

MNR-Bowater Pilot Project Forest Co-op Update

Forest Ecosystem Science Co-op
Science Day
April 4, 2007

Pilot Project Background

- The MNR and Bowater agreed to participate in a joint forestry pilot project to examine:
 - how to improve Ontario's approach to forest information and wood supply analysis to achieve a broad range of objectives through forest management planning
 - the results of which could be applied across the province

Pilot Project Objectives

- The objective of this project is to provide for a sustainable wood supply for the northern based forest economy by:
 - improving the knowledge base,
 - investigating new technologies and their application, and
 - transferring them into Ontario's FMP process, efficiently and effectively

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: Landscape Level Planning (MU, Eco-district or Eco-Region)

Enhanced FRI Theme Objectives

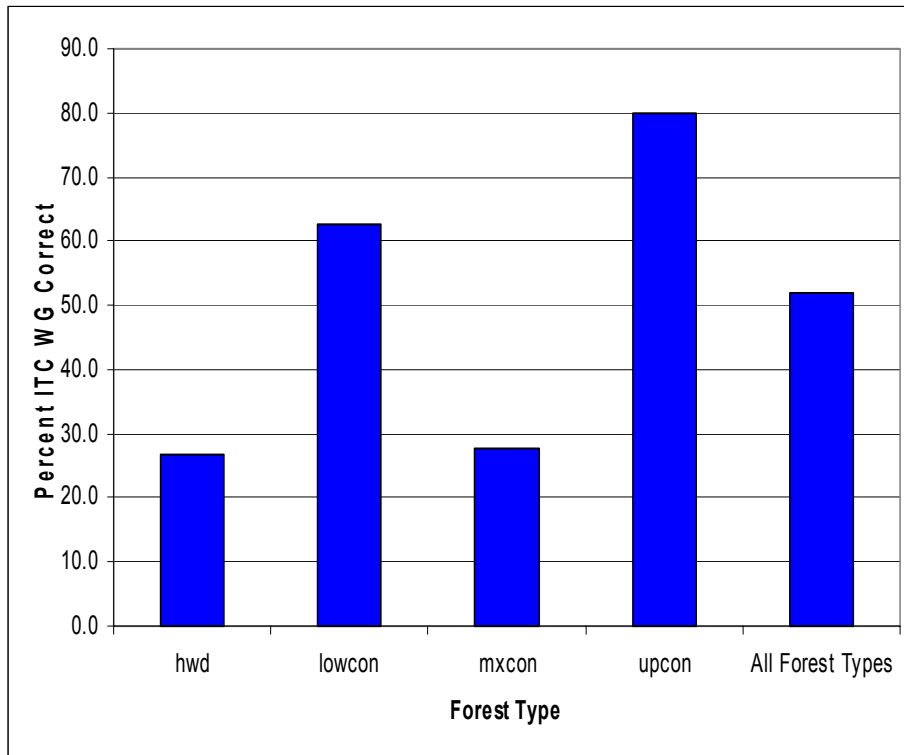
- Evaluate and test the use of remote sensing technology (i.e. high resolution/low level aerial photography and satellite imagery) to create the base information provided by the FRI
- Evaluate base level information to support the forest management needs of today
- Identify & assess methods of inventory update and maintenance, (i.e. partial re-inventory methods and/or the use of growth models)
- Make recommendations on the incorporation of new inventory information into current plans

Enhanced FRI Theme Results

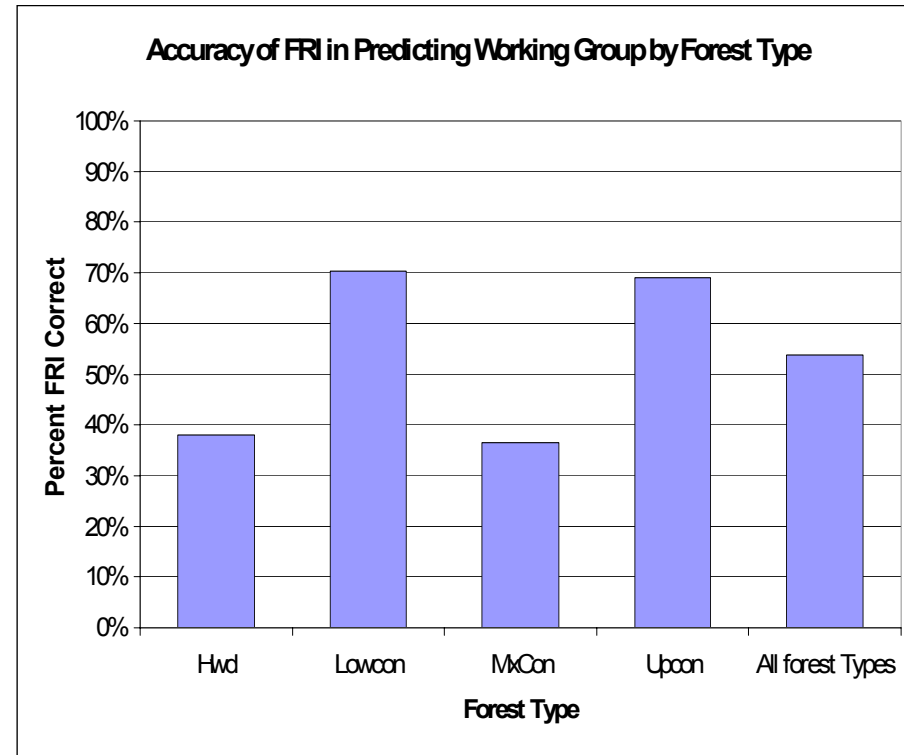
- Pilot results show potential of Individual Tree Crown for FRI
 - Additional attributes valuable – species height & diameter distributions, volume estimates
 - Rapid production time
 - Scalability
 - Repeatability & ability to improve results with new data

Prediction of Working Group

- ITC was very good at predicting the percent of total hwd and swd composition within the polygon. ITC was able to predict working group with as much accuracy as the FRI.



