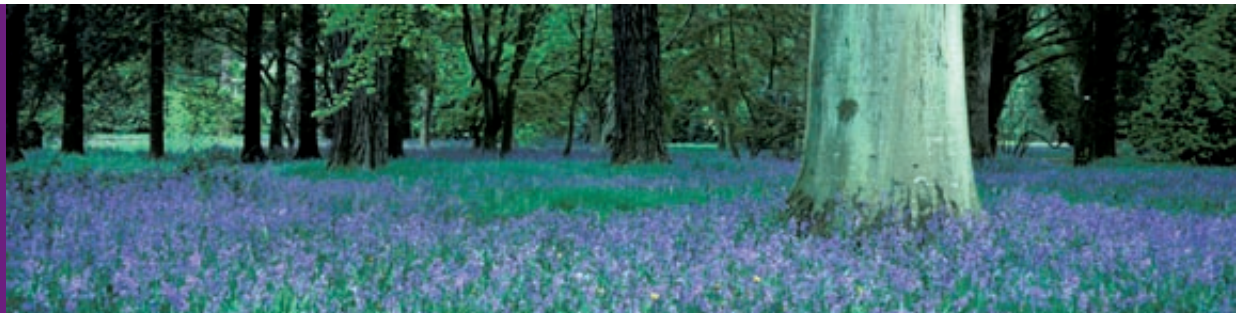


# FR News

News from Forest Research, April 2009

*FR News* is a free quarterly newsletter that is distributed to a wide range of organisations and individuals who have interests in trees, woods and forests.

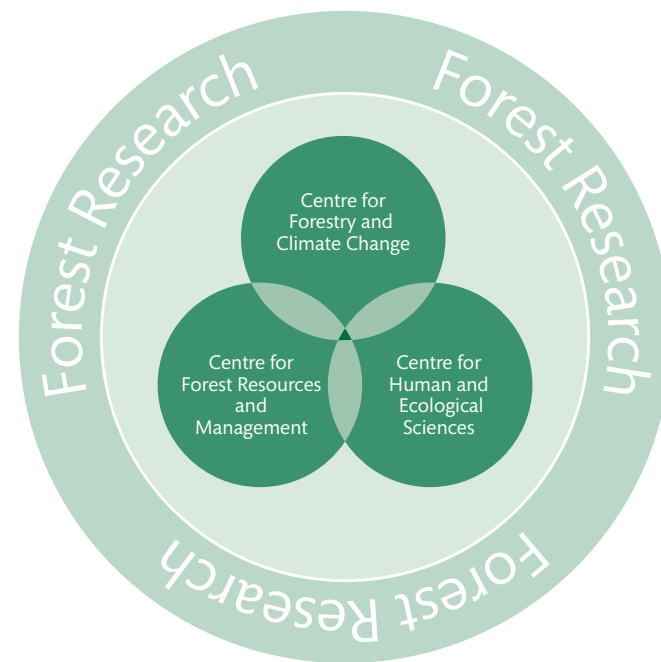


## Forest Research launches new Research Centres

On 2 April Forest Research launched its three new research centres:

- The Centre for Forestry and Climate Change
- The Centre for Forest Resources and Management
- The Centre for Human and Ecological Sciences.

James Pendlebury, Chief Executive, commented "Forest Research has established the three new centres in order to deliver the rapidly changing, cross-cutting and challenging research requirements of its public and private-sector clients. We have a proven track record in interdisciplinary, innovative and applied science – and these abilities remain key to our work. As the demands for research into forestry increase, we look forward to working with new and existing partners and customers to deliver timely and robust evidence, analysis and advice".



Continued ►

**Quick links:** [Monitoring and evaluating the contribution of trees to quality of life](#); [Stump harvesting – benefits and risks](#); [Friendly fungi – mycorrhizas and their vital role in plant and tree health](#); [Assessing open source GIS software for use with FR tools](#); [Horse chestnut bleeding canker](#); [New publications](#); [What's new on the website](#).

## Forest Research launches new Research Centres (continued)

The **Centre for Forestry and Climate Change (CFCC)**, led by [Andy Moffat](#), will research the effects of environmental and climate change on forestry and how the sector can play its part in adaptation to, and mitigation of, climate change. It will also develop entomological, pathological and environmental sciences in order to deliver a holistic understanding of climate change and forestry.

