

FR News

News from Forest Research, November 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.



Pine-tree lappet moth found in Scotland

Pine-tree lappet moth caterpillars, *Dendrolimus pini*, are major defoliators of Scots pine forests in Europe. Adult male moths of this species have only been recorded in Britain as rare migrants but since 2004 they have been captured in increasing numbers near Inverness.

Concerns about the presence of male pine-tree lappet moths prompted large-scale surveys to be carried out near Inverness by Forest Research (FR), Forestry Commission Plant Health Service, Forest Enterprise Scotland and Butterfly Conservation. The surveys aimed to determine whether the moth is established and breeding, and the extent of its distribution in Scotland. The former is indicated by the presence of eggs, caterpillars and/or pupae; the latter is shown by the distribution of the much more mobile moths captured by pheromone and light traps.

In June, 282 pheromone traps were set up at 47 Forestry Commission and private woodland sites, mostly within 20 km of the suspected centre of population, near Kiltarlity in Inverness-shire. Important pine forests in Culbin, Glen Affric and Inshriach were also monitored.



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Pine-tree lappet moth found in Scotland (cont.)

The pheromone traps caught eight moths at five of the 47 sites. Light traps were also used, and these captured 90 moths from five sites. All 98 moths caught were male and came from seven different sites within 7 km of Kiltarlity.

In September, further research was carried out at these seven sites: 1900 sticky bands were attached to tree trunks to catch caterpillars as they descend to hibernate in the soil. In addition, forty-two Scots pine trees were felled and searched for caterpillars, leading to the first discovery of a caterpillar and a pupa cocoon in Scotland. These discoveries confirmed the existence of a breeding population which we believe may have been around since at least 2008.

To determine the origins of the Scottish population of pine-tree lappet moths, FR undertook DNA analysis of 18 Scottish and 6 German specimens. The latter showed higher diversity, with the former showing a narrow genetic base, possibly indicating recent colonisation of Scotland by one or very few individuals.

Further surveys are planned in the near future to look for overwintering caterpillars and adults. In addition, FR will undertake climate change modelling to investigate the potential for this species to spread.



For more information contact **Roger Moore** or visit www.forestry.gov.uk/website/forestry.nsf/byunique/inf-d-7u8dw6

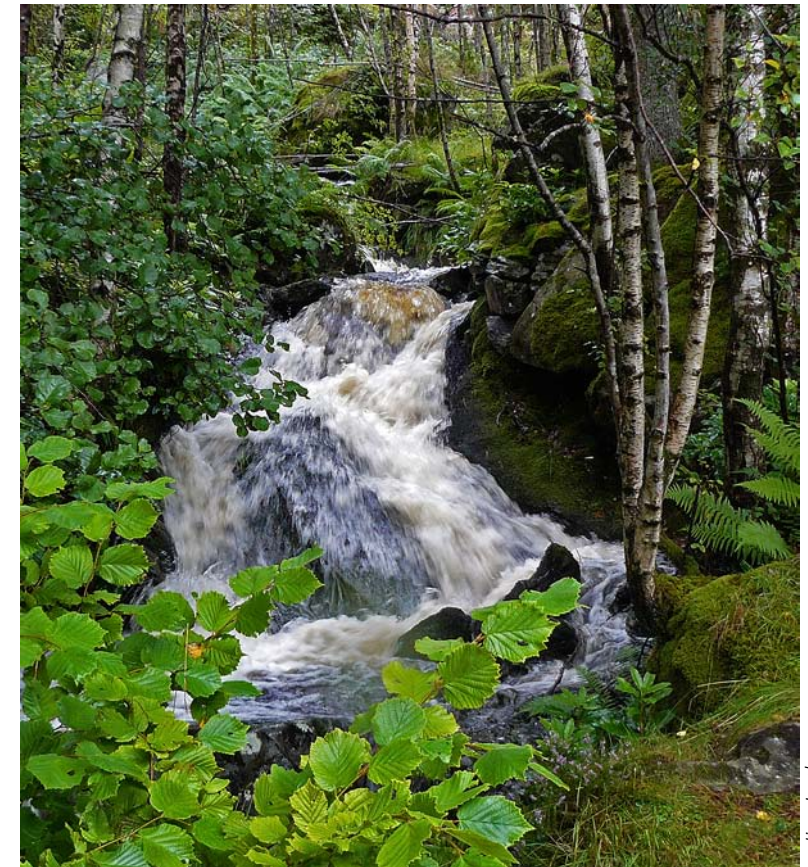
Ecological networks: science and practice

Technical advances and the need to accept uncertainty were key topics of discussion at the 16th annual UK meeting of the International Association for Landscape Ecology (IALE), which was held in Edinburgh this September.

