News and Views
from SNS – Nordic Forest Research Co-operation Committee
2 2007

Focus on environment in two new SNS-granted projects

1. Forestry and use of wood to mitigate climate change

Forestry and the forest industry have vital roles to play in mitigating climate change. Carbon can be sequestered in forest soil and biomass, forest residues can be used as substitutes for fossil fuels and timber as a substitute for non-wood construction materials. Advanced models have been developed for analysing the "carbon footprints" of specific segments of the forest sector, but there is a lack of integrated models.

The objective of the project is to combine models of forest stand management, regional harvest scheduling, wood substitution in house construction, and forest product markets. Greater understanding of the consequences of various measures throughout the forestry/forest product chain should facilitate the development of efficient strategies for tackling climate change.

Project SNS-101, Total grant 50,000 Euro.

The project is a cooperation between:

- SLU (Sweden)
- Mid Sweden University,
- VTT, the Technical Research Centre of Finland,
- Metla (Finland),
- Norwegian University of Life Sciences, Norsk Treteknisk Institutt
- University of Helsinki.

Contact: project leader Ljusk Ola Eriksson, ljusk.ola.eriksson@resgeom.slu.se

2. Environmental effects of shorter forest rotations in a landscape perspective

In the future many harvested stands will be regenerated with genetically improved plant material, allowing rotation periods to be substantially shortened. Shorter rotations inevitably imply intensified silviculture, in the sense that larger proportions of the landscape will be clear cut annually.

The researchers involved in the project hypothesize that shorter rotation periods, and the accompanying changes in the age structure and intensity of silviculture, may be beneficial for wood production and carbon sequestration, but have negative impacts on biodiversity and water quality.

More specifically, the aims are to

1) identify existing models for water quality, carbon sequestration, biodiversity and wood production,

2) modify existing models for the projects' purposes,

3)) integrate and apply them in preliminary evaluations, and

4) report net effects and identify missing information. The intention is to follow up with larger applications at the national and Nordic levels.

The project is a cooperation between:

- Skogforsk (Sweden)
- Icelandic Forest Research,
- Metla (Finland),
- SLU (Sweden),
- Iceland Agricultural University.

Project 102, total grant 24,000 Euro.

Contact: project leader Jan Weslien, jan-olof.weslien@skogforsk.se

Fast growing genetically improved Norway spruce – a common feature in the future. But how does it affect climate change, run-off water and biodiversity? This is to be studied in two SNS-funded projects.

Larch wood – not the "magic solution" for chemical-free construction timber

How durable is larchwood? This issue has long been debated by scientists. Now, an SNS-financed project has provided the answer: larch wood is like Scots pine wood – but has a larger proportion of relatively durable heartwood.

In northern Europe, larch wood has become a popular substitute for chemically treated timber. Larch has a reputation for being naturally resistant to rot, and is thus often used as an environmentally sound alternative in construction, but experimental data on its durability have been scarce, at least for the above-ground use of larch. Recently, however, Andreas Bergstedt and his colleagues have published findings from a joint Nordic project on larch wood properties.

The SNS-sponsored project focused on identifying differences between three widely grown larch species (Siberian, European and European x Japanese hybrid larch) with respect to basic wood properties and the effect of climatic factors (weathering). An additional aim of the project was to test if thermal treatment could be used to improve the natural durability of larch heartwood.

Far from a uniform material

The results showed that basic wood properties varied greatly, depending on the species, location and growth conditions of the larch trees.

Older trees have a higher content of heartwood, and fast growth results in lower wood density. However, there were also differences between the species.

Twisted boards cause problems

It is widely known that larch wood is difficult to dry. The heartwood dries at a much slower rate than that of spruce and pine, and the drying deformations are much more severe. The results showed that fast drying (12 days) resulted in more twisting, greater internal stresses and more cracks than slow drying (23 days).

There were also differences depending on the board's distance to the pith. Boards sawn close to the pith were less seriously deformed.