The **Centre for Forest Resources and Management (CFRM)**, led by [Helen McKay](#), will research, develop and provide guidance on methods of quantifying, improving and managing Britain's forest resource in a cost-effective, safe, sustainable and socially beneficial way. It will also provide technical support for field experimentation, monitoring and surveys through Forest Research's field station network. The Technical Services Unit will continue to deliver research support, surveys, advisory and related work, and forms a vital part of this Centre.

The **Centre for Human and Ecological Sciences (CHES)** is led by [Chris Quine](#). CHES will research and develop the role of trees, woodlands and forests in society and within integrated sustainable landscapes. It will achieve this by continuing to develop and apply a broad range of skills from the human and ecological sciences. It will also provide statistical support across the Agency.

For more information about Forest Research see [www.forestresearch.gov.uk](http://www.forestresearch.gov.uk). If you would like more information about the work of the new centres, please contact the respective head of centre using the links above.



# Monitoring and evaluating the contribution of trees, woods and forests to quality of life

An exciting interdisciplinary project at FR is developing a new monitoring and evaluation framework to assess the contribution of woodland to people's quality of life. The work supports Forestry Commission England's commitment to delivering the Communities and Places element of the Government's Strategy for England's Trees, Woods and Forests.

The research is being carried out at three sites across England.

Novel features of the research include:

- visitor and catchment socio-demographic profiles
- mapping accessibility
- social distribution of use, non-use and quality-of-life benefits
- analysis of site management records



Initial data has already produced interesting results. In particular, detailed profiles are emerging from an analysis of the socio-demographic make-up of visitors and catchment populations in order to assess how truly representative a site's visitor profile is. Focusing on gender, age, household income, disability and ethnicity, the data demonstrates the extent of (under-)representation amongst certain groups of visitors at each site.

Future efforts will focus on an activities and events database. As well as coordinating activities, the database will collate feedback from attendees to enable demographic profiling. It is envisaged that this database will become a useful tool at other sites.

The project's first annual report is due in April 2009. These results will be used for the purposes of corporate performance reporting, and as a way of helping make management decisions for woodland sites.

For further information, contact [Kieron Doick](#) or [Jake Morris](#).

# Stump harvesting — benefits and risks

Concerns about climate change and fossil fuel shortages are encouraging interest in alternative energy sources. As a result, there is increasing demand in Britain for forest biomass to supply power plants. As around 25% of the mass of a tree is in its stump and roots, attention has turned to the possibilities of stump harvesting as an additional source of biomass.

However, the removal of stumps and roots may have an adverse impact on soil and water, including a loss of soil carbon. It is therefore important that these risks are carefully managed to ensure that the potential disadvantages do not outweigh the benefits of harvesting stumps for biomass. Forest Research has identified the main risks of stump harvesting as:

- increased soil damage leading to erosion and reduced stream water quality
- removal of essential nutrients, leading to lower soil fertility
- removal of base cations (calcium, magnesium, sodium and potassium) leading to soil and stream water acidification
- increased carbon loss from disturbed soil

These risks have now been assessed for all soil types based on expert judgement and practical experience of managing forest soils. High-risk soils have been identified, for which stump harvesting is not recommended, and measures have been developed to minimise the impact on medium and low risk soils.

Interim guidance on site selection and good practice for stump harvesting will be released in April 2009. Experiments starting this summer in south Scotland will test the guidance and provide data on the long-term effects of stump harvesting on soil condition, site nutrition, water quality and soil carbon.

More information is available at [www.forestresearch.gov.uk/stumpharvesting](http://www.forestresearch.gov.uk/stumpharvesting), and from **Bruce Nicoll** or **Tom Nisbet**.



Harvested stumps soon after extraction

# Friendly fungi — mycorrhizas and their vital role in plant and tree health

Mycorrhizal fungi are a remarkable group of organisms that form mutually beneficial relationships with about 90% of plants, extending their root systems and helping them extract nutrients and water from the soil. Mycorrhizas also play a key role in helping plants and trees to thrive by making them better able to cope with drought conditions and protecting them from disease. A recent workshop was held to outline proposed future research into the effects of human-accelerated environmental change on forest mycorrhizas and forest condition.

Hosted by Forest Research scientist Nadia Barsoum and mycologist Martin Bidartondo (Imperial College London), the collaborative workshop focused on identifying themes for a programme of research. Participants included scientists with expertise in mycorrhizal research and senior government forestry personnel.

