

Publications

Forest Research publishes a wide range of material, from corporate reports and plans, to brochures, project summaries and technical reports. Many of these can be ordered through our online publications catalogue at www.forestry.gov.uk/publications

In addition, our researchers publish peer-reviewed articles in scientific journals and produce books through external publishing houses.



Forestry Commission technical publications

The following titles were published during the year ending 31 March 2008.

Published by Forest Research

Corporate publications

Forest Research annual report and accounts 2006–2007 (£18)

Forest Research corporate plan 2007–2010 (online publication, free)

Forest Research corporate plan 2008–2011 (online publication, free)

Newsletters, booklets and leaflets

FR Eye. Forest Research's newsletter, giving details of recent projects and developments (online publication, free)

www.forestresearch.gov.uk/freye

Ecotype. Biodiversity and conservation newsletter of Ecology Division (online publication, free)

www.forestresearch.gov.uk/ecotype

Growing places. Social and Economic Research Group newsletter from Environmental and Human Sciences Division (printed and online publication, free) www.forestresearch.gov.uk/growingplaces

Path News. Pathology bulletin of Tree Health Division (online publication, free) www.forestresearch.gov.uk/pathnews

Oak pinhole borer by Christine Tilbury. FR Tree Pest Advisory Note (free)

Methuselah: a monitoring and evaluation strategy for greenspace by Kieron Doick. Booklet (free)

Offenders and nature: helping people – helping nature by Claudia Carter. Booklet (free)

Published by the Forestry Commission

The publications listed below have been written by Forest Research staff for the Forestry Commission.

Bulletins

127 *Choice of Sitka spruce seed origins for use in British forests* by Sam Samuel, Alan Fletcher and Roger Lines (£21)

128 *Estimating deer abundance in woodlands: the combination plot technique* by Graeme Swanson*, Douglas Campbell* and Helen Armstrong (£17.50)

Field Guides

Roundwood and sawlog volume tables (£10)

Timber measurement by Ewan Mackie and Robert Matthews (£16)

Practice Guide

Raising trees and shrubs from seed by Peter Gosling (£5.50)

Inventory Report/Surveys

National inventory of woodland and trees 1995–1999 by Justin Gilbert (online only)

Forest condition survey 2005 (online only)

Information Notes (free)

86 *The role of forest genetic resources in helping British forests respond to climate change*
Jason Hubert and Joan Cottrell

87 *Resistance of young conifers to feeding damage by pine weevil*
David Wainhouse and Sara Brough

88 *Ten years of intensive environmental monitoring in British forests*
Elena Vanguelova, Nadia Barsoum, Suzanne Benham, Mark Broadmeadow, Andy Moffat, Tom Nisbet and Rona Pitman

89 *Evaluating biodiversity in fragmented landscapes: the use of focal species*

Amy Eycott, Kevin Watts, Darren Moseley and Duncan Ray

90 *Forests and wood ants in Scotland*
Jonathan Hughes and Alice Broome

91 *Greenspace establishment on brownfield land: the site selection and investigation process*
Kieron Doick and Tony Hutchings

Practice Note (free)

4 (revised) *Controlling grey squirrel damage to woodlands*
Brenda Mayle, Mark Ferryman and Harry Pepper

Research Note (free)

FCRN101 *Impacts of climate change on forestry in Scotland – a synopsis of spatial modelling research*
Duncan Ray

Technical Note (free)

17 *Cleaning mechanised pesticide spray equipment*
Bill J. Jones

* Authors outwith the Agency.

External publications

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- [Adams, P., De Leij, F.A.A.M.] and Lynch, J.M. (2007)
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- A'Hara, S.W. and Cottrell, J.E. (2007)
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Research programmes and contracts

Forest Research carries out a wide range of research programmes, encompassing topics from across the spectrum of forestry and related environmental subjects. Our work aims to support and enhance forestry and its role in sustainable development. This year's programmes are listed as follows.



Research programmes and contracts

Major research programmes undertaken by Forest Research Programmes funded by the Forestry Commission

Project leaders' names are given for each programme.