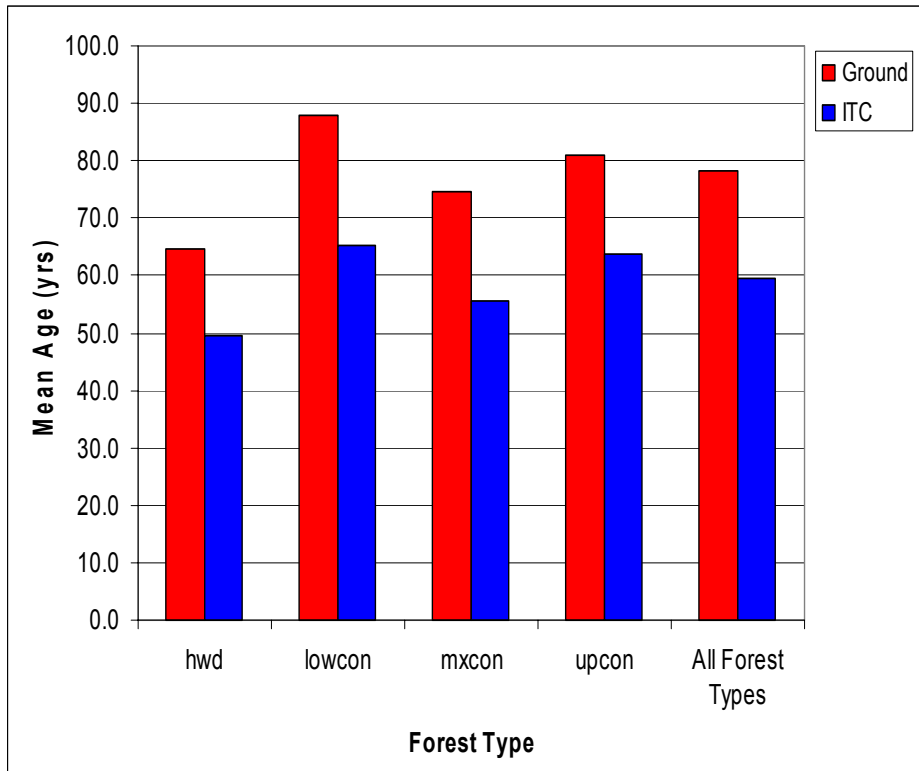
ITC Predictions



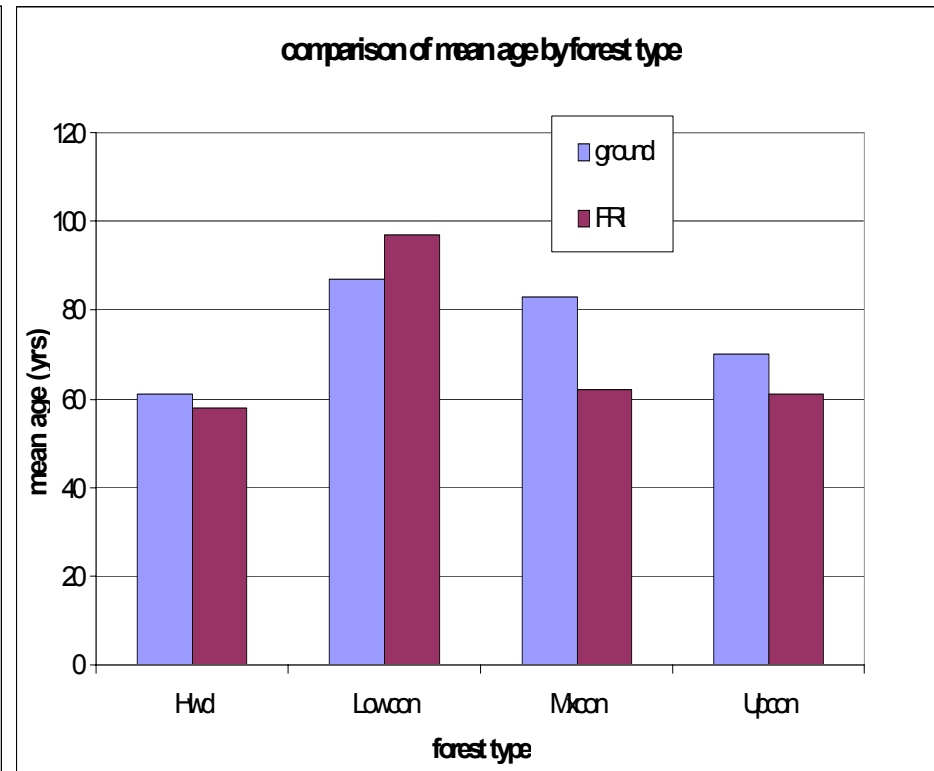
FRI Predictions

Prediction of Age

- ITC consistently underestimated age, while FRI was high or low depending on forest type