The workshop identified a need for the first large-scale assessment of mycorrhizal fungal distributions across Europe as a primary basis for further research. Once initial information showing the geographic variation in mycorrhizal levels, communities and dominant species has been established, more targeted research can follow, with an emphasis on:

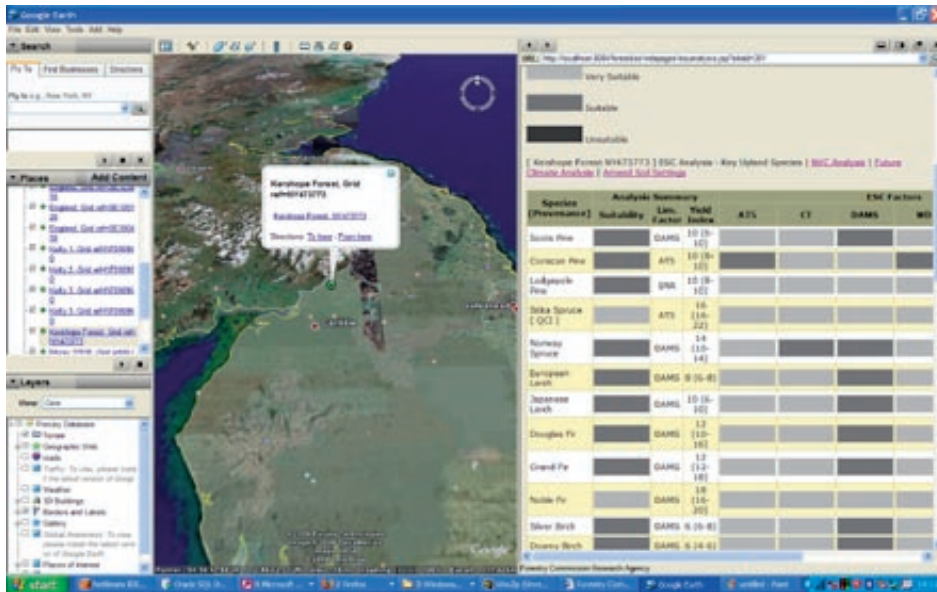
- the role of mycorrhizal fungi as a 'source or sink' of carbon in forest soils under changing climatic conditions
- the effects of site-specific environmental parameters and different forest management practices on the diversity of mycorrhizal species
- the functional role and population dynamics of key fungi

For more information on this pioneering research contact [Nadia Barsoum](#).

More information on the workshop can be found at:  
[www.forestresearch.gov.uk/fr/INFD-7QHFQY](http://www.forestresearch.gov.uk/fr/INFD-7QHFQY)



# Assessing open source GIS software for use with FR tools



Ecological Site Classification analysis viewed within Google Earth

Geographic Information System (GIS) software is essential in order to use a number of FR's landscape-scale spatial modelling tools, such as Ecological Site Classification (ESC), Forest Gales and the forthcoming Biological and Environmental Tools for Landscape Ecology (BEETLE). These tools help forest planners manage the opportunities and risks associated with species selection, habitat networks and wind hazard.

However, many commercial GIS packages are expensive – prohibitively so for some users. FR recently conducted a study into the viability of using 'open source' GIS software, i.e. software that is generally freely available on the internet, as a low-cost alternative for using these tools.

Apart from its obvious cost savings in terms of licensing, open source GIS software offers other advantages – for example, its authors strive towards making outputs compatible between systems. High-quality open source software exists for desktop use (e.g. QuantumGIS), serving data over the internet (e.g. Geoserver) and data management (e.g. PostGIS). Some packages have already been employed in large-scale projects in UK spatial data centres, demonstrating that their maturity and usability are comparable with commercial products.

The study then looked at integrating site-based tools, such as ESC, with web-based mapping software such as Google Maps. There are some issues to consider with these tools (e.g. licensing) but it was found that they could be easily combined with FR models to provide outputs in a spatial context. An example showing ESC used with Google Maps can be viewed at: [www.eforestry.gov.uk/forestdss/webpages/googlemaps-esc.jsp](http://www.eforestry.gov.uk/forestdss/webpages/googlemaps-esc.jsp)

Overall, the study concluded that viable open source alternatives to commercial GIS packages now exist and that web-based mapping objectives can be achieved using third-party tools such as Google Maps. For more information contact the author.

