



Virtual forests help management planning

New planning systems and decision support tools designed to help private forest owners will soon see the daylight in the Nordic countries.

Sweden and Finland have developed sophisticated tools that are “close to practice”. They allow various options to optimize forest management regimes according to different goals, and some include visualizations of the forest in 3D-graphics. Similar efforts are underway in Norway, but with less well developed applications for forest owners.

Planning systems released to date have mainly concentrated on timber production, but the new systems will also portray expected outcomes in terms of other types of values.

Private forest owners comprise an important group of timber suppliers in the Nordic countries, collectively owning 51 %, 62 % and 80 % of the forested areas in Sweden, Finland and Norway, respectively.

Some of the planning efforts are being performed within the international ELAV project (Enhancing Local Activity and Values from forest land through community-led strategic planning), and others are being run at a national level.

Planning in Sweden Heureka research project

The goal of the Heureka project is to provide a new computer-based decision support system with specific applications for both operational and long-term forestry analyses at local, regional and national scales.

Heureka differs from previous planning systems used in Sweden in that it allows the effects of planned activities on non-timber values of forests, such as recreation, carbon sequestration and biodiversity to be explored, as well as their effects on traditional measures of productivity.

The small-scale forestry applications are targeted at forest owners with properties between 10 and thousands of hectares. The current planning systems (“Hugin” and “Forest Management Planning Package”) are designed for national/regional analysis, and long-term planning, respectively, and will be replaced by the Heureka system in a few years.

3D stand-wise

User-friendly presentation of the results is a key objective for the Heureka tools. The small-scale foresters can use an application called

“BeståndsVis” (“stand-wise”), which visualizes the forest in 3D. The users can adjust values, simulate growing stands or examine the simulated effects of loggings. Thus, the effects of new silvicultural treatments, e.g. various logging options, can be visually explored.

For many forest owners, graphs, tables and maps may be difficult to interpret, so the visualizations should provide valuable support that helps them to understand the likely effects of different management options. The images can also provide an overview of the effects of logging on views in the landscape.

The visualized stands are interactive, and it is even possible to draw the exact route of forest roads, or to log certain trees in the stand.

Heureka will provide the concepts and models for the decision tools. However, the applied products will be developed by commercial software suppliers. The present phase of Heureka will continue until 2009.

Source: <http://heureka.slu.se>

Picture above: The program Beståndsvis in the Heureka system can visualize a forest in 3 dimensions based on map, stand and plot data.

Planning in Finland MELA, decision support and MESTA for planning

The Finnish MELA system is a decision support tool that is used to analyze wood production under different management regimes and is being continuously refined by a team at Metla (the Finnish Forest Research Institute) led by Professor Tuula Nuutinen. MELA is used by the Forestry centres, who produce most of the private forest plans in Finland.

A demo version of MELA is available at "www.metla.fi/metinfo/mela/demomela/ohje-en.htm".

MESTA is an internet-based decision support tool for interactive planning that simulates wood production under different management regimes. It provides similar visualizations of forests to the Swedish Heureka package.

*Source: Forest Planning in Private Forests in Finland, Iceland, Norway, Scotland and Sweden. Proceedings of ELAV seminar, 23-24 March 2006, Koli, Finland
www.metla.fi*

Planning in Norway Advanced models but fewer applications

Decision support systems for timber production and harvesting analysis have been developed and applied in Norway for a long time. Notably, various versions of "AVVIRK" ("logging") have been generated, from simple programs initially with limited flexibility to current, multifunctional packages utilising information from geographical information systems (GIS).

A stand simulator has recently been developed for stand-level analyses, and new planning tools based on GIS-applications are being produced. However, forest owners in Norway seem to be exploiting only a fraction of the potential of the models in practice.

*Source: Forest Planning in Private Forests in Finland, Iceland, Norway, Scotland and Sweden. Proceedings of ELAV seminar, 23-24 March 2006, Koli, Finland
www.umb.no*

Modified wood – an environmentally friendly means for preservation

The Norwegian Forest and Landscape Institute (*Skog og Landskap*) is evaluating the efficacy of various modifying treatments that change the properties of wood, without using toxic preservatives, for increasing its resistance to decay when in contact with soil.

The tested measures include acetylation, furfurylation, heat treatment and preservation with linseed oil. The researchers hope that one or more of the treatments can provide an alternative to traditional methods of preservation with CCA (copper, chrome and arsenic). The research is being performed in cooperation with the SP Technical Institute of Sweden.

Source: www.skogoglandskap.no

*Contact:
Gry.Alfredsen@skogoglandskap.no*



Preliminary tests have been conducted in Norway using unsterilised soil in lab conditions to obtain rapid indications of the performance of candidate treatments. Field trials of wood in contact with soil are also underway in both Sweden and Norway. The picture above, "Field of posts" shows one such test at Ås in Norway. Photo: Sigrun Kolstad

"GM tree research is needed"

EFI has issued a statement on the controversial use of genetically modified (GM) trees. The organisation supports research on GM trees. Scientific research is necessary in order to provide public authorities with sound and unbiased data and information.

Amongst other issues, the research should explore alternative options and assess possible technical, economic, social and ecological effects of the trees.

The statement was issued at the Annual Conference of the European Forest Institute in September 2007.

Source: www.efi.fi



GM tree trials have sometimes been destroyed by activists, and attacks have also been launched in ordinary genetic trials. The sign is from a field trial in British Columbia. Photo: Curt Almqvist

Scandinavia under attack – by bark beetles

A major storm over southern Scandinavia in January 2005 blew down large numbers of spruce trees, providing plentiful breeding substrates for bark beetles (*Ips typographus*). Since then, the bark beetle attacks on standing trees have been among the worst ever seen in Denmark and southern Sweden.