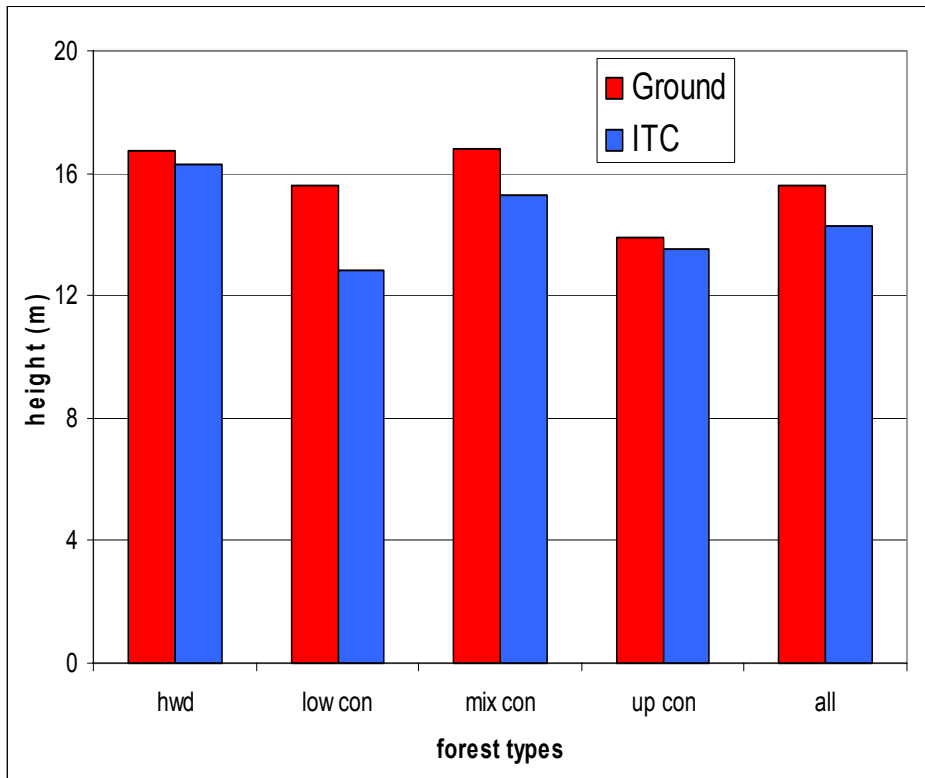
ITC Predictions



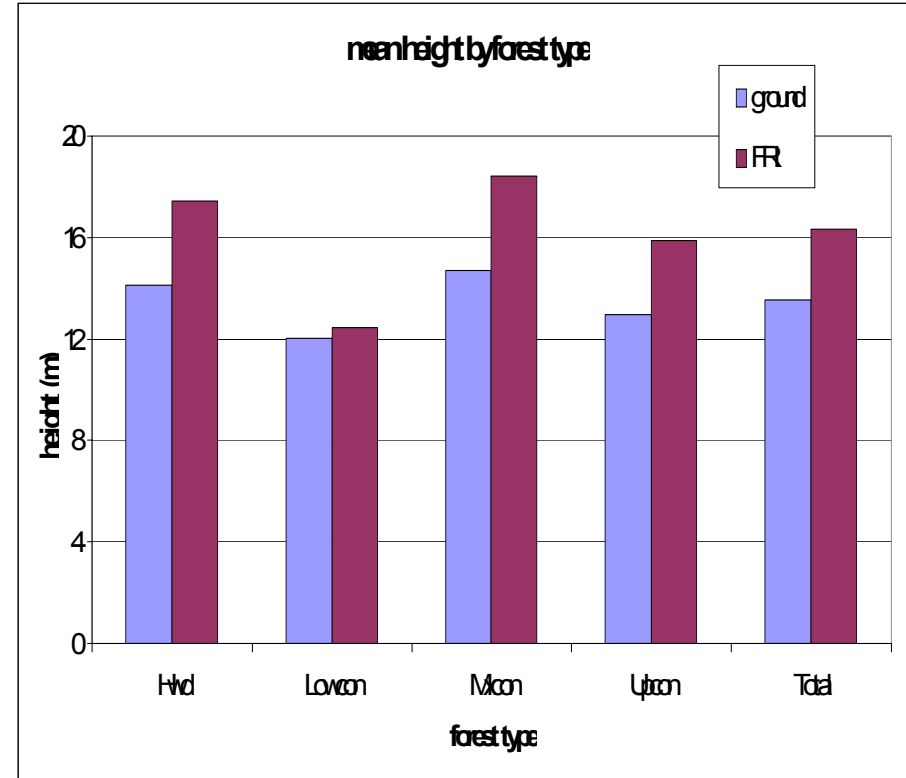
FRI Predictions

Prediction of Height

- The prediction of height by ITC was generally. On average, for all polygons, ITC underestimated height by 1.3m



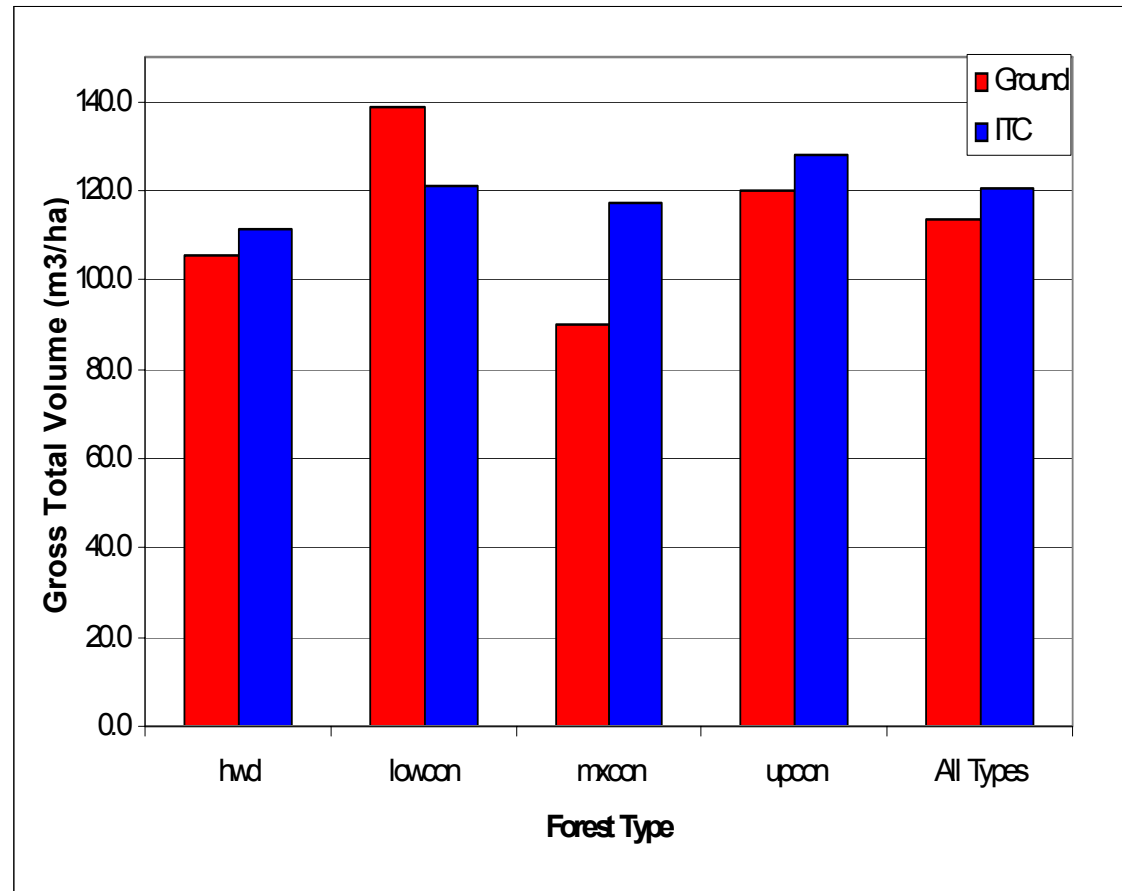
ITC Predictions



FRI Predictions

Prediction of Volume

- Traditional FRI does not predict volume however, ITC offers this attribute.
- The GTV only varies by 6 percent between both methods for the total study area.



