

FR News

News from Forest Research, Winter 2012

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.



Praise for Scots pine project

The recently completed 'Developing the Scots Pine Resource' project has been singled out for praise by the Programme Monitoring Committee (PMC) of the Northern Periphery Programme (NPP). Forest Research was a partner in the three-year project led by Highland Birchwoods, with project partners in Scotland, Finland, Norway and Sweden. The overall aim of the project was to encourage greater use of Scots pine timber in high-value markets as a basis for supporting forestry-related businesses.

The PMC highlighted the fact that the project exceeded its target for product development and acknowledged "strong outcomes, which demonstrated that transnational co-operation can result in tangible products and services, a specific feature of the NPP".

Forest Research's work on the project focused on methods for assessing and forecasting Scots pine timber quality and the development of guidance for managing Scots pine forests for timber production. Models predicting log quality and wood properties were developed from data

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Quick links:

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collected during a survey of 87 Scots pine stands in the north of Scotland. These models were integrated with our existing decision support tools to create a Scots pine management support system that evaluates the effect of site factors and silvicultural actions on the volume and quality of Scots pine timber produced.

We also worked with The Finnish Forest Research Institute (METLA) on the development and testing of 'PreHAS', a stand volume and quality assessment tool that uses a database of harvester stem records to make pre-harvest predictions about the timber.

Forest Research helped to produce a set of six information notes bringing together best-practice guidance with a focus on the production of high-quality Scots pine timber. Each note is published as a downloadable PDF from the [project website](#) where links and references to more detailed information can be found.

For further details of the project and related activities, visit:

www.forestry.gov.uk/fr/INFD-7PLDL7 or

www.pineinfo.eu



Elspeth Macdonald



(Courtesy Northwoods Construction Ltd)



Oak processionary moth

The oak processionary moth (*Thaumetopoea processionea* L.) is a serious defoliator of oak trees and the hairs carried by the older larvae pose a significant risk to human and animal health. The spread of this non-indigenous pest needs careful monitoring and a recent research project has focused on finding the best methods of capturing the moths in order to determine their population and rates of spread.

Oak processionary moth (OPM) is widely distributed in western, central and southern Europe, and was accidentally introduced into west London in 2006 on young oak trees imported from Europe. A visit by Forest Research staff to Saxony-Anhalt in Germany highlighted its impact on tree health, with widespread and intense defoliation and tree mortality observed where oak trees had been damaged over a 2–3 year period.

Forest Research has been monitoring the spread of OPM since its introduction into the UK, using ground surveys to locate nests and a network of pheromone traps to catch male moths. However, over the past five years it has become clear that the network of pheromone traps has not captured as many moths as expected, nor has it proved particularly effective at monitoring their spread. As a result, current research is focusing on how to improve the trapping techniques for OPM.

In the summer of 2011, Forest Research worked in collaboration with The Royal Parks (Richmond Park), the Royal Botanic Gardens at Kew, the arboricultural company Gristwood and Toms Limited, and the University of Derby on a joint project to evaluate a variety of parameters that might influence the effectiveness of pheromone trap captures.

The project has demonstrated that the type of trap used, its positioning in the tree canopy, and the source and chemical composition of the pheromone lure are all important in determining the numbers of moths caught. These findings will influence the protocols used in the future for monitoring the spread of the moth. A summary of the results is currently being written up for publication.

Further information on OPM can be found at www.forestry.gov.uk/fr/INFD-6URJCF

Dave Williams



As well as being a serious defoliator of oak trees, OPM also poses serious public health issues. The hairs of OPM larvae can cause severe allergic reactions in both animals and humans, including dermatitis, conjunctivitis, respiratory problems such as pharyngitis and asthma, or, more rarely, anaphylactic reactions. The current UK outbreak is particularly concerning given that it is in the heavily populated urban area of west London.