Biometrics, Surveys and Statistics Division

Forest measurement, modelling and forecasting

Robert Matthews

Improve methods, models and systems for forecasting growth and yield of forests. Develop and promote systems and instruments for the efficient and accurate measurement of trees and timber to support industry and national/international standards. Develop and maintain the national network of permanent and temporary periodic growth and yield plots to support measurement, growth and yield studies.

Process modelling and data systems

Sebastien Lafont

Develop process-modelling systems, underpinned by integrated datasets, to forecast tree, stand and catchment dynamics under current and future environmental and management scenarios, to support and promote the implementation of multi-purpose sustainable forestry. Current focus: forested catchment-scale dynamics, growth and yield dynamics under climate change, and predicting pest impacts on host tree survival.

Woodland assessment surveys

Mark Lawrence

Undertake the Forestry Commission's National Inventory of Woodland and Trees, assessing woodland cover and providing national statistics on forest systems. Create the digital woodland map for Britain. Promote the use of GIS and remote sensing technology to provide spatially referenced data on the woodland cover of Britain and its changes.

Remote sensing

Juan Suarez

Evaluate and promote the potential of remote sensing technologies for operational use in the management of British forests.

Biomass Development

Andy Hall and Ian Tubby

This programme, which mainly involves staff from BSSD and FMD, covers all FR's research relevant to the greater use of woodfuel. Best practice guidance based on this research is made available to the public and industry, together with information on all aspects of biomass fuels and associated conversion technologies via the Biomass Energy Centre www.biomassenergycentre.org.uk

Ecology Division

Biodiversity indicators and monitoring

Jonathan Humphrey

Identify potential biodiversity indicators, develop and test monitoring methods and disseminate findings.

Priority species and their conservation

Alice Broome

Conduct research to support the protection and encouragement of woodland species identified as priorities within the UK Biodiversity Action Plan.

Rural and urban landscape ecology

Kevin Watts

Improve understanding of how biodiversity responds to management at the landscape scale, and translate this into practical management guidance for forest design.

Ecological site classification

Duncan Ray

Develop ecological site classification (ESC) to accommodate climate change projections and enable it to be implemented at a range of spatial scales.

Decision support for biodiversity

Duncan Ray

Develop decision-supporting tools for biodiversity and in particular produce a knowledge base for forest managers wishing to understand the significance of Habitats and Rare, Priority and Protected Species (HaRPPs).

Management of grey squirrels

Brenda Mayle

Develop cost-effective means of managing the impact of grey squirrels on timber production. Investigate the impact of grey squirrels on woodland biodiversity.

Impact of herbivores

Helen Armstrong and Robin Gill

Provide a sustainable basis for deer management in UK woodlands by investigating and developing new techniques and models of impacts and damage, population dynamics of deer, deer density assessment and grazing management.

Alien and invasive mammals

Roger Trout

Scope the potential for impact of alien and invasive vertebrates. Develop techniques and materials for cost effective protection of trees and woodlands from mammal damage.

Improvement of broadleaves

Jason Hubert

Undertake selection and testing at population, family and clonal level for a range of broadleaved species including oak, ash, sycamore, beech and birch.

Genetic conservation

Joan Cottrell and Jason Hubert

Study the genetic variation and gene flow in natural populations. Assess the level of adaptive variation in the field trials of populations of native species.

Research programmes and contracts

Scientific support for Forest Reproductive Material Regulations

Sam Samuel

Devise methods for inspection of material proposed for registration. Maintain the National Register of Basic Material.

Management (and restoration) of Priority woodland habitats

Ralph Harmer and Richard Thompson

Examine methods for managing, restoring, regenerating and extending priority woodland habitats.

Management (and restoration) of Priority open habitats

Russell Anderson

Investigate and provide guidance on the restoration and management of open ground habitats.

Environmental and Human Sciences Division

Soil sustainability

Elena Vanguelova

Research to identify and evaluate the potential impacts of forest management, air pollution and climate change on soil status, functions and dynamics. Provide expert advice and develop guidance on best management practices for the protection of forest soil sustainability.