Enhanced FRI Theme Results

- Polygons delineated by ITC were not homogeneous.
- More clearly document the process used by ITC to delineate polygons and assign attributes.
- With the increased resolution of new remote sensing data alternative forest-level inventory tools such as ITC offer forest managers another tool to evaluate forest resource information.
- The scale at which it is intended must coincide with the objectives of the forest manager and the level of inference required.

Spatial Modeling Theme Objectives

- Test spatial model using objectives commonly encountered in an FMP
- Develop a streamlined approach to allow models and tools to be used
- Develop approaches to document inputs, model assumptions and outputs such that a common minimum standard of use is identified for all tools

Spatial Modeling Theme Progress

- The set up of FSOS to pilot on the Caribou Forest has been completed
- A number of 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
- Analysis package completed

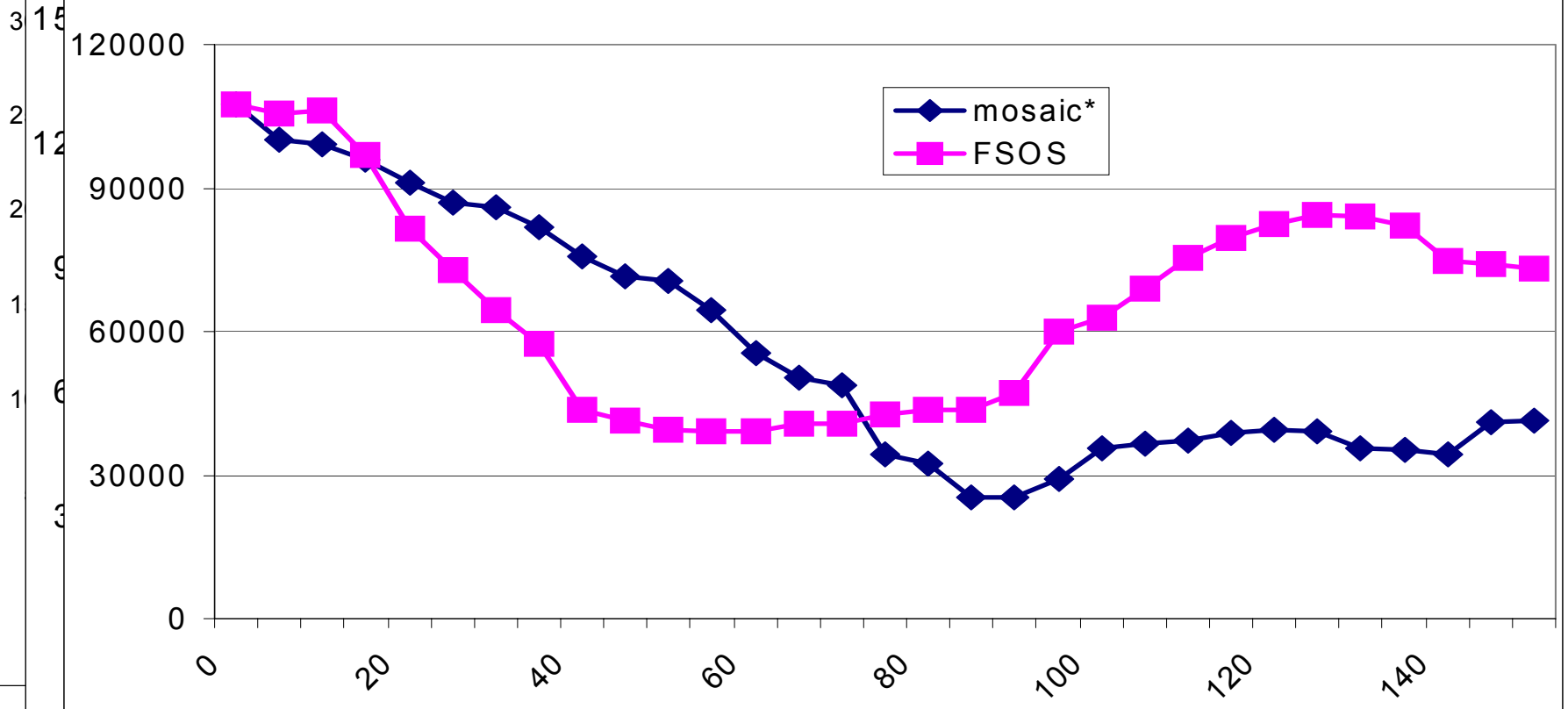
Spatial Modeling Theme Results

- Results of pilot have been positive:
 - Three person team created a spatial model and all the inputs from scratch in a few weeks
 - Explored a meaningful range of alternatives quickly (11 very different approaches)
 - Balanced a number of different and sometimes competing objectives (i.e. NDPE, caribou, First Nations, cost control)
 - Tested likely approach of the Landscape Guide
- Achieved superior volume with a comparable balance of non-timber objectives
- Recommend approval of FSOS for use in FMP's

Spatial Modeling Theme Results

Compare SFE volume

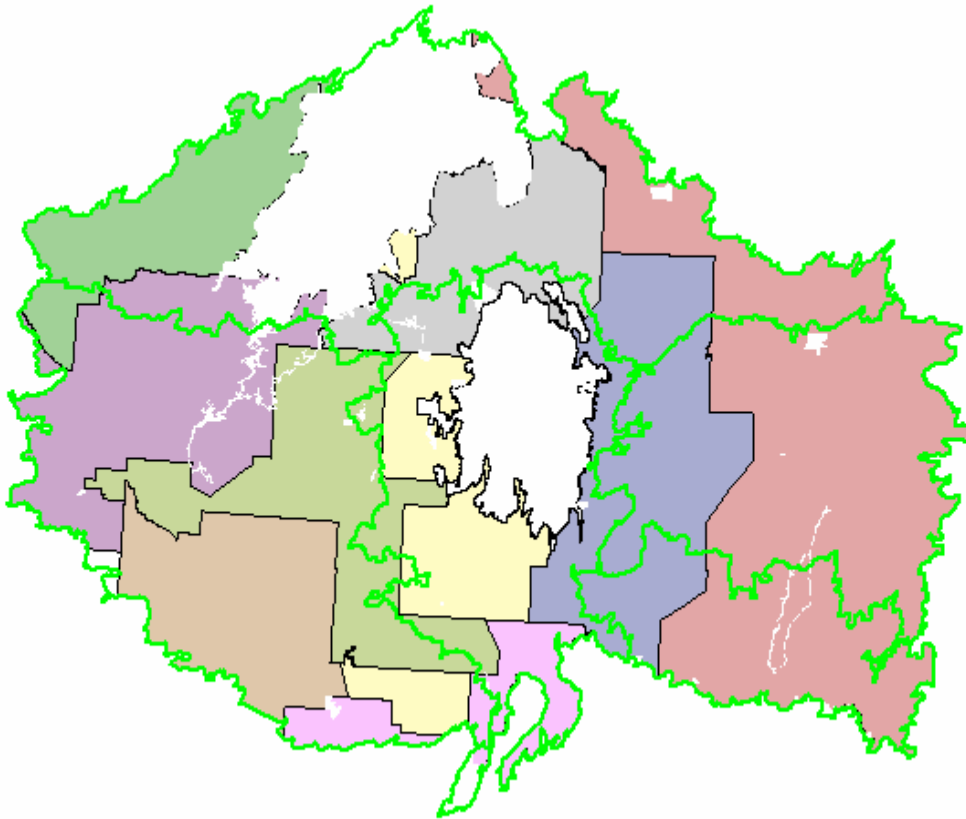
Compare large mature & old patches (i.e. habitat blocks) in the high value caribou areas
2007mosaic & FSOS Scenario9