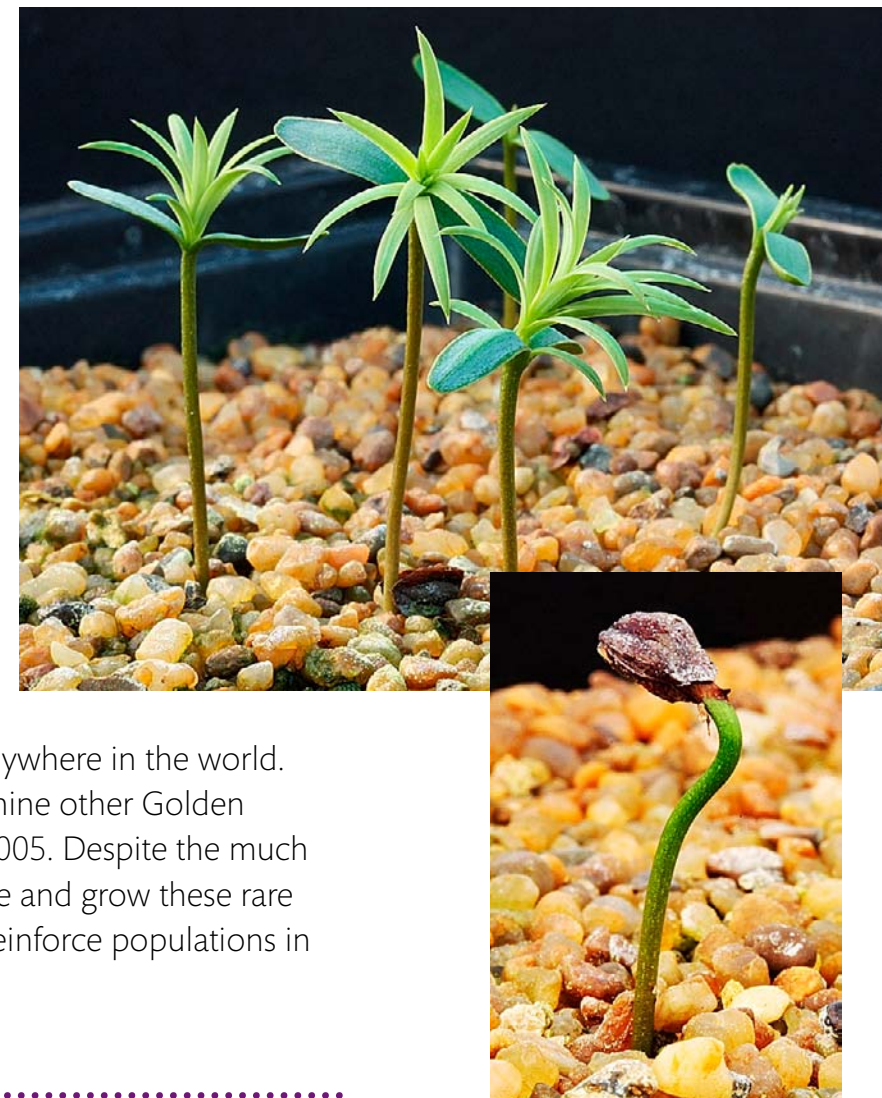
Successful germination of threatened species

Seedlings of the rare Vietnamese Golden Cypress (*Xanthocyparis vietnamensis*) have germinated for the first time outside of Vietnam. This achievement – the first ever successful propagation of the rare and critically endangered species – was achieved at Bedgebury Pinetum, with assistance from Forest Research's seed laboratory.

In 1999, the Golden Cypress became the world's most recently discovered conifer genus. Fewer than 500 individual trees are known to exist in its native country, making it a high priority for conservation. The Centre for Plant Conservation (CPC) in Hanoi has been attempting to germinate seeds in order to boost the population of this species, but with little success. In 2009 Forest Research tree seed specialist Matt Parratt travelled to Vietnam to help establish what the problem was. He was able to advise on how to identify the best cones to collect seeds from as well as the optimum time to do so. Following his visit, CPC Scientist Nguyen Quang Hieu brought some seeds to the UK. Forest Research has a well established and newly refurbished seed laboratory that was able to use X-ray techniques to examine the seeds and determine which ones contained embryos and which were empty or dead. As a result, viable seeds were selected and planted in the nursery at Bedgebury in May 2011.

So far fourteen seedlings have germinated and are the only surviving seedlings in a nursery anywhere in the world. In four years they will hopefully be mature enough to be planted out in the Pinetum, joining nine other Golden Cypresses grown from cuttings donated by Royal Botanic Garden Edinburgh and planted in 2005. Despite the much colder British climate, these specimens are doing well. The lessons learnt on how to germinate and grow these rare trees from seed will be shared with CPC in Vietnam to enable them to produce seedlings to reinforce populations in Vietnam and support the conservation of the species in the wild.

For more information, contact [Matt Parratt](#).



Woodland-related social enterprises

The Forestry Commission has long recognised that supporting woodland-related social enterprises can help to achieve local and community development objectives. However, there has, to date, been little empirical evidence to substantiate this. As a result, Forest Research was asked to identify both barriers and aids to establishing different types of woodland-related social enterprises.