Urban regeneration network

Tony Hutchings

Improve establishment methods and management practices for woodland and other green uses in urban and on disturbed (brownfield) sites, taking into account changes in forestry and land-use policy, planting opportunity, environmental and socio-economic impacts, climate change, contamination, and waste minimisation and utilisation. Provide expert advice and develop best practice guidance on land regeneration issues.

Forest hydrology

Tom Nisbet

Study the impacts of forests and forestry management practices on water quality and quantity. Develop and assess guidance on best management practice for the protection of the freshwater environment within forests. Provide expert advice on forestry-water issues.

Environmental monitoring and evaluation of forest ecosystems

Nadia Barsoum

Determine the role of climate change and air pollution in forest condition and growth through long-term intensive environmental monitoring in forest ecosystems, in compliance with EC regulations. Provide data under the Convention on Transboundary Air Pollution for the calculation and mapping of critical loads.

Climate change impacts

Sirwan Yamulki

Monitor the effects of climate change and predict the likely future impacts through a combination of environmental monitoring (the Environmental Change Network), experimental manipulation and modelling studies. Identify interactions between forests, woodland management and the changing global environment, including a quantification of non-CO₂ greenhouse gas fluxes.

Forest carbon dynamics

Matthew Wilkinson

Develop a network for monitoring carbon stocks and stock changes of woodland in the UK. Maintain one of only three long-term carbon flux monitoring stations in woodland in the UK, measuring carbon fluxes and constructing a carbon budget for a stand of lowland broadleaf woodland. Research the contribution that wood (including bioenergy production) and wood products can make to climate change mitigation.

Cultural heritage and historic environment

Peter Crow

Develop methods, tools and guidance to aid the day-to-day management of historic environment features such as archaeological evidence, veteran trees and historic woodlands/landscapes.

Social Research

Anna Lawrence

Examine relationships between communities and woodlands in support of FC policies on sustainable forest management. Work concentrates on community involvement, publicly held values, health and well-being, sustainability indicators, impact assessment, recreation, access and rural development.

Economic Research

Gregory Valatin

Investigate the economics of sustainable forest management, including climate change mitigation and adaptation, and the potential for adopting economic instruments in forest policy. Provide economic advice to other research programmes.

Forest Management Division

Integrated establishment systems for the uplands

Mike Perks

Integrated studies of the effect of nursery practice, seedling physiology, plant handling methods, site preparation and maintenance upon tree establishment and subsequent growth.

Timber properties

Barry Gardiner

Investigate the impact of silvicultural practices on timber quality in conifers, especially spruce. Main emphasis is on impact of site factors (e.g. exposure, fertility) on quality.

Research programmes and contracts

Management of upland native woodlands

Colin Edwards

Research into the structure, dynamics and silviculture of native woodland ecosystems in northern and western Britain to support restoration and extension for ecological and economic benefits. Emphasis is on Scots pine forests, birchwoods and the Atlantic oakwoods.

Continuous cover silviculture

Gary Kerr

Evaluate canopy structure manipulation to promote suitable microclimates for seedling establishment and facilitate natural regeneration to enable wider use of alternative silvicultural systems to patch clearfelling (continuous cover forestry).

Tree stability and climate

Bruce Nicoll

Research to reduce wind damage to British forests using a GIS-based windthrow risk model for predicting the probability of windthrow in Sitka spruce forests. Carry out studies of root development and architecture in support of the model.

Integrated forest vegetation management

Ian Willoughby

Investigate alternatives to conventional vegetation management for new planting and regenerating existing woodlands, including reducing synthetic chemical inputs and direct seeding.

Seed and seedling biology

Peter Gosling and Richard Jinks

Improve tree seed quality and performance to reduce costs and increase reliability of direct seeding and natural regeneration.

Selection and testing of conifers

Steve Lee

Undertake plus-tree selection, progeny testing. Breeding/production populations. Demonstration of realised gain. Development of techniques for marker aided selection. Species: Sitka spruce, Scots pine, Corsican pine, Douglas fir, larch.

Long-term experiments

Alan Harrison

Retention of long-term forest experiments; include maintenance, assessment and provision of data.