Co-organised by Forest Research, the conference was entitled 'Ecological Networks: Science and Practice'. The aim of the event was twofold: to review the empirical foundations for the design of ecological networks and to consider how this evidence has been used in practice in different countries.

A number of Forest Research staff took part in the event: Tytti Vanhalla explained how using the DNA of wood crickets can help model connectivity, Amy Eycott reviewed how different landscape features affect species movement, and Jordan Chetcuti gave a presentation about integrating ecological network modelling and forest plans. Kevin Watts and Phil Handley gave a workshop on the latest spatial tools for network modelling.

There were also field trips to the Loch Lomond and The Trossachs National Park and the Edinburgh and Lothian area, which demonstrated implementation strategies in progress and provided a focus for discussion.



© Jim Latham

The field trip to Loch Katrine demonstrated the scope for integrating landscape-scale restoration with the protection of an important watershed producing exceptionally pure water for Glasgow.

For more information about FR's work on landscape ecology, visit www.forestresearch.gov.uk/landscapeecology; for details on IALE(UK) and the Ecological Networks conference, see www.iale.org.uk

Forest Health days in Scotland

The health of our forests has never been more important, as changes in our climate make the UK an increasingly favourable home to new pests and diseases arriving from abroad.

There is a need for those responsible for our forests, woodlands, and urban trees to familiarise themselves with the first signs of trouble and to learn what to do about them. Forest Research's tree health specialists are continually monitoring both existing pests and diseases as well as the influx of new ones from abroad. This year, Forest Research ran three specialised Forest Health days in Scotland to disseminate this knowledge. Around 100 people participated, including practitioners from the Forestry Commission, the private sector and local authorities. Attendees were encouraged to share what they had learned with colleagues.

On each Forest Health day, a morning session gave an overview of current threats and those that may be just over the horizon. It also covered the basics of how to spot the signs of pests or disease, how to monitor a situation if there is a problem, how and to whom it should be reported, and discussion of any specific concerns. The afternoon was then spent outdoors visiting sites to consider specific issues in local forests.

The days were organised by Steve Penny, Research Liaison Officer (Scotland) in partnership with Forestry Commission Scotland and the private sector. The events have been very well received by all who attended and we look forward to running further days in Scotland during 2010.

For more information or copies of the presentations given at the Forest Health days contact [Steve Penny](#).



*Sarah Green shows the group a *Meripilus giganteus* fungus on a large old beech at Scone Palace, Perth.*

Common juniper 'in a pickle'

Juniper populations in the UK have declined significantly over the past forty years, making juniper the subject of a UK Biodiversity Action Plan and a Species Action Plan. Early results from seed research indicate new ways to boost struggling populations.

The decline in juniper populations is mainly due to a lack of natural regeneration, which is attributed to poor seed quality and a shortage of suitable micro-sites for germination and establishment. Nursery production offers a means of bolstering these declining juniper populations, but propagation is still difficult as juniper produces a large proportion of empty seeds, which makes nursery production inefficient and thereby expensive.

Last year, a joint project was started with Frances Graham of the Yorkshire Dales National Park Authority focusing on three juniper populations. This research aims to understand the reproductive biology of juniper, to improve seed lot quality by effective processing (to remove empty seeds) and to improve seed performance by adequate pre-treatment (to break dormancy).

Early results show that seed quality varies significantly between the three populations, with the proportion of empty seeds ranging from 0–96%. Results also show that properly processed and pre-treated seeds from the 'best' population germinate relatively rapidly, with up to 70% germinating within 40 weeks. Further research is underway to 'scale-up' processing and fine-tune pre-treatment of juniper seeds.

It is hoped that this research will be a significant step towards the successful regeneration of juniper populations in the UK.

For more information contact [Shelagh McCartan](#).



Purple plump juniper berries are most likely to contain filled, live seeds.

Shelagh McCartan and Peter Gosling

Future monitoring of forest plots for climate change

The intensive monitoring of forest plots (formerly the ICP Forests Level II network) is now six months into its two-year funding under the new EU Life+ FutMon project. The research uses the UK's existing network of forest plots, which was set up in 1996 to monitor the effects of pollution on forests, and has redeveloped it to reflect a greater emphasis on climate change.