Such organisations operate primarily to achieve social and environmental objectives, reinvesting any profit to achieve their goals or further their business. Over the past decade there has been growing interest in the potential contribution that these enterprises can bring to society. There has also been an increasing effort to encourage civil society organisations to take on the management and/or ownership of physical assets such as land or buildings. Interest in both agendas has been heightened by the Government's commitment to 'Big Society', which focuses on empowering communities to take more control over their own destiny

Using case studies from across Britain, the project identified a number of challenges facing woodland-related social enterprises. These included: difficulties in finding funding, the imposition of bureaucratic and institutional hurdles by public bodies, and public sector procurement and asset transfer processes that assess 'best value' in purely economic terms.

Critical enabling factors identified included: the availability of financial and non-financial support, the existence of sufficient capacity within communities, strong leadership, and facilitative mechanisms such as the National Forest Land Scheme that operates in Scotland.

The full report and summaries can be accessed at: www.forestry.gov.uk/fr/INFD-84JD86 or for more information please contact **Amy Stewart**.

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Harnessing new developments in molecular technology

The science of molecular technology has been revolutionised over the past twenty years. Recent developments such as next-generation sequencing, alongside existing Polymerase Chain Reaction (PCR), have provided new opportunities for examining the world around us. At Forest Research, the molecular team has harnessed these developments to tackle practical forestry questions. Two current projects are highlighted here to show its potential.

Tree breeding

Tree breeding is inherently a long-term business. Knowing at an early stage exactly what characteristics and quality a tree will have has many advantages, as this offers the opportunity for early selection of trees with the desired characteristics. Forest Research is participating in two EU projects, NOVELTREE and PROCOGEN, which aim to match DNA variation with particular traits and ultimately enable rapid selection of trees with desirable characteristics.

Source of pests and diseases

The discovery of the first breeding population of pine-tree lappet moths in Scotland has given rise to concerns as this insect is a pest elsewhere in Europe. To establish where the Scottish population of moths originated, we have sourced samples of this moth from across Europe and are comparing their mitochondrial DNA with Scottish samples. This will enable us to better understand how these pests spread and help us to reduce their future dispersal. We have also been doing similar work to determine the origins of other tree pathogens (such as horse chestnut bacterial canker) that are being seen for the first time in Britain.

For more information visit www.forestry.gov.uk/fr/INFD-65PHTT

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Joan Cottrell and Stuart A' Hara

A longer article on this subject was published in *Chartered Forester*, Winter 2011, p12.



Above: Large Sitka spruce trial site
 Below: Pine-tree lappet moth



Hands-on science at the Royal Botanic Garden Edinburgh

The Real Life Science Lab at the Royal Botanic Garden Edinburgh was the scene of a number of public events last year where adults and children could get hands-on experience of woodland-related science. Organised by Forest Research, in partnership with a number of other organisations, the events were part of our contribution to both the International Year of Forests and the International Year of Chemistry.

A wealth of activities were on offer, designed to capture the interest of the public, to demonstrate the breadth of current research, and to allow them to meet and talk to Forest Research scientists. For example, visitors could discover how to interpret tree rings or learn about carbon capture, photosynthesis and seed biology. Over 2500 visitors tried their hands at the activities.

Steve Penny, Research Liaison Officer, commented: "The aim of running these events is to engage the public with our science and to show what we do. We hope that we have inspired some younger visitors to consider a career in science!"

The events were held in partnership with other organisations, bringing additional perspectives to inform visitors. To increase linkages to young people and science, we provided opportunities for pupils from two High Schools and students from The University of Edinburgh's Moray House School of Education to be involved in delivering the activities.

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Steve Penny

Any activity involving microscopes proved a particular attraction.



Forest Research reviewed by an independent panel

During November and December 2011 a group of seven senior external scientists, chaired by Professor Sir David Read FRS, reviewed Forest Research's science quality. This review forms part of the established procedures used by the Government to ensure the quality of the evidence base it uses in policy making.

The review will provide an independent, expert assessment of the research, scientific and technical services and knowledge exchange being provided by Forest Research (FR). The group considered a wide range of evidence, including stakeholder views. They also visited FR's Northern Research Station near Edinburgh and Alice Holt Lodge in Surrey, met both FC and FR staff, and discussed each of FR's current research programmes.