Breeding and production of conifers

Steve Lee

Clonal archives: conservation, advanced breeding material. Improved seed: controlled pollination, seed orchards.

Modelling mixed stands

Sebastien Lafont

Evaluation of single tree growth models available in other countries that could be used to predict the growth of the mixed species and structure stands that are being created as a result of the greater use of Continuous Cover Forestry systems in British forestry. The work is carried out by a team comprising members of Biometrics and Forest Management Divisions.

Direct seeding

Ian Willoughby

Re-evaluation of the possibility of using direct seeding as a means of restocking forests in upland Britain at a lesser cost than conventional practice. Also considering the value of such systems to restore native woodlands in a more naturalistic manner.

Operational efficiency and safety in the forest wood chain

Ian Murgatroyd

This programme covers the investigation of operational issues and the provision of solutions that will contribute to improved efficiencies within the forestry sector. Four main areas of investigation are: forest establishment and maintenance; harvesting and transport; low impact silvicultural systems and ecosystem management; and safety and ergonomics.

Native woodland survey of Scotland

Alistair Macloed

Fieldwork is being carried out by Technical Services Unit (TSU) on behalf of Forestry Commission Scotland. First comprehensive survey of the extent, location and condition of all native woodlands in Scotland.

Tree Health Division

Pests and pathogens of phytosanitary concern

Hugh Evans

Research into the risks from indigenous and non-indigenous forest pests and pathogens. Co-ordination and implementation of surveys in relation to retention of EU Protected Zone status for named bark beetle pests. The use of Pest Risk Analysis techniques to determine risks from named non-indigenous pests and pathogens.

Impacts of pests under changing management

Nigel Straw

Investigate the implications of alternative silvicultural systems in relation to insect abundance and diversity, especially for key pest species. Study sites are located in several forests in Wales. This work builds on previous studies of quantitative relationships between insect populations and their impact on trees, particularly impact of green spruce aphid *Elatobium abietinum* on Sitka spruce.

Research programmes and contracts

Integrated Forest Management

Roger Moore

Building on studies of the population dynamics of *Hylobius abietis*, decision-support systems for management of the restocking problem are being developed. This enables the selective use of biological control to reduce populations of *H. abietis* to sub-economic levels through the managed application of insect parasitic nematodes for both the FC and private sectors.

Advice and scientific support for tree health

Joan Webber

Provide an advisory service to determine the causes of ill health in trees and provide advice and information on pest and pathogen identification, management and control. Disseminate the information to all interested parties through outreach activities such as Forest Health Days, workshops and seminars. Assess the impacts of horse chestnut leafminer and bleeding canker on the health of horse chestnut tree.

Tree health monitoring

Steven Hendry

Monitor the health of the nation's trees through the 350+ plots of the Forest Condition Survey, and raise awareness of tree health issues.

Non-chemical protection

Katherine Tubby

Research the potential for biological and non-chemical control of tree diseases, with special emphasis on root and butt rot of conifers caused by the fungal pathogen *Heterobasidion annosum*. Integrate this information into effective approaches to management and control of tree diseases.

Red band needle blight

Anna Brown

Research and survey the extent, severity and rate of spread of red band needle blight (caused by *Dothistroma pini*) in the UK with particular reference to East Anglia Forest District. Determine the impact that this could have on tree mortality and timber yields of Corsican pine and the suitability of the different control measures.

Quarantine pathogens – *Phytophthora ramorum* and *P. kernoviae*

Joan Webber

Investigate the biology and epidemiology of the two new quarantine tree pathogens, *Phytophthora ramorum* and *P. kernoviae*, which infect tree species within the Fagaceae. Use information generated from this research in Pest Risk Analysis to determine the extent of the risk these pathogens pose to trees in the UK, their impact and opportunities for eradication and control.

Pests and pathogens in a changing climate

David Wainhouse

New programme initially concentrating on three main strands. 1. The influence of voltinism in *Hylobius abietis* and its effect on geographical variation in pest status. This uses *H. abietis* as a model system to study the effects of climate change on insect pest generation time. 2. Interaction between drought stress and fungal disease of trees with particular reference to Sitka spruce in Scotland. 3. Investigate the influence of climate change on broadleaved pests and pathogens, using oak (*Quercus* spp) as a model system.