More heartwood in larch

It is not, in fact, the entire tree that is durable, but the heartwood. In the Nordic countries, constructions made of Scots pine heartwood can still be found intact in wooden buildings that are several hundred years old. Prime quality pine heartwood is therefore a durable alternative to chemically preserved wood. However, this resource has become increasingly scarce and expensive. Mature pines often have 30 to 50 year-rings of sapwood, which has much lower durability.

Larches contain a much larger proportion of heartwood, since the sapwood occupies only 15 to 20 year rings. The internal form of the heartwood is also more regular than in Scots pine, and larch heartwood is more easily available, at moderate prices, than prime quality pine heartwood.

Heat treatment reduces water absorption

Heat treatment is an alternative method for improving the durability of wood, which also provides other benefits, such as better form stability. Heat-treated spruce is being marketed for exterior cladding, and heat-treated larch poles have been introduced recently.

The project investigated the effects of thermal treatment at 190°C (the so-called Celloc process) on durability. The treatment resulted in a pronounced change in colour, but this disappeared within a few weeks. The moisture content of the heat-treated boards fluctuated less than in normally treated boards, and the treatment generally increased their resistance to water absorption.

Contact: Andreas Bergstedt, e-mail: abe@life.ku.dk

A foot-bridge made of larch wood. Its durability depends on whether it is made of heartwood or sapwood.

Wikis raise delicate quality assurance issues

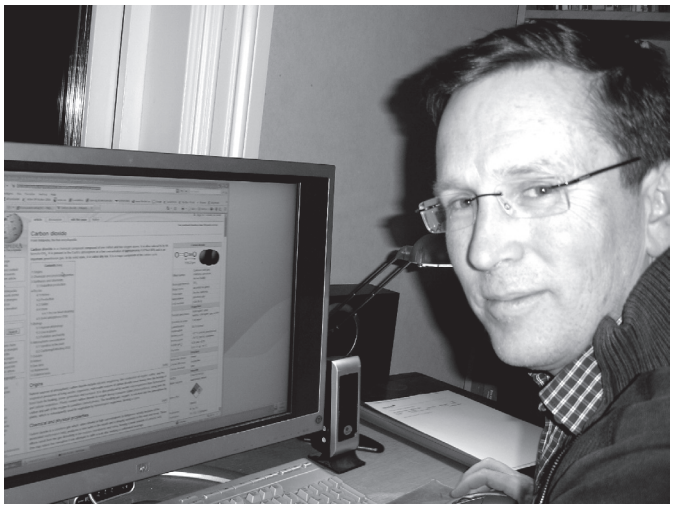
Can I rely on this information?

Devoted researchers who use their free time to disseminate their top-level knowledge to their peers and general society, or gossipers and mythomaniacs who exploit the web to spread false information and science fiction? Wikis have opened up new reservoirs of information. And a new need of awareness amongst those seeking information.

Wikipedia and other wikis have grown quickly on the internet. A wiki is like a database, to which everyone who has a web browser can contribute and add information. The information in a wiki grows, but not in a completely uncontrolled manner. The wiki community itself helps to control the content, and administrators can stop articles from being published, or delete articles. However, the control mechanism is very different from the one commonly used in the scientific community.

An article in EFI News discusses wikis and their conflict with established scientific ethics and practices. Scientists are used to results being reported after a thorough review process.

In a wiki, information is posted by the author himself with only the administrators as gateway keepers, at least initially (once the information is published, it may be subjected to thorough quality control by the wiki-community).



Wikipedia is used occasionally by the editor.

However, wikis definitely contribute to the loss of credibility of science and reduce the resistance to publishing personal opinions and non-reviewed results, according to John A Stanturf, who is cited by EFI News. He also sees direct ethical concerns such as abuse of intellectual property rights and dissemination of science fiction as science fact.

Stanturf, from the USDA Forest Service, suggests that websites could be certified and presented with a credibility index.

Eric Möller, a member of the board of Wikipedia, defends the wikis, saying that they are as good as any other encyclopedia at presenting credible science in areas where a consensus exists.

Source: EFI News 1 2007, based on presentations at the ForestXchange conference in Freiburg in October 2006.