Management Scale Theme Objectives

- Setting management objectives and/or implementing forest management guidelines at 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 Scale Study Area



Covers all or parts of 13 SFL's

Landscape analysis results compared at different scales

- ecoregion
- ecodistrict
- economic cluster
- corporate wood shed
- SFL

SFMM - 32 SU created based on SFL, ecodistrict, and productivity

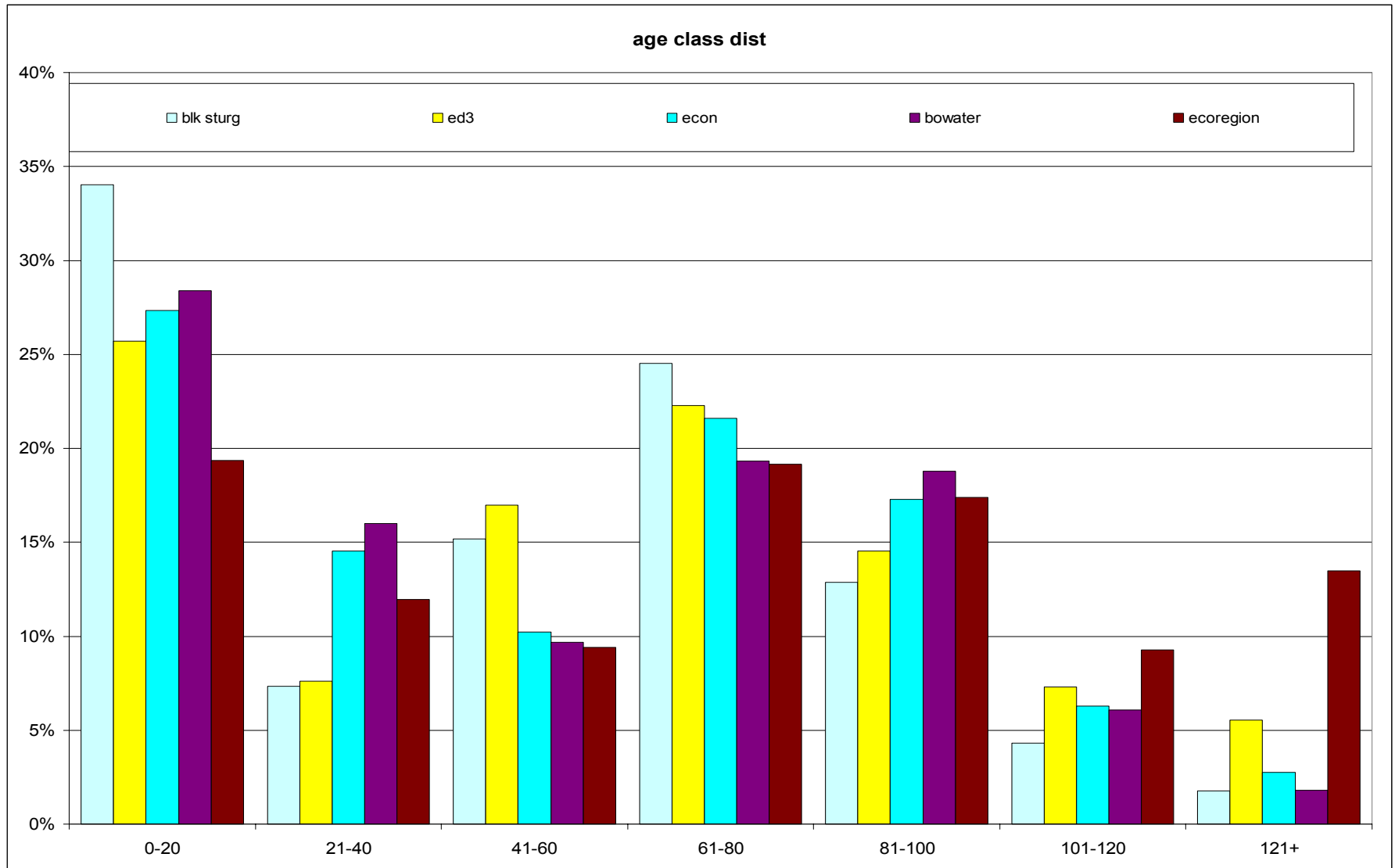
Management Scales Theme Progress

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

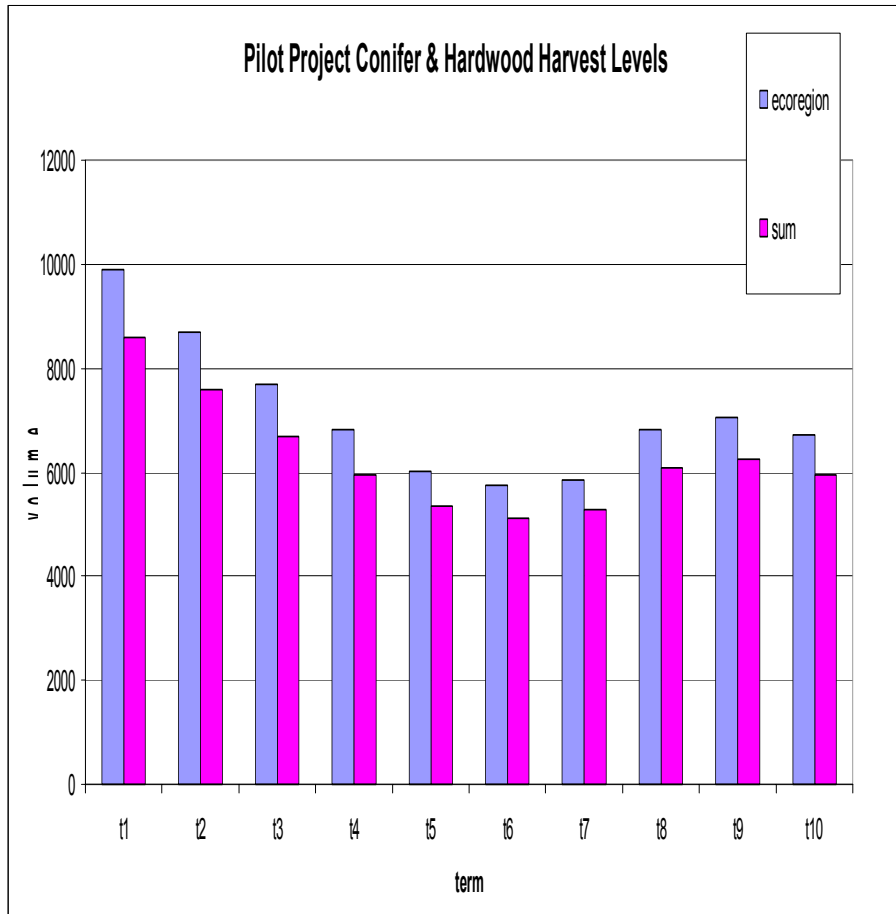
Management Scales Theme Results

- Analysis shows that the larger the management scale the better the ability to balance timber and non-timber values
- Volume gains in the order of 10% across terms was consistently achieved and gains in excess of 20% for highly constrained runs
- Volumes gains can be achieved with cost reductions
- Sustainability benchmarks very wide in natural systems