Programmes part-funded by the European Commission

Integrated information on tree breeding (TREEBREEDEX). Linking information on tree breeding programmes across major European countries.

Development of improved pest risk analysis techniques for quarantine pests, using pinewood nematode *Bursaphelenchus xylophilus* in Portugal as a model system (PHRAME).

Robinwood (INTERREG) projects: An examination of potential forest measures for mitigating hydrological instability and flood risk. Analysis of woodfuel management strategies and the impact of Continuous Cover Forestry on outputs from forests in various regions of Europe (Wales, Liguria, Murcia, Brandenburg and parts of the Czech republic).

Forests for water: Demonstration of opportunities on forest land to support the implementation of the Water Framework Directives.

Biosoil: The largest single soil monitoring exercise implemented so far at an EU scale, the main aim is to establish an improved common European baseline of forest soils for environmental applications – carbon stock assessment, acidification, eutrophication and impacts of climatic change.

GC EUFORGEN: Collaboration between European countries to promote conservation and sustainable use of forest genetic resources.

Risk analysis for *Phytophthora ramorum* (RAPRA).

Reintegration of coal ash disposal sites and mitigation of pollution in the West Balkan area.

Research programmes and contracts

EFORWOOD: Sustainability impact analysis of the European forestry wood chain under different scenarios and developing decision support tools to help evaluate changes in practice and market fluctuations.

SENSOR: Sustainability impact assessment: tools for environmental, social and economic effects of multifunctional land use in European regions.

STORMRISK: Development of STORM resistant landscapes through regional cooperation, adapted management and RISK communication. Working with partners in northern Europe to adapt existing decision support tools to help improve management practices.

COMFOR: Collective work science approach to solving the common problems of occupational health and performance in European forest operations SMEs.

INTERREG IIIA (Ireland-Wales): Sustainable Management of Forest Insect Pests.

Programmes funded by other organisations

BP Exploration Operating Co. Ltd
Scottish Forestry Alliance Biodiversity Group. Method development, data collection and analysis to provide biodiversity monitoring for new native woodlands established on Scottish Forestry Alliance sites.

Central Science Laboratory and Scottish Natural Heritage
Supporting a Defra-led project that aims to test and adapt fertility control agents for target species that have been developed in the US, and in particular work on the grey squirrel (*Sciurus carolinensis*).

Centre for Ecology and Hydrology (CEH)
Inventory and projections of UK emissions by sources and removals by sinks due to Land Use, Land-Use Change and Forestry (LULUCF).

COFORD
CLIMADAPT: Development of an Ecological Site Classification (ESC) for Ireland. Assessment of species suitability in Ireland, and the impact of IPCC climate change scenarios on forest stands and forest ecosystems using an ESC.

Deer Commission for Scotland
Management of Roe deer in peri-urban Scotland. Determine current attitudes of those who might manage peri-urban deer, i.e. private landowners and landholding organisations. Establish the distribution and scale of the peri-urban Roe deer population in the Central Belt.

Department for Business, Enterprise and Regulatory Reform (BERR) and Aspire Defence
The use of biologically enhanced charcoal for *in-situ* remediation of contaminated land.

Department for Environment, Food and Rural Affairs (Defra)
Biomass Centre – contributions towards continued development.

Flood and Coastal Erosion Risk Management Innovation Fund – Restoring Floodplain Woodland for Flood Alleviation.

Department for Innovation, Universities and Skills (DIUS)
Public Sector Research Exploitation Fund, third round. A three-year capacity building project commenced in April 2006 to assist Forest Research to develop its innovation and commercialisation activities.

Economic and Social Research Council (ESRC)/University of Leeds
Supergen: The production of different types of biomass and their behaviour in thermal conversion processes, with particular emphasis on the interaction and interface between production and conversion.

Engineering and Physical Sciences Research Council (EPSRC)/Sheffield
Novel compost.

