Modeling Theme Progress

- The setup of FSOS (Forest Simulation and Optimization System) pilot on the Caribou Forest has been completed
- Numerous runs analyzed to examine
 - How different objectives can be represented in spatial models and
 - What impact different combinations of objectives typically encountered in the FMP process have on forest values

Spatial Modeling Theme Results

- Results from pilot project have been positive:
 - A three person team created a spatial model and all the inputs from scratch in a few weeks
 - Explored a meaningful range of alternatives quickly (10 very different alternatives)
 - Balanced a number of different and sometimes competing objectives (i.e. NDPE, caribou, First Nations, cost control)
 - Achieved superior volume with a comparable balance of non-timber objectives

Spatial Modeling Next Steps

- Review results and scenarios to assess if any additional analyses is required
- Complete FSOS model documentation (analysis package)
- Complete spatial model guidelines to speed up approval of the model

Management Scale Theme Objectives

- Setting management objectives and/or implementing forest management guidelines at the forest management unit, eco-district, or eco-regional scales
- Management opportunities would include:
 - role of protected areas,
 - eco-regional yield curves & forest succession,
 - landscape pattern, and
 - old growth requirements

Management Scales Theme Progress

- The eco-regional, eco-district, economic area SFMM analyses, and a series of base runs for each management unit have been created to assess the potential benefits of changing management scales
- In addition, Boreal Forest Landscape Dynamic Simulator (BFOLDS) runs have been completed for the 3W eco-region and provide non-timber targets and bounds

Management Scales Theme Results

- Analysis indicates that the ability to balance timber and non-timber values is improved at a larger management scale
- Volume gains in the order of 10% across terms were consistently achieved and gains in excess of 20% were achieved for highly constrained runs
- Volumes gains could be achieved while also achieving cost reductions
- Sustainability benchmarks were very wide in natural systems

Management Scales Next Steps

- Complete management scales final report and presentation
- Examine the effects of management scales with spatial constraints (spatial modeling exercise being developed by Michael Gluck)
- Develop recommendations to aid in implementing the landscape guide

Pilot Project Recommendations

- Results are encouraging and should be incorporated into FMP development
- Enhanced FRI's offer additional attributes that potentially aid the forest industry, and the MNR. The MNR & forest industry should work together to define enhanced attributes
- ITC significantly reduces the time required to produce an inventory with enhanced attributes. Upon completion of the field assessment the MNR should move to acquire ITC inventories as part of the enhanced FRI program

Pilot Project Recommendations

- Spatial models have the potential to provide better solutions
- The MNR should approve FSOS for use in FMP's
- Spatial modeling calls for additional analytical skills that require specialized staff. The MNR should focus analysis in the Forest Analysis & Modeling Unit to develop highly qualified personnel

Pilot Project Recommendations

- By increasing the scale of the management unit synergies are realized and the MNR should facilitate/encourage the amalgamation of SFL's to create larger land bases
- Parks make important contributions to sustainability at the landscape level and parks adjacent to SFL's need to be considered in the assessment of sustainability. This will be of particular importance in the context of forest management under the Landscape Guide

Final Words

- The project reports should be completed in June.
- A summary report will be provided to the Forest Co-op at the conclusion of the project.
- If you have any questions you can contact:

John MacGillivray

macgillj@bowater

807-475-2308