

FR News

News from Forest Research, Summer 2011

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.



The UK's first National Ecosystem Assessment is launched

Earlier this month, the UK National Ecosystem Assessment (NEA) was released. It is significant as being the first analysis of the benefits the UK's natural environment (including woodlands) provides to society and our continuing prosperity.

The assessment centres on a description of the UK's ecosystem services, their benefits for people and the economy, and the broad habitats from which they are derived. It also values the contribution of ecosystem services to human well-being, and identifies options for policy responses to secure the health and resilience of the UK's ecosystems and the continued delivery of the services provided by them. One of the key findings is that the natural environment is consistently undervalued in conventional economic analyses.

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The UK's first National Ecosystem Assessment is launched (cont.)

Working in partnership with others, Forest Research scientists have led a chapter on woodlands (chapter 8) and have contributed to the economic and non-economic valuation of woodlands (chapter 22). The assessment provides clear evidence of the value of woodlands in delivering multiple benefits, for example the provision of timber, the regulation of greenhouse gases through carbon sequestration and the provision of cultural services. It also highlighted how the forest sector can and does support multiple services through sustainable forest management.

The NEA project builds on the findings of the pioneering global Millennium Ecosystem Assessment carried out in 2005, and has been highly influential in underpinning the new Natural Environment White Paper for England: 'The Natural Choice'. Forest Research's report on the 'Benefits of Green Infrastructure' was also cited as evidence in the White Paper.

The NEA report is available at <http://uknea.unep-wcmc.org/Resources/tabid/82/Default.aspx>

The Natural Environment White Paper is available at www.defra.gov.uk/environment/natural/whitepaper/

Forest Research's Benefits of Green Infrastructure Report is available at www.forestry.gov.uk/fr/urgp



Assessing the sustainability of bioenergy crops

Forest Research is one of a consortium of seven UK research institutes and universities that has been awarded a £3.28m project to examine the sustainability of bioenergy crops within the UK. The project is funded and commissioned by the Energy Technologies Institute (ETI) and will produce a framework for predicting the sustainability of bioenergy deployment across the UK.

The Ecosystem Land Use Modelling and Soil Carbon GHG Flux Trial (ELUM) will study the impact of bioenergy crop land-use changes on soil carbon stocks and greenhouse gas (GHG) emissions. The project will combine modelling, GHG flux assessments and mapping to underpin recommendations for the environmental efficiency of various bioenergy crops and management scenarios.

Forest Research will have specific responsibility for assessing the GHG balance during conversion of agricultural land to short-rotation forestry. The information gathered will inform UK forest policy and the wider land-use sector, and provide empirical evidence of the GHG balance from changing land management.

The Forest Research team is being led by Mike Perks and co-ordinated by Tor Stokes. "This project is timely research to which we are delighted to contribute scientific expertise and field sites" said Mike Perks. "The programme is ambitious and directed at an area of specific concern for land managers today. This project dovetails with Forestry Commission objectives for woodland expansion and energy forestry and will utilise existing UK trials."

All data and models produced as part of this work will eventually be made freely available to researchers and the wider community.

More information on Forestry Commission short-rotation forestry trials can be found at www.forestry.gov.uk/srf





Wildfires in Wales

A two-year project looking at wildfires in South Wales has recently been completed. The joint project, involving Forest Research, Coed y Cymoedd Forest District and two Welsh Fire and Rescue Services, looked at the social context in which wildfires occur in the South Wales Valleys and explored the potential reasons behind incidences of deliberately started wildfires.

On average there are over 5000 wildfires – including both grass and forest fires – in South Wales annually, which is more per unit area than anywhere else in the UK. The perception is that the majority of these are started deliberately. Our research found that areas with higher levels of relative deprivation experienced higher numbers of fires. However, the majority of local residents do not see a problem with wildfires, although they do recognise that they are largely deliberately started.