*Stephen Bathgate*

## Investigating horse chestnut bleeding canker

Trees and woodlands play a critical role in sustaining our environment. One of the Forestry Commission's major objectives is the long-term sustainable management of trees and woodlands. To do this, we need to address the causes of woodland decline and protect trees from invasive species and diseases.

One new threat is a disease known as bleeding canker of horse chestnut, caused by the bacterium *Pseudomonas syringae* pv *aesculi* (Psa). This disease has rapidly become widespread throughout Britain over the past five years, but prior to this had only been reported from India in 1980 on Indian horse chestnut (*Aesculus indica*). It has now proved to be highly mobile and exceptionally virulent to European horse chestnut (*Aesculus hippocastanum*).

Research is underway to provide an accurate diagnosis of this pathogen and underpin management strategies to combat the disease. A technique called real-time polymerase chain reaction (PCR) has been developed and is being used to detect the levels of Psa on infected trees and their surroundings. PCR is a highly specific, sensitive and rapid method of identifying pathogens based on the detection of specific and highly characteristic segments of DNA, which can allow us to track how such organisms survive and spread in the environment. Little was known previously about what natural resistance horse chestnut populations may have to Psa, but observational evidence indicates that even in heavily affected locations some trees remain healthy and symptom free. Disease-free horse chestnuts have been propagated and will be tested for disease resistance in inoculation trials and compared against other disease-prone individuals.

This research will ultimately guide management and mitigation strategies and the molecular techniques developed will also be applicable to the study of other important tree diseases. For more information, visit [www.forestresearch.gov.uk/bleedingcanker](http://www.forestresearch.gov.uk/bleedingcanker)



# New Publications

## *Forest vegetation management in Europe: current practice and future requirements*

by Willoughby I., Balandier P., Bentsen N.S., McCarthy N. and Claridge J., eds (2009). COST Office, Brussels.

There has been much debate in the forestry and agricultural sectors regarding European proposals that may reduce or ban the use of certain pesticides. A significant weakness in this debate is the limited amount of evidence available on the management practices and level of pesticide usage in forestry across Europe. Part of the evidence contributing to this debate is now available within this new publication, which gives valuable information regarding the use of pesticides across Europe. Co-authored by Ian Willoughby from Forest Research, the publication synthesises the work of forest practitioners and scientists from 19 European countries that worked on an EU-funded Co-operation Science and Technology (COST) programme.

The COST programme sought to help forest managers reduce their dependence on using herbicides by facilitating and co-ordinating the development of sustainable practices based on sound forest management. This book provides a summary of the current 'state of the art' as it applies to forest vegetation management in Europe for scientists, practitioners and policymakers. The publication documents existing forest weed control practices across Europe and provides a resource of alternative solutions for individual countries sharing similar conditions and challenges. It also identifies common information gaps and future research needs. This book is valuable reading for policymakers, practitioners and those interested in the future of forest management.

A pdf is freely available from [www.cost.esf.org](http://www.cost.esf.org) or [www2.clermont.inra.fr/cost-e47](http://www2.clermont.inra.fr/cost-e47)



Continued ►

# New Publications (continued)

## Short summaries of social forestry projects

Forest Research's Social and Economic Research Group has undertaken a wide range of social forestry projects over the past few years. Short summaries of many of these projects are now available online, covering the subject areas:

- well-being and quality of life
- community diversity, coherence and development
- governance
- economic research



Further summaries will be added throughout the year. Visit [www.forestresearch.gov.uk/fr/INFD-7N3EWJ](http://www.forestresearch.gov.uk/fr/INFD-7N3EWJ)

# What's new on the FR website

## Research projects

### Assessing the contribution of forestry to equal access for disabled people for recreation in Scottish woods

Examining methodologies appropriate to assessing forestry grant schemes that promote disability access, developing a pilot methodology and understanding the extent to which the Scottish Forestry Grant Scheme has encouraged equal access for disabled people.

[www.forestresearch.gov.uk/fr/INFD-7PSM42](http://www.forestresearch.gov.uk/fr/INFD-7PSM42)

### Enhancing the forest sector's contribution to equal access for disabled people to recreation goods, facilities and services in Scottish forests

Assessing the duties and understanding the knowledge, skills and guidance required of the forest sector by the Disability Discrimination Acts and other legislation and policy.

[www.forestresearch.gov.uk/fr/INFD-7PSLPC](http://www.forestresearch.gov.uk/fr/INFD-7PSLPC)

### Exploring disabled people's perceptions and use of forest recreation facilities

Determining the reasons for disabled people's low participation in woodland leisure activities.