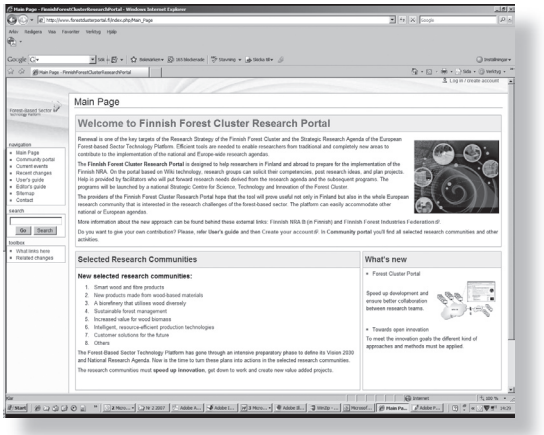
An example of a forest-related "wiki" is the Finnish Forest Cluster Research Portal (see adjacent article).

Finnish research projects are planned on the web

The Finnish Forest Cluster Research Portal is a website that has been set up to help researchers in Finland and other countries prepare projects in line with the Finnish national research agenda (NRA).

The portal is based on Wiki technology, which means that interested researchers can sign in and post their own ideas and plans. The portal was opened in January 2007. Ideas can be discussed with others – who can comment on them either anonymously or using their real names. Once an idea has passed through the discussion phase, it may be ready for drafting a project proposal. These proposals can also be commented on and improved. Finally, ideas may be incorporated into a granted project, which can also be administered via the portal.

Read more on www.forestclusterportal.fi



Shortcuts

Finland: Peatlands – an underutilized wood resource

Only a third of the annual growing volume in peatland forests is harvested in Finland, despite all the silvicultural investments made to increase their growth. A Metla (Finnish Forest Research Institute) project has focused on factors to increase the utilization of the 24 million cubic metres that are added to the peatland forests each year.

One problem that has to be addressed is that harvesting is normally restricted to the winter season on these wetlands. Thus, harvesting equipment and methods need to be developed to prolong the harvesting season into the summer. Further development is also needed to improve ditch network maintenance and felling, since large numbers of peatland forests are about to reach harvesting age. Better classification of peatlands intended for commercial forestry and those to be left unmanaged is also needed.

Source: www.metla.fi, contact: Jani. heikkila@metla.fi

Sweden: Head of SLU leads climate commission

The Swedish government has established a scientific council for mitigating the effects of anticipated climate change. The council will be led by Lisa Sennerby Forsse, who is the head of SLU, and formerly a member of the SNS board.

– The climate change debate must be viewed from many perspectives, she says according to a newsletter from SLU. I am particularly glad that the council includes scientists, economists, technicians and social scientists, she continues.

Norway: Recruiting students through modern media

The Norwegian University of Life Sciences (UMB) is using YouTube to present opportunities that a forestry education provides in two 6-minute clips of a film called "UMB Skogfag" describing the courses and employment prospects. When the editor checked, the film was not among the "most-viewed" video clips, but had been downloaded 256 times.

See link at www.umb.no/ina

Norway: New national system for monitoring greenhouse gases

Greenhouse gas emissions and uptake in Norway are to be mapped in detail using a new system, launched this year, with which the Norwegian Forest and Landscape Institute (Skog og Landskap), in cooperation with Statistics Norway, will collect and analyse all the information needed to meet the demands of the Kyoto protocol on greenhouse gas supervision.

According to the protocol, all signatory countries need to collect information on the uptake and emission of carbon dioxide, methane and nitrous oxide (laughing gas) from all areas affected by human activities.

In Norway, this includes all forests, from the lowest to highest altitudes, all farmland, urban areas and roads. For all areas, changes in carbon stocks – in biomass and dead wood, below and above ground – must be monitored.

Read more: www.skogoglandskap.no

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

We strongly encourage our readers to contribute to a lively and interesting journal. Letters to the News & Views section will be published if they are:

- short
- relevant to the Journal
- interesting for the readers.

Examples: comments on papers published in the Journal, views on ongoing research, trends in research policy, opinions about forestry practice etc.

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