The researchers interviewed a selection of young people, some of whom had set fires. The young people attributed fire-setting behaviour to levels of boredom and a lack of engaging activities in their local area. In addition, youth workers felt that there was a lack of connection between young people and the surrounding natural environment.

Findings from the research have been used by Coed y Cymoedd Forest District to improve the way they deal with fire-setting and their relationships with external partners and stakeholders.

Jake Morris will be presenting more details of this research on behalf of Matthew Jollands and Andy Moffat at 'Wildfire 2011', which takes place on 14 and 15 of September 2011, at Buxton in the Peak District.

A summary of the research is also available online at: www.forestry.gov.uk/fr/wildfiresinwales

Transformation to continuous cover versus clearfelling and replanting – how do the economics compare?

A recent study by Forest Research has shown that transformation to continuous cover forestry (CCF) can be a good economic option compared with clearfelling and replanting (C&R). It is hoped the findings of the work will alleviate concerns that transformation to CCF is a costly option.

The study examined the costs and revenues associated with three transformation scenarios for a stand of Sitka spruce (GYC14) and compared them with conventional C&R. A flexible yield model was used to predict the growing stock and harvesting yields for programmes of thinnings which follow current guidance. Detailed information on the costs of operations was obtained from work study reports, England Woodland Grant Scheme standard costs and the experience of Forestry Commission staff in CCF Trial Areas.

Transformation scenarios were less costly than C&R over a 20-year period because of high initial thinning returns. In the longer term, transformation to CCF was similar or better than C&R if successful natural regeneration could be obtained. The results were tested for their sensitivity to changes in the level of management overheads (assumed to be higher for transformation), product prices and discount rate. The changes investigated had relatively little effect on the ranking of scenarios.

The report is accompanied by an analysis spreadsheet, this allows practitioners and policy makers to change input costs, product specifications, roadside prices and the discount rate to suit their local conditions.

The work was completed on behalf of the Forestry Commission's Working Group on CCF.

More details can be found at www.forestry.gov.uk/fr/ccfcosts



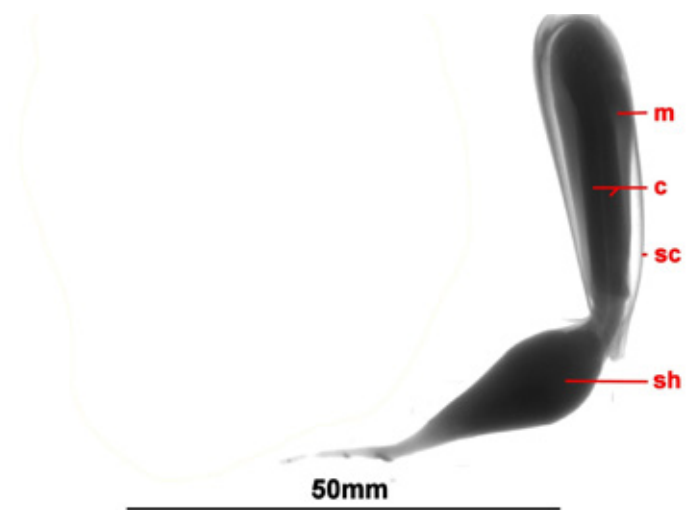
New seed research laboratory opens



On 10 May 2011, we officially opened a new laboratory for seed research. Along with the usual seed testing equipment, the facility has a digital X-ray machine, which is used to determine seed quality by identifying whether seeds are empty or filled and, if filled, whether there is any damage from insects or other causes.

Recently, as part of collaborative research with the National Pinetum at Bedgebury, we used X-rays to track embryo growth *in situ* in seeds of the threatened conifer, *Araucaria araucana*, commonly known as the monkey puzzle tree. The X-rays provided a non-destructive method of regularly assessing the embryos' progress, and also shed light on the germination profiles of this species.