[www.forestresearch.gov.uk/fr/INFD-7PSL75](http://www.forestresearch.gov.uk/fr/INFD-7PSL75)

### Management of long-term experiments

Reviewing our long-term experimental holding, with an aim to share information about these experiments with other researchers and consider the best ways to maintain this network for the benefit of future generations.

[www.forestresearch.gov.uk/fr/INFD-7PCDHB](http://www.forestresearch.gov.uk/fr/INFD-7PCDHB)

### Tree health and ectomycorrhizal fungal communities

Are there links between tree health and ectomycorrhizal fungal communities under changing environmental conditions?

[www.forestresearch.gov.uk/fr/INFD-795BCR](http://www.forestresearch.gov.uk/fr/INFD-795BCR)

## Events

Full details of FR's events are available from the FR website: [www.forestresearch.gov.uk/events](http://www.forestresearch.gov.uk/events)

Alternatively, a weekly email service provides details of newly announced events and other events that are organised or sponsored by Forest Research, or where Forest Research is participating. If you would like to receive this e-newsletter, please send your contact details to: [fr.events@forestry.gsi.gov.uk](mailto:fr.events@forestry.gsi.gov.uk)

### **April and July 2009, various dates**

#### *Hylobius* Management Support System training day

Training course to help foresters predict and reduce damage and costs due to large pine weevil, *Hylobius abietis*, in upland spruce and pine plantations.

20th April: Inverness, Forest Enterprise Office; [www.forestresearch.gov.uk/fr/INFD-7PKHUL](http://www.forestresearch.gov.uk/fr/INFD-7PKHUL)

22nd April: Welshpool; [www.forestresearch.gov.uk/fr/INFD-7QMCR8](http://www.forestresearch.gov.uk/fr/INFD-7QMCR8)

24th April: Exeter, Peninsula Forest District; [www.forestresearch.gov.uk/fr/INFD-7PKJ3X](http://www.forestresearch.gov.uk/fr/INFD-7PKJ3X)

29th July: Kielder Forest, Forest District Office; [www.forestresearch.gov.uk/fr/INFD-7PKHZB](http://www.forestresearch.gov.uk/fr/INFD-7PKHZB)

### **21-23 April 2009**

#### Vegetative propagation and deployment of varieties – the scope for Europe

Workshop on the state of play of clonal forestry currently being practised around the world and investigating the possibilities for Europe.

The Liner Hotel, Liverpool

[www.forestresearch.gov.uk/fr/INFD-7KHFW](http://www.forestresearch.gov.uk/fr/INFD-7KHFW)

### **22-23 April 2009**

#### Timber, Mutton or Fuel – Debating the economics of land use and forestry

Institute of Chartered Foresters (ICF) National Conference 2009.

The conference will explore where the future of forests and woodlands lies given the growing economic pressures on our land brought about by climate change. FR will be making a presentation at this event.

Barcelo Cardiff Angel Hotel, Cardiff, Wales

[www.forestresearch.gov.uk/fr/INFD-7NAC5H](http://www.forestresearch.gov.uk/fr/INFD-7NAC5H)

Continued ►

## Events (continued)

### **29 April 2009**

#### **Continuous cover forestry in Sitka spruce in Britain**

The aim of this seminar/workshop is to update practitioners on recent research relevant to Continuous Cover Forestry (CCF) in Sitka spruce forests in Britain.

Kielder Castle, England

[www.forestresearch.gov.uk/fr/INFD-7Q2EZ4](http://www.forestresearch.gov.uk/fr/INFD-7Q2EZ4)

### **8-11 July 2009**

#### **Systems biology for plant design**

Workshop looking at iterative experimentation and modelling to obtain insight in general mechanisms and processes governing life at the cellular level.

Organised by EU COST Action E50 – Cell wall macromolecules and reaction wood (CEMARE).

Wageningen University, Netherlands

[www.forestresearch.gov.uk/fr/INFD-7LWFL4](http://www.forestresearch.gov.uk/fr/INFD-7LWFL4)

### **31 March-1 April 2010**

#### **Climate, water and soil: science, policy and practice**

Addressing our current understanding of the management of climate, water and soils in a rapidly changing economic and natural environment.

Edinburgh

[www.forestresearch.gov.uk/fr/INFD-7NPCHD](http://www.forestresearch.gov.uk/fr/INFD-7NPCHD)