The review group will report to the Forestry Commissioners in early March, making recommendations, as necessary, on any changes they feel will enhance FR's provision of quality science and its fitness for purpose, or which will promote knowledge exchange and delivery. The Forestry Commission will, in turn, provide a submission to Ministers on how they propose to take the recommendations forward. It is anticipated that the review will be valuable in both determining the future direction of FR's research programmes and in the future management of its science delivery.

Review group panel:

- **Chair: Professor Sir David Read FRS** (Emeritus Professor of Plant Science, University of Sheffield)
- **Lindsay Bulman** (Project Leader in forest biosecurity at Scion (New Zealand Forest Research Institute Ltd))
- **Shireen Chambers** (Executive Director of the Institute of Chartered Foresters)
- **Professor Maggie Gill OBE** (formerly Chief Science Adviser, Environment and Rural Affairs Department of The Scottish Government)
- **Professor Paul Milbourne** (Cardiff University, School of City and Regional Planning, and Director of the Centre for Research on Environment, Society and Space and the Wales Rural Observatory)
- **Professor Antonio Pizzi** (Chair and Professor of Industrial Chemistry, ENSTIB, Université de Nancy)
- **Dr Clive Potter** (Reader in Environmental Policy, Imperial College, London, and a Visiting Professor, University of Exeter)

More Tree and Forest Health Days planned for 2012

Forest Research is planning another programme of Forest Health Days around Britain in 2012 following the success of seven such events in the Autumn of 2011.

More than 400 practitioners from the forestry and land-use sectors, as well as people from other related organisations across Scotland and England, attended the 2011 series of Tree and Forest Health Days. The events aimed to raise awareness of new, existing and future pest and disease threats to plant health. There were also sessions on methods of looking for changes in trees and ways to report these effectively.

Topics covered included *Phytophthora ramorum*, *Phytophthora lateralis*, Dothistroma needle blight (red band needle blight), pine tree lappet moth (*Dendrolimus pini*), great spruce bark beetle (*Dendroctonus micans*), and others.

One manager who attended a Forest Health Day commented: "Forest Research provided a huge amount of information presented in an easily digestible way, and it was great to meet the scientific experts face to face."

Details of the 2012 programme will be posted on our events pages at www.forestry.gov.uk/fr/events. Meanwhile anyone with an interest may also subscribe to receive free event email updates by writing to fr.events@forestry.gsi.gov.uk.



Linking forest risk to finance

Forests are at risk from a number of natural and manmade hazards. Researchers and academics working in the field of forest risks are well informed of these issues, but until now there was no established flow of information to the finance sector. In collaboration with Genevieve Patenaude from the University of Edinburgh, Forest Research has recently started work on a new NERC Knowledge Translation project which aims to develop a Forest Finance Risk Network that will provide a link between researchers and the finance sector.

The project will help to develop improved information on forest risks in order to support investment decisions. The main risks it will cover include natural hazards, such as wind, fire, pests and diseases, and anthropogenic risks such as inappropriate management, and policy/regulatory issues.

Already there has been strong interest in the application of ForestGales – a tool developed by Forest Research that estimates wind risk to forestry. This has led to a collaboration with a specialist insurance intermediary in order to develop ForestGales for natural forests in the tropics and, through a pilot project in Wales, as a tool to provide higher-scale regional risk estimates. It is hoped that in the future other areas of Forest Research's work may feed into this network.

The Forestry Commission is also involved in this work and is particularly interested in targeted risk information to help underpin investment in forestry under the UK Woodland Carbon Code.

For more information visit the [project webpage](#). Alternatively, contact [Susan Davies](#) or [Mike Perks](#).



How much carbon and woodfuel do farm woodlands contain?

The area of UK farm woodland has increased by over 50% in recent years – from 500,000 hectares in 2000 to 779,000 hectares in 2009, almost half of which is in England. Farm woodlands offer many potential benefits, including carbon storage and woodfuel production, yet indirect evidence suggests that many such woodlands are not actively managed. On behalf of Forestry Commission England, Forest Research undertook a survey of farm woodlands as a first step towards a better understanding of this growing land-use type and to increase its contribution to the green economy.

The objective was to quantify the above-ground standing biomass and carbon in a sample of farm woodlands. In 2011, we assessed 60 woodland compartments on 28 farms, compiling data that were used in models to calculate the biomass (in oven dry tonnes, odt) and carbon (in tonnes, t).