Araucaria araucana seeds have slow and erratic germination. The seeds of this species are shed from the tree with immature embryos that are small but perfectly formed. The embryos grow until they fully occupy the seeds, germinating a few weeks later. The rate of embryo growth is temperature-dependent; they grow faster at high temperatures and more slowly at low temperatures, which means that seeds can take about ten to twenty weeks to germinate. As a result, these large seeds are particularly prone to desiccation, disease and predation in the field. We hope that by developing a better understanding of this process our research will contribute to the successful conservation of this flagship species.



An X-ray image of a seedling with elongated cotyledons (c), shrivelling food reserves (m), seed coat (sc) and a swollen pseudo-tuber (sh).

Communicating risk

Forest Research scientists have recently published a paper in the high-impact journal *Philosophical Transactions of the Royal Society B* that outlines recent research on how best to communicate the risks of zoonotic diseases, such as Lyme disease, to countryside users. The project, undertaken with scientists at the Universities of Brunel, Oxford and Surrey, developed two frameworks that provide guidance on how best to go about communicating risk, and highlighted the number of factors to be considered, such as how and when to provide information. It also considered how the public respond to precautionary advice, the need to avoid disproportionate reaction and the importance of land-based organisations being involved in enabling appropriate behaviour. For more information visit the [Royal Society website](#).

Assessing and communicating animal disease risks for countryside users

Many people take great pleasure in spending time in the great outdoors and still more are being encouraged to visit green spaces to improve their health and well-being. Although considerable evidence supports the benefits of spending time in the countryside, little is known about how best to warn visitors of potential risks and encourage appropriate behaviour without causing alarm.

Research summary

An interdisciplinary research team is exploring the possible impact of zoonotic diseases on the development of recreation in rural areas, within an overarching framework of risk communication. The initial focus will be on Lyme disease (also known as Lyme borreliosis), an infectious disease caused by the bacterium *Borrelia burgdorferi* s.l. Lyme disease is found in a number of wild animal hosts and can be transferred to humans by infected ticks.



The study will:

- analyse scenarios for future risk of disease transmission;
- estimate the risk of encountering ticks in a range of habitats;
- develop an understanding of the risk perceived by public users and land managers;
- identify the possible responses of organisations and potential behavioural responses of individuals following precautionary advice;
- recommend methods for communicating precautionary information.

Study sites will represent remote upland woodland and wild land; accessible lowland woodland and farmland/heath, and peri-urban park and woodland.

Research outputs

The project will increase understanding of how individuals, groups and organisations perceive and respond to the risk of zoonotic diseases. The development of mathematical models will improve predictions of the location of infected ticks within the countryside. The evaluation of precautionary information will assist policy makers, countryside managers and users to effectively communicate the degree of risk and encourage preventative action.



A Rural Economy and Land Use Programme (RELU) Policy and Practice Note (Number 27) from the same project is now available [here](#).

UK–India collaboration project update

As part of a collaborative project on forest landscape restoration, our counterparts from the Indian Forest Research Institute and the Indian Forest Service recently visited Scotland to see examples of UK forest restoration at a landscape level. The study group visited examples in the Trossachs and Lochaber and discussed future partnership working. The report on the first phase of the project is due in the summer and will provide a general overview of current forest restoration activities in India and the UK. This review will then provide material for the development of the second phase, which will look at specific initiatives in the states of Madhya Pradesh, Orissa and Uttarakhand, as well as Scotland.

The project is being carried out through the Global Partnership on Forest Landscape Restoration, which is a proactive network uniting governments, organisations, communities and individuals with a common goal to restore degraded landscapes.



Smiling through the rain at Loch Ness

Saving seeds for the future



Photo courtesy of MSB



From Left: Richard Jinks (FR), Paul Smith (MSB), Steve Lee (FR)

Seeds contain the genetic blueprints for plants and trees. Storing them allows us to preserve threatened species or examples of rare adaptation in the wild. This April, Forest Research scientists Steve Lee and Richard Jinks visited the Millennium Seed Bank (MSB) at Wakehurst Place in West Sussex, which is operated by the Royal Botanic Gardens (RBG) Kew. Their guide around the facility was Paul Smith, Head of MSB, who explained that currently 10% of the world's flora are stored at the Bank, with plans to expand this to 25% over the next ten years.