EPSRC/University of Surrey
Pollutants in the urban environment.

ESRC/University of Sheffield
Rivers project.

Forestry Commission Scotland/Scottish Natural Heritage
Production of a toolbox of methods for assessing grazing impacts, including development of a qualitative method for assessing herbivore impacts on woodlands and monitoring of a pilot grazing grant scheme.

Forestry Commission Scotland/Perth and Argyll Council
Invasive weed control. Undertaking surveys of *Rhododendron ponticum* occurrence in sensitive woodlands, predicting potential for colonisation and developing cost-effective management strategies.

Research programmes and contracts

Gallagher Estates

Plant growing trials.

Highland and Islands Enterprise/FC Grampian Conservancy/Scottish Enterprise

Scots pine timber quality in North Scotland. Carrying out surveys of the Scots pine resource and assessing its quality for different markets.

Highland Birchwoods 'sourfelling': Trials of various methods of preparing conifer timber for use as woodfuel.

Institute of Grassland and Environmental Research

Development of sustainable heat and power fuelled by biomass from short rotation coppice in Wales.

James Jones Ltd

Timber properties of Sitka spruce in south Scotland. Operational testing of acoustic tools for assessing timber quality in the forestry wood chain.

Natural Environment Research Council (NERC)

QUEST forestry demonstrator. Deliver the scientific basis for project verification methods and project design principles and guidelines that assure that forestry-based mitigation projects have maximum benefits for climate, social concerns and the environment, including biodiversity, water resources and soils.

Rural Economy and Land Use Programme (RELU)

A case study on integrated deer management.

Scotland and Northern Ireland Forum for Environmental Research (SNIFFER)

Urban networks for people and biodiversity: Review recent approaches to the identification and analysis of habitat networks and examine opportunities to apply these to urban areas. Identify other relevant social and environmental data-sets that could be linked to green network data to investigate the potential to create green networks with multiple functions.

Minard cattle grazing trial: Monitoring of cattle grazing as vegetation management to improve conditions for Black Grouse.

SNIFFER/British Trust for Ornithology (BTO)

Implications of land use and demographic change: Identifying the relationship between predicted environmental and demographic trends and biodiversity conservation in urban areas, and examining strategies to manage this relationship most effectively.

South East England Regional Development Agency (SEEDA)

Grant to assist the establishment of the Rural Research and Strategy Partnership. This Partnership aims to support and stimulate interdisciplinary research between Forest Research, the Universities of Reading, Surrey and Sussex and the University for the Creative Arts. It focuses on topics important for rural sustainability.

United States Department of Agriculture (USDA)

Studies on *Phytophthora ramorum*.

Research contracts awarded by Forest Research

Environment Agency (Wales)

Effects of forestry on surface water acidification.

Fountain Forestry

Water monitoring, Halladale.

Imperial College

Links between tree health and ectomycorrhizal (ECM) fungal communities under changing environmental conditions.

University of Bristol

Landscape history of Saverlake Forest.

University of Cardiff School of Engineering

Investigation of the hydraulic impact of floodplain woodland.

University of Edinburgh

Impacts of ultraviolet-B radiation on leaf decomposition in forest trees.

Physiological ecology of understorey trees in alternative management systems.

The biology of heartwood formation and its influence on conifer timber quality.

University of Essex

Impact of nitrogen deposition on microbial communities in relation to nitrogen/carbon cycling in forest soils.

University of Exeter

Soil microbial population dynamics and function associated with soil methane and CO₂ fluxes within forest systems as influenced by climate change.

University of Reading

Investigation into best practice for the design and management of successful engineered wetland habitat systems on brownfield land.

Investigating the flux of carbon dioxide from a lowland oak woodland.

University of Surrey

In-situ magnetic resonance of water distribution and movement in living trees.

University of Ulster

Impact of defoliating insects in a changing forest environment.

University of York

The role of biotic interactions in determining species' responses to climate warming.

People

Forest Research staff include many experts from a wide range of subject areas relating to forestry and the wider environment. These specialist science teams work at the forefront of research, aided by a network of support staff essential to the continued smooth running of our organisation.