Some new plots have been added to the network, particularly in the south where climate change is expected to show greater effects. A range of tree species are included in the research, including oak, beech, Scots pine and Sitka spruce, with a wide variety of soil types. Three new scientific actions have been incorporated at certain sites to investigate and establish more accurate estimates of water budgets, nutrient flows and tree vitality. This work uses detailed phenology from web cams, leaf area estimates from mobile sensors, and automatic temperature and moisture probes. However, the skills of our tree health assessors and ecologists in the field remain vital and training courses have been organised in Europe to ensure the comparability of assessments across all 24 EU participating countries.

In the UK, routine site monitoring will be undertaken by staff from Forest Research and the Forestry Commission, and all chemical analysis of plant material, waters and soils will be performed by Forest Research's Centre for Forestry and Climate Change laboratory.



Webcam images show leaf coverage at certain times of year.

For more information, contact [Rona Pitman](#) or [Sue Benham](#); alternatively visit www.forestresearch.gov.uk/futmon



African students' study visit

Three international MSc students have recently arrived at Forest Research to undertake short-term placements alongside our researchers. They will be contributing to the EU-funded ForestClim project that focuses on the assessment of climate change impacts on forests and forestry in north-western Europe.

One of the main objectives of this project is to demonstrate tools and techniques for adapting forest management to climate change, using case study forest areas in the project's partner countries. During their month-long study visit, the three students will be working on a variety of topics within this field:

- ▶ **Celina Awale** will examine the policy of forest data availability and access in the ForestClim partner countries and EU.
- ▶ **Florence Mazwi Murungu** will be researching the spatio-temporal variability of climate change effects on forest development.
- ▶ **Margaret Wambui Kamau** will be developing regional forest management adaptation strategies for climate change.

The students are all from ITC (the International Institute for Geo-Information Science and Earth Observation) in The Netherlands. Their visit is another example of Forest Research's extensive collaborative links with like-minded institutions both at home and abroad.

More details of the ForestClim project can be found at www.forestresearch.gov.uk/forestclim



Left to right: Duncan Ray (FR), Celina Awale, Florence Murungu, Margaret Kanau, Carolina Massmann, Luc Boerboom (Director of Studies, ITC).

New Publications

Research Notes

Potential impacts of drought and disease on forestry in Scotland

by Sarah Green and Duncan Ray (FCRN004)

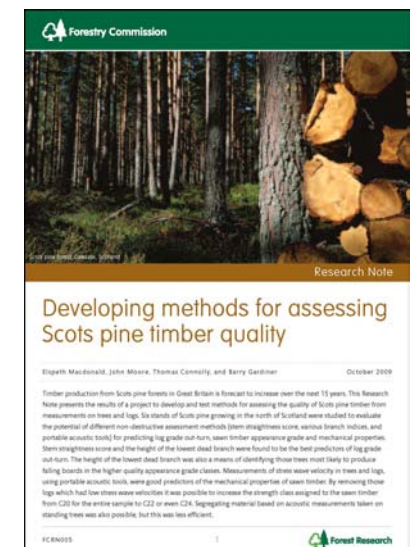
In the future climate, drought is expected to become a more important factor affecting the health of trees in areas of Britain. Although a number of diseases are known to be more aggressive on trees experiencing drought stress, there are uncertainties as to which are likely to increase in frequency and severity in response to future changes in climate. This study developed 'drought-risk maps' to identify those forest sites and tree species in Scotland most at risk, and reviews a number of diseases that have been identified as likely to increase in frequency and severity on drought-prone forest and woodland trees in Scotland.

Developing methods for assessing Scots pine timber quality

Elspeth Macdonald, John Moore, Thomas Connolly, and Barry Gardiner (FCRN005)

This Research Note presents the results of a project to develop and test methods for assessing the quality of Scots pine timber from measurements on trees and logs.

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



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New Publications (continued)

Technical Note

Using acoustic tools in forestry and the wood supply chain

Shaun Mochan, John Moore and Tom Connolly (FCTN018)

The use of acoustic technology to predict the mechanical properties of timber is a well-established practice overseas. Recent advances in technology and the development of portable instruments mean that wood can now be assessed in standing trees before they are felled. Trials in the UK have shown that it is possible to relate measurements of acoustic velocity in standing trees and logs to the mechanical properties of timber cut from them. This gives the potential to segregate material for different end uses in the forest, at the roadside or in the sawmill.