MSB focuses on ultra-long-term storage (ULTS) of seeds and many of the principles employed at Wakehurst could be used to improve medium-term storage and seed viability at Forest Research. MSB's top seed storage expert, Keith Manger, has recently visited Forest Research's Northern Research Station near Edinburgh and was able to suggest a number of quick and cheap changes to our systems that will improve the storage and long-term viability of our selected conifer seed.

Both Forest Research and Kew receive funding from the Department for the Environment, Food and Rural Affairs (Defra), and as such are keen to work together to ensure efficiency, mutual cooperation and value for money. This is supported by the formal Memorandum of Collaboration between the Forestry Commission and RBG Kew.

We are now developing plans to transfer rare native Scots pine seed from our own storage facilities to the ULTS facilities at MSB.

Steve Lee

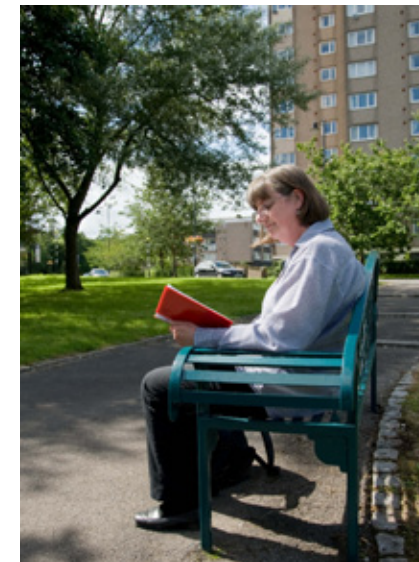
European workshop considers the potential of urban forestry

Forest Research's Social and Economic Research Group (SERG) organised a workshop in Brussels in January to share experiences on urban and peri-urban forestry, explore its potential and identify recommendations for taking urban forestry forward in Europe. This work forms part of Key Action 12 of the European Union Forest Action Plan: 'Explore the potential of urban and peri-urban forests', which SERG was invited to lead by the EC Directorate General for Agriculture and Rural Development last year. The work focuses on engaging local communities and non-traditional stakeholders in planning, creating, managing and using urban and peri-urban forests, and methodologies for evaluating their social and human impacts.

The event was hosted by the European Commission Directorate General Agriculture and combined overview papers with country case studies and facilitated discussion, which led to a lively and motivating exchange. Three overview papers were presented by Forest Research and Forestry Commission staff, working with experts from across Europe, exploring the physical urban forestry resource, its governance, and the societal benefits it provides. The workshop benefited from the chairing of Cecil Konijnendijk, an international expert on the subject, and was attended by EU Member State representatives on the EU Standing Forestry Committee, policy-makers, invited academic and expert practitioners and other stakeholders, as well as European Commission staff from three Directorate Generals.

We presented the outcomes and recommendations of the workshop to the EU Standing Forestry Committee on 18 February 2011.

Further details can be found at: www.forestry.gov.uk/fr/INFD-8ETBT7



New publications

Research Reports

Wood properties and uses of Sitka spruce in Britain

John Moore (FCRP015)

This publication is written for forest scientists, engineers, wood processors, and end users of wood products who are seeking a better understanding of Sitka spruce's material properties and potential end uses. The first part is a general introduction that covers the origins of Sitka spruce, its introduction into Great Britain and its growth and management in this country. Part two contains information on the wood properties of Sitka spruce, including wood anatomy, general wood structure, and physical and mechanical properties. Part three contains an overview of the end products that are currently produced from Sitka spruce or that could potentially (and realistically) be produced from Sitka spruce in the future.