Many FR staff have received awards and qualifications during the past year, reflecting national and international success and recognition.

Jim Lynch, FR Chief Executive from July 2003 to September 2007, received an OBE in June 2007, recognising particularly his 17 years as co-ordinator of the Organisation for Economic Co-operation and Development (OECD) programme on Biological Resource Management. Sam Evans also received an OBE (Military Division). Jim Lynch and Andy Moffat were both granted Visiting Professorships in the School of Human and Environmental Sciences at the University of Reading.

Mike Perks was awarded Honorary Fellow Status in the School of Geosciences at the University of Edinburgh, while Juan Suarez received a Fellowship from Glamorgan University. Bill Mason was awarded a Doctorate in Science from Bangor University for his work entitled 'Silvicultural research in support of multifunctional management of British conifer forests'.

Hugh Williams and Ian Willoughby were promoted to Fellows of the Institute of Chartered Foresters.

FR was pleased to welcome new staff in many areas of work and across most sites during 2007-08.

Biometrics, Surveys and Statistics Division (BSSD) welcomed Vera Correia and Stefania Pizzirani to work in the Woodland Surveys Unit at NRS. Dave Auty and John Fonweban joined Forest Management Division (FMD): Dave as a PhD student to work on developing a timber quality model for Scots pine with reference to forests undergoing transformation to irregular structures; and John as timber properties modeller working on the programme for Sitka spruce and the integration of modelling approaches. Rebecca Brassey joined Ecology Division (ED) at our Northern Research Station (NRS) as a project officer working to develop indicators of wild deer health and welfare on the open hills across Scotland.

Environmental and Human Sciences Division (EHSD) welcomed Anna Lawrence as the new Head of Social and Economic Research Group (SERG) at Alice Holt. Anna's role includes identifying and responding to the social research priorities related to the forest strategies of England, Scotland and Wales. Mariella Marzano joined as a project leader in SERG working on a literature review of forest management and recreation, and Vadims Sarajevs joined as an economist, based at NRS.

Also joining EHSD at Alice Holt is James Morison as Head of the Environmental Change Group where he is focusing on developing and co-ordinating FR research on the consequences and mitigation of climate (and the adaptation necessary). Jeremy Wingate joined the Land Regeneration and Urban Greening Research Group to work on a joint project on the *in situ* remediation of contaminated land.

Two new Research Liaison Officers (RLOs) joined Communications Group: Steve Penny as RLO for Scotland and Hugh Williams as RLO for England. Their wide-ranging roles include channelling FR research knowledge to FC Scotland and FC England and other stakeholders, providing feedback to FR.

Other new staff included Sandra Smith as Finance and IT Services Director, based at Alice Holt, and Sarah Jeffreys as a placement student in Human Resources and Administration. Also based at Alice Holt, but with a GB-wide role, Jane Devlin joined as Intellectual Property Manager to deliver FR's PSRE3 project and to support innovation and commercialisation across FR.

During 2007-08 we said goodbye to several staff, many after long and wide-ranging service with FR.

Allan John retired after 32 years working with Physiology Branch, Tree Improvement Branch and Forest Management Division. Allan's dedicated work focused on vegetative propagation of larch and Sitka spruce, initially with cuttings then at micro-level. He was also an active union member, representing FR on Whitley sub-committees and at 'Prospect' conferences.

People

Paul Tabbush retired after 34 years with FC/FR. His long and varied career began in the Forest of Dean and Kielder Forest before he began working as a silviculturist specialising in forest establishment at NRS, and later at Alice Holt where he was Head of Silviculture. His invaluable contribution to forestry research then moved in a different direction when he set up the Social Research Unit, actively developing research capacity and winning funding.

Sue Stiles' 21-year career with FR spanned a large range of secretarial work. In her last four years at Alice Holt she worked as personal secretary to Jim Lynch and Peter Freer-Smith, always providing vital and friendly support.

Dave West's 30 years as a forester started at Crychan Forest and he later became Head Forester at Thetford. During the past 15 years he worked with TSU at Santon Downham and Fineshade.

