



Decision Support Tools For Early Stand Establishment

ONE OF THE KEY STEPS IN GOOD DECISION MAKING IS TO OBTAIN ALL OF the necessary information to help support the decision process. With this in mind, I will provide a brief insight into some of the available early stand establishment decision-support tools available to BC's forest professionals.

I would, however, like to offer a small caution—when looking for decision aids, it is important to recognize that such tools can only support decision making as far as the assumptions built into these tools will allow them to go. As someone who is involved in designing early stand development decision-support tools, I have learned the value of keeping the lines of communications open with various experts. Sometimes a good conversation in concert with the various decision aids can be of immense value in helping make a good decision.

Field Guides and Field Notes

There are many examples of field guides/field notes to support early stand establishment—from various forest damage field guides to short notes on managing various vegetation management complexes.

One of the key field guides that forms the basis of many early stand establishment decisions are those associated with the Biogeoclimatic Zones of British Columbia (or BEC guides). These guides provide a range of climatic and geographic conditions that currently affect the various tree and plant species found in defined areas of the province using a structured classification which has become the cornerstone for many forestry related decisions. Updates on this information can be downloaded from the Ministry of Forests Lands and Natural Resource Operations Research Branch website.

<http://www.for.gov.bc.ca/hre/becweb/>

These biogeographic zones are also the basis for a series of field notes called Stand Establishment Decision Aids (SEDAs) designed by FORREX—Forum for Research and Extension in Natural Resources. Short summaries focus on synthesizing the latest information on silvicultural tools and practices which can help deal with environmentally limiting factors. The initial series of these notes addressed issues associated with forest health and alternative vegetation management strategies to address competing vegetation. SEDAs are available online and can be downloaded from FORREX's website.

<http://www.forrex.org/tools/sedas/>

A new series is currently underway that looks at how to use various silvicultural tools to manage for other values such as wildlife habitat.

Online Tools

With the advancement of the Internet, valuable early stand establishment decision-making tools are now obtainable online.

For the southern interior of British Columbia there is an Expert System for Site Preparation and Vegetation Management. This system predicts how the vegetation community will develop following

disturbance and evaluates the potential effectiveness of site preparation and brushing treatments.

<http://www.myacquire.com/spvegman/expertsystem/>

Another expert system that also provides guidance around vegetation management is VegTools, designed by the USDA Forest Service. This system provides a wide spectrum of resources and simplifies access to specific information regarding techniques, processes, technology and personal experience with various treatment options. Although this is an American system, it does offer some suggestions and case studies that readers may find useful.

<http://wwwlfs.fed.us/vegtools/>

If concerns exist around forest health issues, the BC Ministry of Forests Lands and Natural Resource Operations, Forest Practices Branch has an online Tree Doctor which will give specific information on high priority forest health concerns in the province.

<https://isweb.mala.bc.ca/td/pestinfo.asp>

A tree species selection tool is in development and will be released for the northern portion of the province (former Prince George and Prince Rupert Regions) by the end of March 2012. This tool will provide information on the ecological characteristics and habitat of provincial tree species. Shirley Mah, RPF, research ecologist with the Ministry of Forests, Lands and Natural Resource Operations is the team lead on this tool and updates can be found on their website.

<http://www.for.gov.bc.ca/hfp/silviculture/TSS.htm>

Modelling

In the world of modelling, British Columbia has a vast array of decision-support tools.

On the coast, researchers from the University of British Columbia have created LLEMS—Local Landscape Ecosystem Management Simulator. LLEMS is an ecologically based decision-support tool for assessing the implications of variable retention management for selected indicators of sustainable forest management. It can provide projections of spatial and temporal development of complex cut blocks.

<http://www.forestry.ubc.ca/ecomodels/moddev/llems/llems.htm>

For those professionals working in the northern part of the province, Dave Coates, RPF, research silviculturalist with the Ministry of Forests, Lands and Natural Resource Operations, and his team have been working on SORTIE-ND, the SORTIE-Neighbourhood Dynamics model. Although this model is considered a research model, it can help in early stand establishment decision making through the exploration of various forest management scenarios.

<http://www.bvcentre.ca/sortie-nd/history>

For those who are interested in more of the financial aspect of early stand establishment decision making, a beta version of the Financial

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Analysis System Including Economic Return (FAN\$IER) is currently being tested and will be available in the next Table Interpolation Program for Stand Yields (TIPSY) release of Fall 2011. This addition to TIPSY is designed to provide improved economic analysis options to aid forest professionals and planners in evaluating the impact of selected silviculture events on the discounted value returned by end products at the stand level. More information on this can be found in an upcoming article in LINK News <http://jem.forrex.org/> or by contacting Mario Di Lucca, Growth and Yield Application Specialist with the Ministry of Forests, Lands and Natural Resource Operations at Mario.DiLucca@gov.bc.ca.

Trade Off Analysis

This growing field offers a complement of tools that are mainly linked with forest estate models and larger forest planning exercises.

Scenario planning is one process that can help with trade-off analysis especially when combined with forest estate modeling tools which include optimization routines (e.g., Patchworks and Woodstock). Using the scenario process helps to compare and contrast futures under different resource management objectives. For more information on how scenarios can be used in the development of Sustainable Forest Management Plans refer to the Morice and Lake's Innovative Forest Practices Agreement (IFPA) Sustainable Forest Management Plan.

[http://www.moricelakes-ifpa.com/publications/documents/MoriceSFMPan_V3.3%20\(032509\).pdf](http://www.moricelakes-ifpa.com/publications/documents/MoriceSFMPan_V3.3%20(032509).pdf)

Multiple accounts/criteria analysis is another tool that can help with trade-off analysis. This tool is a relatively simple trade-off analysis technique that can be implemented as a spreadsheet application independent of forest modelling. The technique involves ranking and aggregating multiple criteria across multiple values by assigning relative importance scores (or weightings) to the individual criteria. An example of such a tool was used by the Forests for Tomorrow Program in 2009. They developed a multiple accounts decision-analysis (MADA) template that was used to help prioritize stands within individual management units for silviculture investment. More information on Forests for Tomorrow's MADA can be found on their website.

<http://forestsfortomorrow.com/fft/tool/multiple-accounts-decision-analysis-mada/223>

Information related to many of these growth and yield models and forest and landscape analysis tools is currently being pulled together by Steve Stearns-Smith 'RPF' for publications in the *Journal of Ecosystem and Management* (JEM). This article will also touch on a couple of models that may be of interest to those wishing to identify what options are available for early stand development decision makers.

I've touched on a range of tools here. However, the scope of this topic is very broad and there are many tools I haven't had space to mention. If you are interested in learning more about early stand establishment decision support tools, please contact me at kathie.swift@forrex.org 🐣

Kathie Swift, RPF, is a fourth generation forester and is one of the founding extension specialists of FORREX. She has recently become FORREX's new manager for knowledge exchange. She holds an Honours Bachelor of Science in Forestry from Lakehead University and a Masters of Science from UBC.