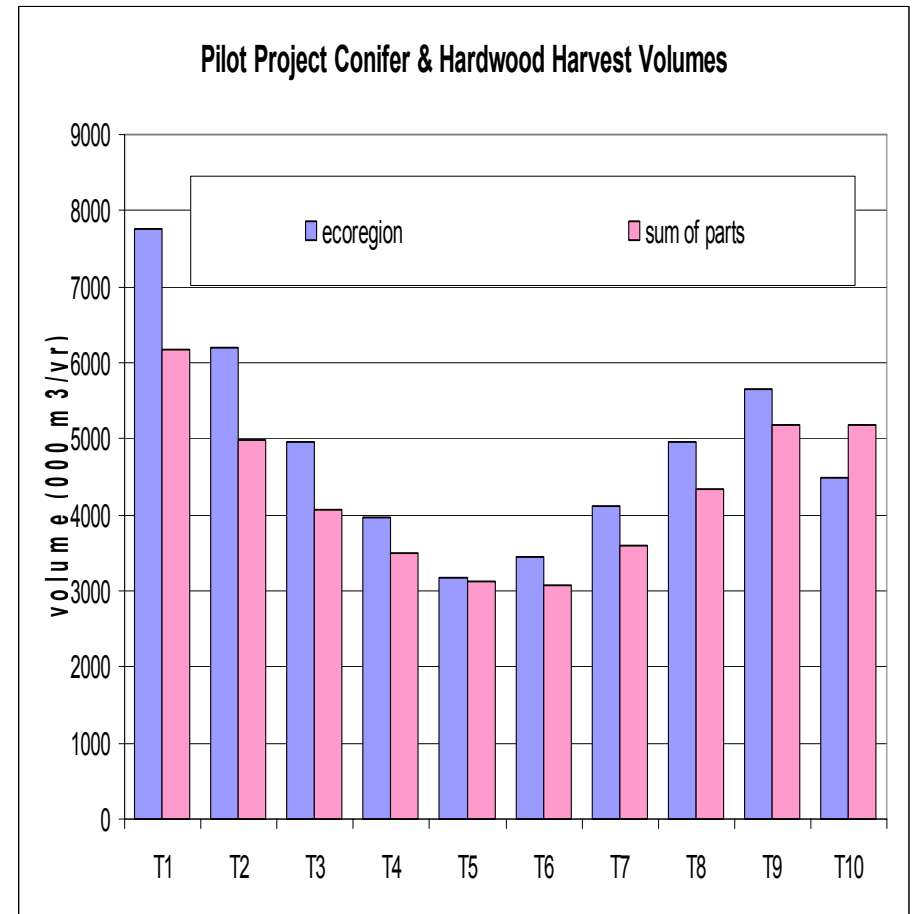
Age Class Synergies



Volume Synergy at the Ecoregional Level

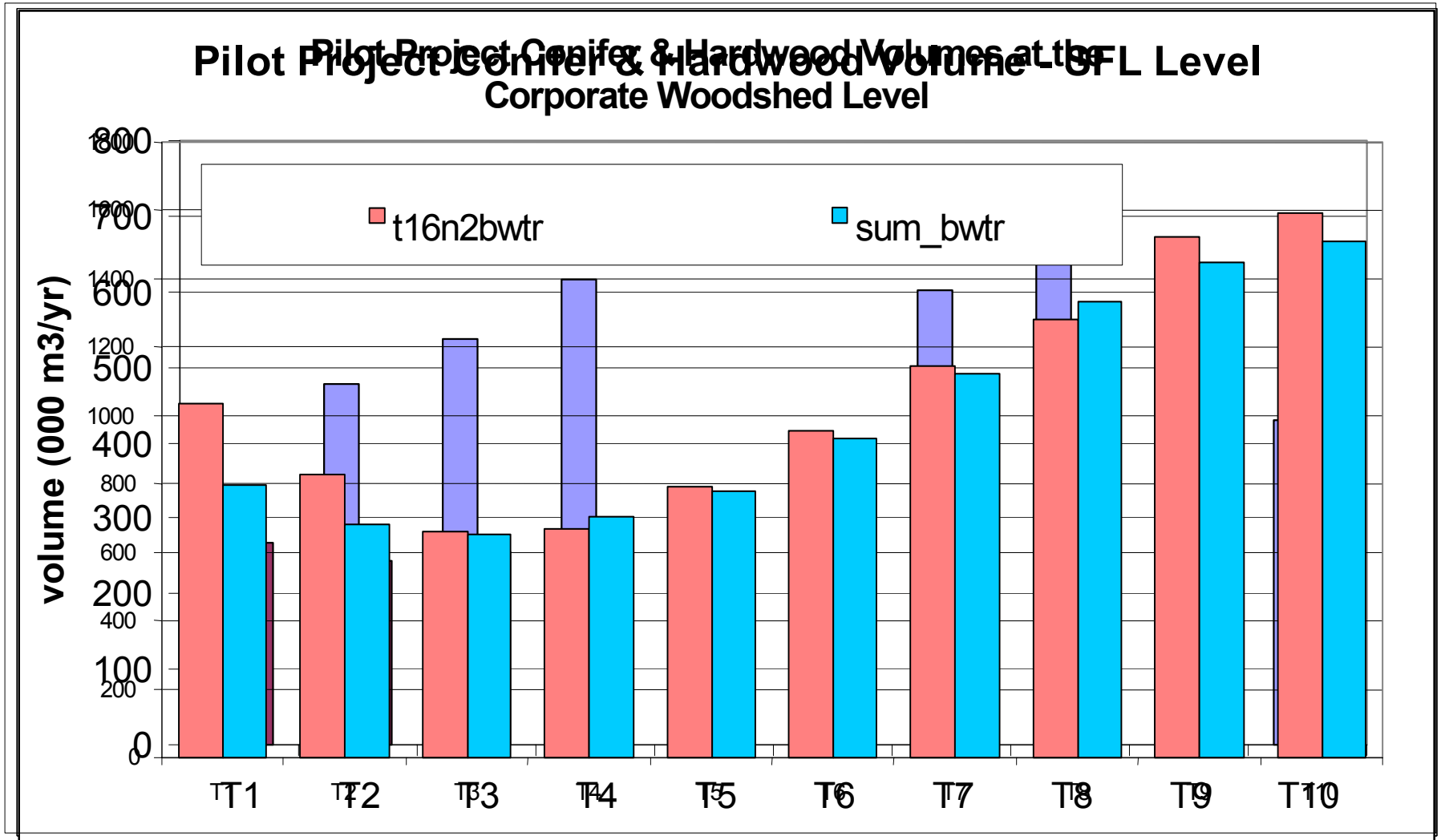