The woodlands were very variable but the average woodland area per farm was 26 hectares. The total woodland biomass per farm averaged 3800 odt or 90 odt per hectare. The biomass was mainly in stemwood (61%), followed by branchwood (23%) and roundwood (16%). The total woodland carbon per farm averaged 1833 t, with an average of 45 t carbon per hectare.

Most of the woodlands were mixed broadleaves with occasional mixed conifer areas. About two-thirds of the woodlands were unthinned and almost all were planted rather than naturally regenerated.

Despite the survey's limited sample size, a number of useful conclusions can be drawn. It is clear, for example, that more woodland is managed and used to a greater extent than is often thought. It was also evident that if managed correctly, and barriers were overcome, these farm woodlands, as well as being a significant store of carbon, could bring quite substantial quantities of biomass into the market.



New publications

Research Notes

Natural regeneration in western hemlock plantations on ancient woodland sites

Ralph Harmer, Kate Beauchamp and Geoff Morgan (FCRN011)

This Research Note reports the results of a survey of natural regeneration in western hemlock plantations on ancient woodland sites that aimed to: determine the numbers and species of tree seedlings regenerating; estimate the amount of each site that was restocked; assess the effect of site characteristics; and identify a general sampling method to assess the proportion of a site that is stocked.

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

Biodiversity in fragmented landscapes: reviewing evidence on the effects of landscape features on species movement

Amy Eycott and Kevin Watts (FCRN010)

This new Research Note on biodiversity in fragmented landscapes reviews the evidence on the effects of landscape features on species movement.

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

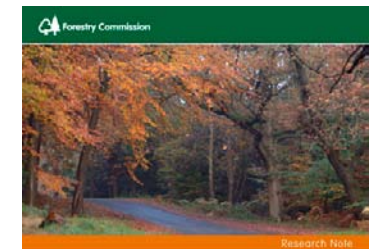


Natural regeneration in western hemlock plantations on ancient woodland sites

Ralph Harmer, Kate Beauchamp and Geoff Morgan November 2011

During the 20th century large areas of ancient semi-natural woodland were converted to timber plantations, creating the now termed Forest Plantations on Ancient Woodland Sites. Restoration of these sites to native woodland is a complex regeneration process involving clear-felling, natural regeneration or other options as the primary method of restoring FPAWS but it is a generally unpredictable process and some native species are very difficult to regenerate. A survey of western hemlock FPAWS carried out to identify which species were regenerating and how much of each was present, found a wide range of species either as seedlings or saplings, but it was clear that regeneration was predominantly birch. There were significant relationships between some of the characteristics and the occurrence or regeneration, with the presence of nearby mature being especially important. Although there were other large numbers of seedlings present, most were small and probably B&B killed, and the proportion of such seedlings with natural regeneration was low. A simple method for determining the proportion of a site that is stocked is presented. This research note is one of a series of research notes on the effects of landscape features on species movement. This indicates that natural regeneration may be an inadequate method of restoring and that planting may be required for an adequate level of regeneration to produce a good final wood crop.


FCRN011 1 



Biodiversity in fragmented landscapes: reviewing evidence on the effects of landscape features on species movement

Amy Eycott and Kevin Watts November 2011

Managing species movement across fragmented landscapes is considered important if we are to conserve populations of many species and help them adapt to climate change. Landscape features in the landscape have the potential to hinder or facilitate species movement. As each species interacts with the landscape differently, it can be hard to extract general patterns to inform planning and management guidance. This Research Note brings information together to look for such patterns. Firstly, we conducted a systematic review of the scientific literature. This relatively new technique in environmental sciences allowed a quantitative assessment of specific types of evidence, as well as a broader qualitative synthesis of the wider information available on UK species. Our review confirmed that, for those species for which there is evidence, most prefer to move through landscape features similar in structure to their breeding habitat. For example, woodland species tend to prefer to move through habitats which have some elements of vertical structure (mosses) and also indicated that rivers are discontinuous and their meanders have various functional values. For example, some landscape features that have a connecting structure with a point of branching habitat may provide better shelter from predators, while others may act as good visual cues for navigation. Secondly, we summarise species based landscape ecological studies carried out by Forest Research over the past five years.

FCRN010 1 

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New publications (cont.)

Plant Health Guides

Import inspection fees for wood, wood products and bark

Forestry Commission Plant Health Guide (FCPH002)

This guide explains which imports of wood, wood products and bark are subject to chargeable import inspection, how much the fees are, and how they may be paid.