Practice Note

Practical techniques for surveying and monitoring squirrels

John Gurnell, Peter Lurz, Robbie McDonald and Harry Pepper (FCPN011)

Survey methods can be used to establish the presence of squirrels in a particular area, and to detect significant changes in the distribution or abundance of populations and species over time. The data gathered can also be used to monitor how threatened populations of red squirrels are responding to conservation management or environmental change, and to assess the efficacy of grey squirrel control measures. This Practice Note describes how to plan a survey, and provides guidance on which methods to use. It describes five indirect survey techniques, and gives advice on their suitability for different types of habitat at different times of year.



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

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New Publications (continued)

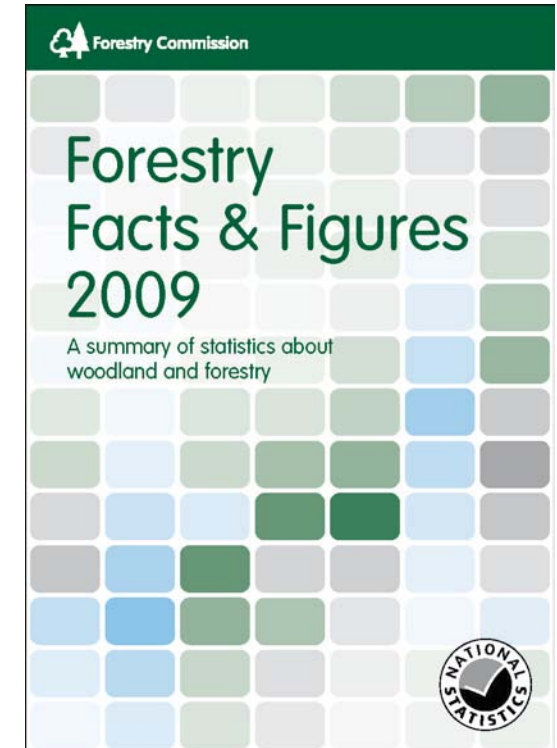
Forestry Statistics

Forestry Facts & Figures 2009

(FCFS209)

Detailed statistics about woodland and forestry are published in the web publication *Forestry Statistics 2009*, with an extract in this handy booklet. It includes UK statistics on woodland area, planting, timber, trade, climate change, environment, recreation, employment, finance and prices, in addition to some statistics on international forestry. Where possible, figures are also provided for England, Wales, Scotland and Northern Ireland.

www.forestresearch.gov.uk/forestry/infid-7aqf6j



Events

Full details of FR's events are available from the FR website: 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

12 November 2009

Forest Research update seminar (Winter 2009)

An opportunity to update forestry colleagues in the industry on a number of current topics of interest to the practitioner, to share information and gain feedback. We include topics of practical relevance as well as topics that are current in the development and support of policy.

Macdonald Aviemore Highland Resort, Aviemore

www.forestresearch.gov.uk/fr/INFD-7W6DTC

19 November 2009

Trees and urban climate adaptation

Conference to mobilise policy makers and the wider community to ensure a sustainable urban forest canopy capable of meeting future climate adaptation needs.

The Royal Geographical Society, London

www.forestresearch.gov.uk/fr/INFD-7VZDHT

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

13–15 April 2010

Trees and forests in British society

Conference to explore the demands that society places on forestry and the role it is expected to play.

Heriot-Watt University, Edinburgh

www.forestresearch.gov.uk/fr/INFD-7RXCBA

What's new on our website

Forest fires and climate change

Study into the incidence, contributory factors and impact of forest fires and developing predictive models.

www.forestresearch.gov.uk/fr/INFD-7WLAHK

Partnership working: Third sector, local government and agency engagement with the Forestry Commission

Research assessing which partnership factors and issues in partnership models are the most sustainable and able to provide the desired forestry-related outcomes.

www.forestresearch.gov.uk/fr/INFD-7WCDZH

Payments for ecosystem services

Investigating a framework of incentives covering financing and paying for the benefits provided by ecosystems to households, communities and economies.

www.forestresearch.gov.uk/fr/INFD-7WUHPW

Review of approaches to carbon additionality

Net greenhouse gas emissions savings or sequestration benefits over and above those that would have arisen anyway in the absence of a given activity or project.

www.forestresearch.gov.uk/fr/INFD-7WUEAN

Review of approaches to carbon valuation, discounting and risk management

Establishing a framework that places a value on carbon.

www.forestresearch.gov.uk/fr/INFD-7WTDFQ

Global Forestry Information Service (GFIS)

We now provide forestry-related information from our website to the global forestry community via this web portal.

www.gfis.net