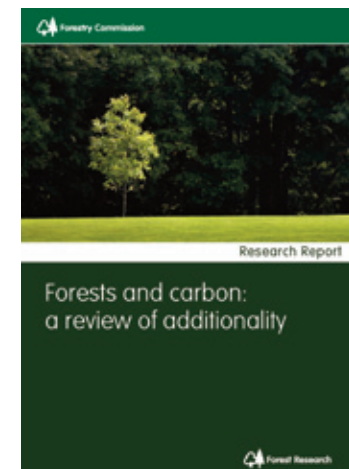
www.forestry.gov.uk/forestry/HCOU-4VXJ5B

Forests and carbon: a review of additionality

Gregory Valatin (FCRP013)

This research report helps to clarify the concept of additionality and provide an overview of how it is currently applied in both compliance and voluntary carbon markets, including tests used and underlying evidence base requirements. It provides background for considering how the additionality principle might be interpreted and applied in establishing standards for woodland climate change mitigation projects in the UK, including in developing an industry Code of Good Practice.

www.forestry.gov.uk/forestry/HCOU-4VXJ5B



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New publications (cont.)

Forests and carbon: valuation, discounting and risk management

Gregory Valatin (FCRP012)

This publication reviews methods to value carbon over time, examines approaches for dealing with risk and considers approaches that could be used in extending standards to forestry more generally in voluntary carbon markets in the UK.

www.forestry.gov.uk/forestry/HCOU-4VXJ5B

Practice Notes

Street tree valuation systems

Vadims Sarajevs (FCRN008)

This practice note assesses three approaches to estimating the amenity value of street trees as described above. The review showed that the three valuation systems differ significantly in methodology, data input requirements and outputs.

www.forestry.gov.uk/forestry/HCOU-4VXJ5B



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New publications (cont.)

Managing forests for white-tailed eagles

Kenny Kortland, Richard Evans, Andy Douse and Gordon Patterson (FCPN101)

This practice note provides advice to forest managers and landowners to help them to plan and carry out forestry operations and other activities in relation to the statutory protection of white-tailed eagles (sea eagles). It replaces general guidance relating to white-tailed eagles contained in Forestry Operations and Birds (Forestry Commission Scotland guidance note 32).

www.forestry.gov.uk/forestry/HCOU-4VXJ5B



Public engagement in forestry: a toolbox for public engagement in forest and woodland planning

(FCMS016)

This is the second edition of the toolbox, rewritten to take into account recent developments and ideas. It aims to assist forest and woodland managers when preparing for public engagement, and when considering which tools they could use to include people in planning forest or woodland design, management and the provision of services and activities.

www.forestry.gov.uk/forestry/HCOU-4VXJ5B



Events

Full details of FR's events are available from the FR website: www.forestry.gov.uk/fr/events

Alternatively, an email service providing 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

18th to 19th August 2011

Northern forests leading the way to sustainability

Northern ToSIA (Tool for Sustainability Impact Assessment) final conference to demonstrate how results of the project can help decision-makers balance the demands of different aspects of forestry.

Rovaniemi, Finland.

www.forestry.gov.uk/fr/INFD-8GACHA

19th August 2011

Phytophthora awareness seminar

Addressing the current situation in Scotland, the science of the diseases, discussions on the national perspective and practical biosecurity measures and field demonstrations of Air-spade, Air Blaster and Deep Aeration treatment using the Terralift.

Roslin, Edinburgh

www.forestry.gov.uk/fr/INFD-8K4E54

8th September 2011

Build, burn or both? – looking to the future for British timber

Forestry Engineering Group (IAgrE) Autumn Symposium to look at the issues around substitution of wood and wood products for other construction materials and for non-renewable energy sources.

Penrith, England

www.forestry.gov.uk/fr/INFD-8K7APS

26th to 30th September 2011

8th European Vertebrate Pest Conference

Biennial meeting of people interested in various aspects of vertebrate pest management.

Humbolt University, Berlin.

www.forestry.gov.uk/fr/INFD-8JFCDE

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Events (cont.)