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

The UK Wood Packaging Material Marking Programme

Forestry Commission Plant Health Guide (FCPH004)

This Guide sets out the obligations of manufacturers, repairers, remanufacturers and others involved in the wood packaging material sector under the UK Wood Packaging Material Marking Programme.

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



Import inspection fees for wood, wood products and bark

Controlled material inspection fees for imports from non-EC countries



Plant Health Guide



The UK Wood Packaging Material Marking Programme

Requirements for regulating wood packaging material in international trade ISPM15



Plant Health Guide

Our other newsletters:

Our scientists carry out research into many different aspects of forestry and land use. Some of their work is highlighted in several more-specific newsletters:

Growing Places

The Social and Economic Research Group (SERG) newsletter.



Latest issue covers:

- Better Woodlands for Wales grant scheme evaluation
- Monitoring and evaluating the 'Woods In and Around Towns' (WIAT) programme
- Monitoring and evaluation (M&E), and organisational learning, adaptation and change
- Evaluation of net economic benefits of greenspace

www.forestry.gov.uk/fr/growingplaces

Ecotype

The biodiversity and conservation newsletter from the Centre for Human and Ecological Sciences (CHES).



Latest issue covers:

- Changes within CHES
- Restoring blanket bog
- Woodland expansion geographic information system (GIS) analysis
- Aerial surveys for *Phytophthora ramorum* in Wales shows extent of damage by squirrels to larch
- New work investigating 'MARXAN with zones' in land use planning
- Suppressing bramble using overstorey cover – does it work?
- British forestry and climate change: how can changes in climate affect forests?
- Understanding the value of second rotation forestry to black grouse

www.forestry.gov.uk/fr/ecotype

Events

Full details of Forest Research events are available from our website at: 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

3 and 4 April 2012

Valuing ecosystems: policy, economic and management interactions

A joint Scottish Agricultural College (SAC) and Scottish Environment Protection Agency (SEPA) Biennial Conference, in association with Forest Research, The James Hutton Institute and Scottish Natural Heritage.

University of Edinburgh

www.forestry.gov.uk/fr/infid-64eavk

8–11 October 2012

Managing forests for ecosystem services: can spruce forests show the way?

Conference organised by Forest Research and the International Union of Forest Research Organizations (IUFRO), examining how best to translate the concepts promulgated by the Millennium Ecosystem Assessment (MEA) and successor documents into strategic, tactical and operational management regimes that will help adapt forests to meet changes in climate and societal demands.

Edinburgh

www.forestry.gov.uk/fr/infid-64eavk

What's new on our website

UK Red Squirrel Group

Website for group aiming to improve communication and awareness of the conservation action and research into native red squirrels. Included are news and events, information about the work of the group throughout the UK, research and monitoring information, publications, squirrel facts and links to useful red squirrel related websites.

www.forestry.gov.uk/fr/ukrsg

Research projects

Assessing the cultural and spiritual values of European forests

Reporting on Indicator 6.11 'Cultural and spiritual values', one of 35 Pan-European Indicators of Sustainable Forest Management.

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

Benefits and drawbacks of using new media for the Forestry Commission

Investigating how data from social media can be utilised to inform policy makers and managers about the management and benefits of trees, woods and forests, and how social media might shape collective behaviour change.

www.forestry.gov.uk/fr/INFD-8J3BKM

Critical assessment of evidence of net economic benefits of initiatives to create or improve greenspace

Covering a spectrum of market and non-market values, this project assessed existing evidence against emerging government guidelines on value transfer, identified gaps in evidence and recommended appropriate indicators to incorporate in emerging monitoring and evaluation frameworks.

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

Dothistroma (red band) needle blight

Updated page with new information on our work to monitor the extent of this disease and to increase understanding of it.

www.forestry.gov.uk/fr/redbandneedleblight

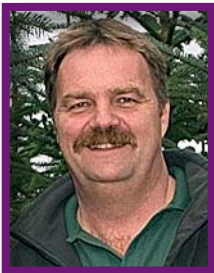
Woodland-related social enterprises: enabling factors and barriers to success

Examining the barriers and challenges facing different types and models of woodland-related social enterprise, and investigating the critical enabling factors affecting them.

www.forestry.gov.uk/fr/INFD-84JD86

Contact details

Research Liaison Officers



Chris Jones

Email: chris.jones@forestry.gsi.gov.uk

Tel direct: +44 (0)1874 676444



Steve Penny

Email: steve.penny@forestry.gsi.gov.uk

Tel direct: +44 (0)780 8900331