

Linking geological, soil and vegetation data using GIS to predict early tree growth in central Newfoundland

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“Wood supply” models are used to calculate “annual allowable cut” in a manner analogous to using fish population models to determine “total allowable catch”. The assumptions on which early (0-20 years) plantation growth

rates are based are still simplistic and require further refinement. In particular, most plantations are located in central Newfoundland where the presence of an ericaceous shrub, *Kalmia angustifolia*, can severely reduce the early growth

of planted black spruce seedlings. An ideal seedling growth model would predict seedling performance based upon innate site productivity, successional status, the amount of *Kalmia* present and its rate of spread.

To build towards this, the positions of approximately 6000 seedling assessment quadrants on 1:12,500 map sheets from a 1992-93 provincial plantation survey in central Newfoundland were located and digitized. Attribute tables were then generated for each of these points from GIS maps of bedrock and surficial geology, forest capability (CLI), dominant and sub-dominant soil attributes, and forest inventory cover

type. Analysis is on-going, but it is hoped that a first approximation of a field manual can be tested in 1995, which will allow for prediction of spruce performance based upon GIS-generated information on geology, site and soils, and simple field measurements of biological features. If the predictive capabilities can be refined and are accurate enough, then the potential exists to move to an area-based model that can be linked directly into forest management GIS maps and even satellite images of *Kalmia* distribution for prioritizing silvicultural decisions and improving the accuracy of wood supply models.