



## Fundy Model Forest

### *~Partners in Sustainability~*

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*“The Fundy Model Forest (FMF) is a partnership of 38 organizations that are promoting sustainable forest management practices in the Acadian Forest region.”*

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Canadian Institute of Forestry  
Canadian Forest Service  
City of Moncton  
Conservation Council of New Brunswick  
Fisheries and Oceans Canada  
Indian and Northern Affairs Canada  
Eel Ground First Nation  
Elgin Eco Association  
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Village of Petitcodiac  
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**Benchmark Soils: Maintenance of Permanent Sample Plots**  
2002-2003

**Final Report**

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The overall purpose of the benchmark soil project is to establish reference values for soil quality under different methods of forest management, in particular the substitution of rapidly growing plantations for mixed natural forests, and to detect changes over time. The program thus includes 24 permanent sample plots, 6 in naturally regenerated, near-mature forest (NF), and 9 in each of two plantation age-sequences: jack pine (P) and black spruce (S) (Table 1, Fig. 1). Forest growth and soil quality are to be assessed at regular intervals (see original statement for protocols). So far measurements have been carried out on each of the 24 plots at the time of initiation (1994/95) and after the first 5 years into the program.

Over the years, several problems have appeared, threatening the success of the project. Most serious was the presence of volunteer species in nearly all plantation plots, leading to highly variable levels of stocking and danger of biased results. Rapid growth of understory and groundcover vegetation had obliterated trails; originally used flagging was lost and paint, marking center and plot boundaries, had faded. One of the plots was lost in the course of construction of the new TCH and needed to be replaced.

These problems were remedied in the summer of 2002 and spring of the current year with funding from the FMF and in-kind support from the New Brunswick Department of Energy and Natural Resources. In summary, the following work performed:

1. Cutting excess trees (mainly volunteer balsam fir, aspen and birch) to adjust the population density to about 100 trees on each plantation plot (2000 trees/ha).

2. Adjusting tree populations (density and species composition) beyond plot boundaries to establish buffers of 5 m minimal depth around each plantation plot.
3. Refurbishing or replacing, where necessary, center posts, 10x10x125 cm, cut from cedar lumber and painted (red) on all (24) plots.
4. Repainting (red) and re-flagging plot boundaries.
5. Permanently numbering trees with metal tags and marking breast-height locations for diameter (dbh) measurement, volume computation and biomass estimates (this involves plots in plantations too young for diameter and volume assessment in previous assessments).
6. Replacement of permanent sample plot (S7), lost in highway construction.
7. Recording GPS coordinates and altitude (a.s.l.) at plot centers.
8. Setting plot markers (cut from cedar lumber and painted red) at road-side, and clearing access trails to all plots.

The permanent sample plots form the basis upon which the benchmark soil project is developed. Although plot maintenance is not expected to require a special effort in future years, on-site markers will need to be renewed occasionally and population densities adjusted to concur with managed-stand development.

The maintenance work on the sample plots was performed by Matthew Steeves, Faculty of Forestry and Environmental Management, University of New Brunswick. We are indebted to the New Brunswick Department of Energy & Natural, Fredericton, for the loan of ATVs, allowing us to access plots cut off by the new TCH.

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