compare volume synergy—unconstrained runs

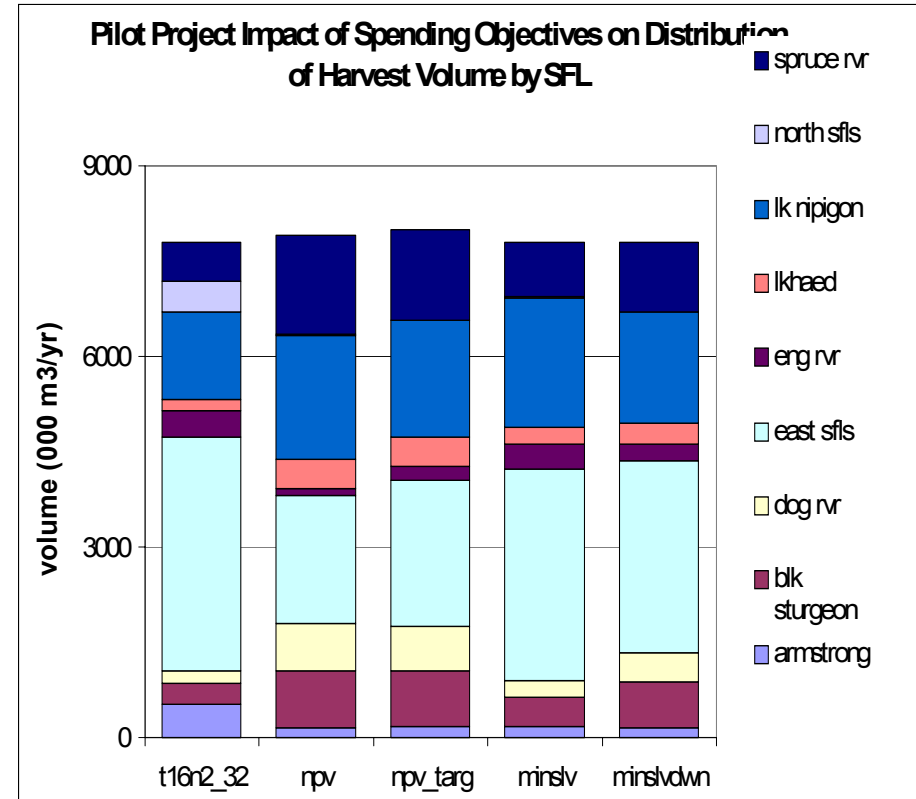
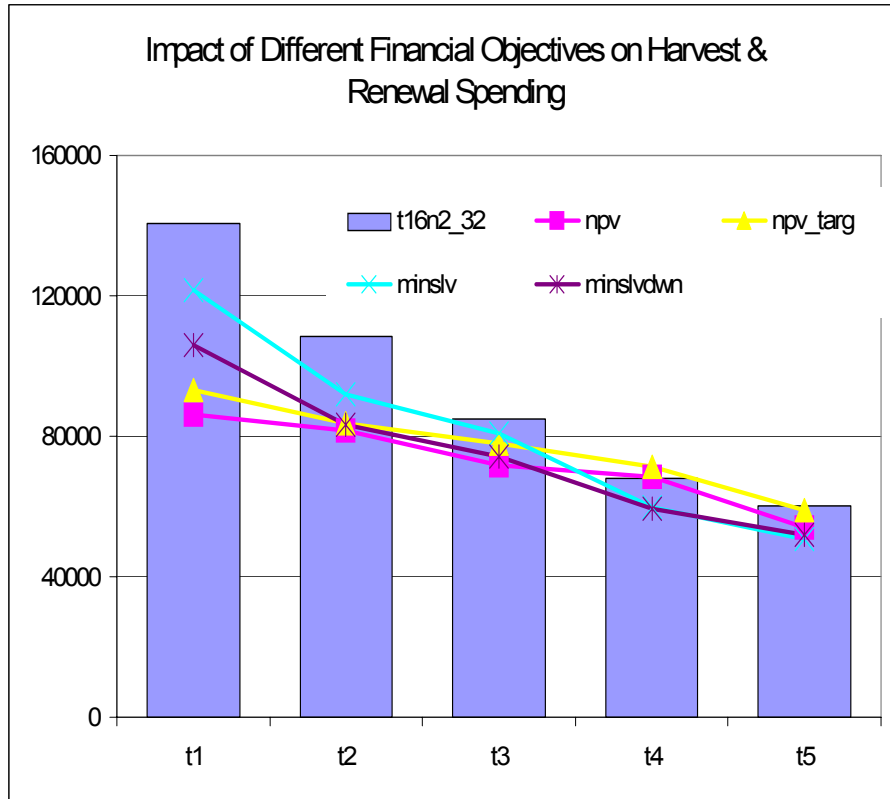