Photo: Skogforsk

Denmark – now under control

The propagation of bark beetles in 2007 was halted during the summer by a spell of cold, wet weather. The bark beetle swarms in April-May and hatches in weakened spruce stems. A second swarming period occurs in July-August. In normal years, summer attacks are five times as severe as the May attacks. However, this year, only 10-20% of the numbers of trees attacked in May were attacked in the summer. There are still many damaged or killed spruce trees in the forests of Denmark, which have to be removed. But the situation seems to be under control, according to the Danish research centre Forest & Landscape.

Source: Forest & Landscape, www.sl.life.ku.dk

Sweden – severe attacks

Huge amounts, 800 000 cubic metres, of standing forest have been attacked and destroyed in southern Sweden. The cold, rainy weather during the summer of 2007 was favourable for the trees and unfavourable for the bark beetles, but the situation is still serious. The bark beetle population is still substantial, and there is also a high risk of new attacks next year due to the large amounts of timber left in the forest and at roadsides. A large-scale helicopter inventory will help the forest owners to locate damaged trees.

Source: The Swedish Forest Agency, www.skogsstyrelsen.se, and Nordic Family Forestry, www.nordicforestry.org

Shortcuts

Five million new hectares of forest in Sweden

The international definition of forest, used by the FAO (Food and Agricultural Organization), differs from the one generally used in Sweden. However, the Swedish University of Agricultural Sciences has suggested that the Swedish definition should be adjusted.

The FAO definition does not consider the productivity of the site, but classifies an area as a forest if it supports trees at least 5 metres tall, with at least 10% crown closure. Use of this definition will add another 5 million hectares to the Swedish forests, in addition to the 23 million hectares currently classified as forest.

Source: www.slu.se

EFI launches Euroforest forestry portal

A new portal for forest and forestry information has been launched by the EFI (European Forest Institute) in Finland.

The portal contains a news section and a metadata base of web resources – web pages of organisations, networks, information providers, databases, and selected major reports.

The portal offers a technical platform to establish new “local forest portals” for sharing information for specific regions.

Source: <http://forestportal.efi.int/>

New newsletter from Norway’s “forest university”

“INAnytt” is the name of a newsletter issued by the Department of Ecology and Natural Resource Management at the University of Life Sciences (UMB) in Norway. The department is responsible for research and education in forest science, natural resource management, biology and ecology.

The newsletter is distributed in e-mails via a listserver. The first issue, published in September 2007, reports *inter alia* that there is a predominance of females on the master programme for rural development, and that UMB will invest in research on renewable energy. The newsletter is presently only written in Norwegian.

Source: www.umb.no/INA

New Nordic organisation to protect genetic resources

Nordgen is a new organisation with the mission to safeguard genetic diversity in the Nordic region. It originates from a merger of the Nordic Gene Bank for plants, Nordic Gene Bank for farm animals and the Nordic Council for Forest Reproductive Material.

The body will be run under the auspices of the Nordic Council of Ministers, and its headquarters will be in Alnarp, Sweden, where the Nordic Gene Bank for plants is currently based.

The first permanent head of the Centre (from January 2008) will be Jessica Kathle.

Source: www.skogoglandskap.no www.nordgen.org

International conference on seed orchards filled a gap

In September, an international conference on seed orchards in Umeå, Sweden, gathered more than 90 participants.

– Research related to seed orchards has been regarded as “mature” and much less “sexy” than research on vegetative propagation or molecular genetics, says Dag Lindgren, Professor of Genetics at the Swedish University of Agricultural Sciences. Nevertheless, a conference on the topic attracted 90 participants from around the world.

Furthermore, improving the stocks, design and use of seed orchards seems to be the most readily achievable, reliable and rapid way to improve forests. The genetic gains resulting from tree breeding steadily

accumulate over time, implying that improvements should also accrue in the seed and stocks of newly established seed orchard over time.

More than 50 papers and posters were presented, covering aspects such as stimulating flowering with gibberellins, the layout of the orchard trees, treatment against seed-eating insects and the role of seed orchards as genetic resources.

This was the first international conference on the topic in decades, and it was considered to have filled a gap. A new IUFRO (International Union for Forest Research Organisations) working party was also formed at the meeting.

Contact: Dag.Lindgren@sgen.slu.se

Seed orchard research is definitely a vital disciplin. The conference in Umeå attracted 90 researchers from around the world. Photo: Jan-Erik Nilsson



Ban on pesticides in Swedish forests – with exceptions

After long discussions, the Forest Stewardship Council (FSC) has reached an agreement with its members on the use of pesticides.

The new agreement states that:

- Those who follow FSC certification standards should not generally use pesticides
- Pesticides can be allowed under some circumstances, but all exceptions from the general rule must be agreed in annual negotiations.
- The board of the Swedish FSC will define criteria for exceptions with respect to insecticide protection against pine weevil attacks. These criteria will be decided before 31 January 2008.

The members of FSC include, *inter alia*, the main forest companies, WWF, the forest workers union and the organisation for forestry contractors.

Source: www.fsc-sverige.org



The pine weevil should initially be combated without insecticides in FSC-certified forests.

Contact News & Views

Write to the scientific editor:
Mats Hannerz,
Skogforsk
SE-751 83 Uppsala
Sweden.
mats.hannerz@skogforsk.se

More info about SNS:

www.nordicforestresearch.org

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News & Views is edited by
Mats Hannerz
mats.hannerz@skogforsk.se,
and produced by
Carl Henrik Palmér. chp@areca.se