27th and 28th September 2011

Forest health days - South-East of England

Two single day seminars where Forest Research scientists will provide an update on the latest information about tree insect pests and diseases.

Farnham, England.

www.forestry.gov.uk/fr/INFD-8JYBAH

29th to 30th September 2011

The Woodland Edge

Conference to explore the interface where people and nature meet, in the context of Britain's wooded landscapes.

Neroche Forest, Somerset, England.

www.forestry.gov.uk/fr/INFD-8JCBG6

28th October 2011

Forest health day - East of England

A Forest Research seminar providing an update on the latest information about tree insect pests and diseases.

Santon Downham, England.

www.forestry.gov.uk/fr/INFD-8J4BDM

What's new on our website

Research projects:

Archaeological prospecting in woodland using LiDAR - summary of 2010 surveys

Outline of surveys and images created by using Light Detection And Ranging (LiDAR) at The Blean (Kent), The Weald Forest Ridge (west and central), Wilsontown Ironworks and Culbin Sands.

www.forestry.gov.uk/fr/INFD-8GZH33

Clearance and disposal strategies for *Phytophthora*-infected rhododendron

Details of a new project to identify new or improved management strategies for the eradication and safe disposal of *Phytophthora*-infected rhododendron, and methods which reduce pathogen persistence on infected sites.

www.forestry.gov.uk/fr/INFD-8F7BU3

Evaluation of the Neroche Landscape Partnership Scheme

An evaluation of the Neroche Landscape Partnership Scheme run by the Forestry Commission from 2006-2011 with eleven partner organisations. Both the summary and full reports are available.

www.forestry.gov.uk/fr/INFD-8H8DFS

Learning from monitoring and evaluation

Details of a new research project to assess best practice and provide models to ensure the findings of monitoring and evaluations are assimilated and applied in ways that help make the Forestry Commission and its partners more responsive, adaptive and sustainable.

www.forestry.gov.uk/fr/INFD-8FVDKH

Measuring forest greenhouse gas exchange

Research on the processes and rates of exchange of greenhouse gases (GHG) in forests and how they are affected by forest management. Details of the impacts on GHG of peatland restoration in Scotland and a report on the impact on GHG due to forestry on peat soils.

www.forestry.gov.uk/fr/INFD-8HMC7Z

Research on managing forest carbon and greenhouse gas balances

A summary of the programme providing the scientific evidence base to enable the Forestry Commission to report UK forest carbon stocks reliably, to understand how they will change with climate change, and to recommend appropriate management and policy for the UK forestry sector.

www.forestry.gov.uk/fr/INFD-8HLKUA

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What's new on our website (cont.)

Pine-tree lappet moth

New information about the pine-tree lappet moth and details of research to guide future management and control.

www.forestry.gov.uk/fr/pinetreelappet

Public engagement in forestry and woodland plans and projects

The latest findings on the best methods for public engagement with links to the new edition of the Public Engagement toolbox and other key publications..

www.forestry.gov.uk/fr/INFD-8HSEBB

Urban trees and greenspace in a changing climate

Details of new research to understand the contribution that urban trees make with respect to: the resilience of current and planned urban tree stocks to climate change; their role in regulating temperatures; and water management in urban areas.

www.forestry.gov.uk/fr/urbanclimate

Volunteering in forests in Scotland and Wales

Exploring what counts as volunteering in woodlands and determining its extent, particularly for public forests in Scotland and Wales, with links to 2 reports on this topic.

www.forestry.gov.uk/fr/INFD-8G2BRY

Pests and diseases:

Native species that may be mistaken for oak processionary moth

Descriptions, with photos, of the Lackey moth (*Malacosoma neustria*), Brown-tail moth (*Euproctis chrysorrhoea*), Small ermine moth (*Yponomeuta species*), Buff-tip moth (*Phalera bucephala*), Small Eggar moth (*Eriogaster lanestris*) and Vapourer moth (*Orgyia antiqua*).

www.forestry.gov.uk/fr/INFD-8GQC26

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