compare volume synergy—constrained runs

Volume Synergy at Different Levels



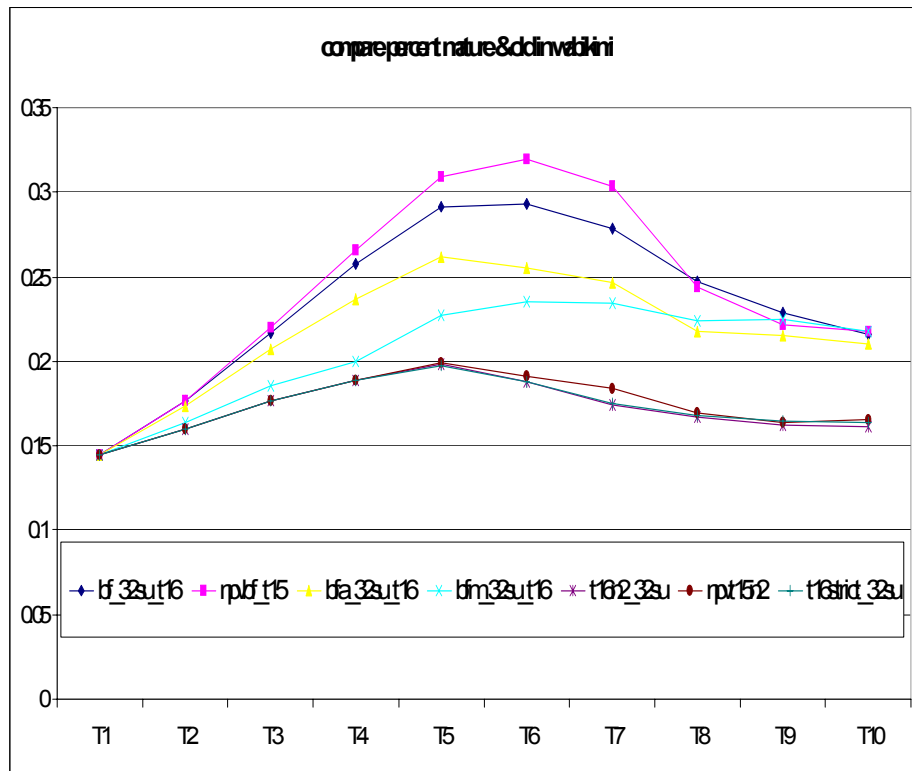
Impact of Financial Objectives



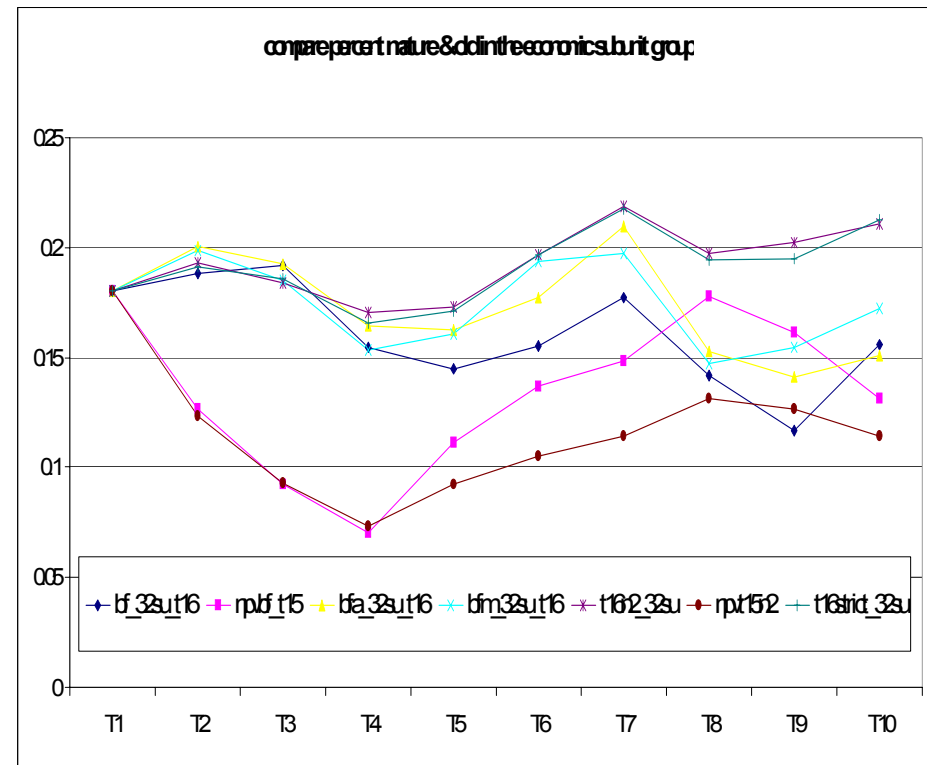
Changing objective from MAX TPP to recognize financial objectives redistributed the allocation based on harvest cost and changed the renewal program – with no loss in conifer volume (hardwood needs were met with incidental harvest)

Impact on Non-timber Values

Wabikimi Park's Contribution



Economic Cluster's Contribution



Changing objectives & targets redistributes habitat and other non timber values

Management Scales Next Steps

- Complete management scales final report and presentation
- Examine the effects of management scales with spatial constraints (spatial modelling exercise being developed by Michael Gluck)
- Develop recommendations to assist in implementing 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, 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 and the MNR should approve FSOS for use in FMP's
- Spatial modeling calls for additional analytical skills that require specialized staff and the MNR should concentrate 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 combination of SFL's to create larger land bases
- Landscape level parks make important contributions to sustainability and parks adjacent to SFL's need to be considered in the assessment of sustainability, especially in the context of the Landscape Guide

- The final project reports completed need to schedule presentation to steering committee.
- 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:

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