David Jones retired after 42 years, beginning as a forester in South Wales and Brecon Beacons before joining FC Technical Training at Rheola Training Centre. David was responsible for training all FC employees in mechanised harvesting. Moving to Technical Development, he then focused on small-scale harvesting and became an expert on woodfuel production systems.

Terry Gray, a leading research worker at TSU, Kielder, retired after 26 years.

Tony Cornwell retired as Finance and IT Director. During his nine years with FR, Tony centralised all financial information to the Finance Office at Alice Holt, transferred systems to PCs, and introduced the Government Procurement Card, popularly known as the GPC, to FR.

We also said farewell to **Jonathan Humphrey**. After 14 years of dedicated work on many aspects of ecology, including representing FR at conferences and editing proceedings, Jonathan left to retrain as a Church of Scotland Minister, starting with a degree in Divinity at Edinburgh University.

People and locations

Permanent and fixed-term staff as at 31 March 2008.

Acting Chief Executive

- Professor Peter Freer-Smith, BSc, PhD, DSc

Acting Research Director

- Professor Andy Moffat, BSc, PhD, DSc

Personal Secretaries

- Claire Holmes
- Helena Ladbury

Head of Northern Research Station

- Chris Quine, MA, MSc, FICFor, PhD

Quality Assurance Manager

- Carl Foster

Business and Innovation

- Alison Melvin, BA
- Jane Devlin, BSc

Human Resources and Administration

- Ken Charles, FMS, *HR and Administration Director*
- Wendy Groves
- Sarah Jeffreys
- Janet Lacey
- Andrew Phillips
- Heather Russell
- Mandy Sennett
- Sally Simpson
- Amanda Smith
- Mike Wheeler
- Mike Young
- Martin Abrahams, *Head of Administration at NRS*
- Gerry Cockerell
- Evelyn Hall
- Esther Ker

Finance and IT

- Sandra Smith, ACMA, *Finance and IT Director*
- Laura Caless
- Carol Knight
- Timothy Knight, BSc
- Carole Martin
- Paul Morris
- Corinne Russell
- Janet Turner
- Ann Williams
- Wayne Blackburn, BSc, *Head of IT Services*
- Alec Gaw, BSc

Communications

- Xanthe Christophers, BSc, MSc, PGCE, PhD, *Communications Director*
- Joanne Davies, BSc
- George Gate
- David Georgiou, BA
- Eleanor Harland, MA, DipLib
- Catherine Oldham, BA, MA, DipLib, MCLIP
- Sally Taylor
- Glenn Brearley
- Kirsten Hutchison, MA

Research Liaison Officers

- Hugh Williams (England), BA, MSc, PhD
- Steve Penny (Scotland), BSc, MSc
- Chris Jones (Wales), BSc

Biometrics, Surveys and Statistics Division

- Helen McKay, BSc, PhD, MICF, CEnv, *Head of Division*
- Professor Sam Evans, UDip, BA, MA, PGDip, PhD, PhD, FCMI (currently on secondment with Defra)
- Catia Arcangeli, MSc, PhD
- Eric Casella, MSc, PhD
- Joy Cornwell
- Ian Craig
- Paul Henshall, BSc
- Geoff Hogan, BSc, DPhil
- Makihiko Ikegami, BSc, MSc, PhD
- Sebastien Lafont, BSc, MSc, PhD
- Ewan Mackie, BSc, MSc
- Robert Matthews, BSc, MSc
- Geoff Morgan, BSc, MSc, PhD
- Lyn Pearce
- Tim Randle, BSc
- Marc Sayce
- Paul Taylor, MA, MSc, MPhil
- Ian Tubby, BSc
- Miriam White, HND, BSc, MSc
- Christopher Vials, BSc
- Stephen Bathgate, BSc, BSc, PGDip
- Christine Brown
- Graham Bull
- Shona Cameron
- Lynn Connolly
- Tom Connolly, BSc, PhD
- Vera Correia
- Fauzia Davidson, BSc, MSc
- Justin Gilbert, BSc
- Celia Igreja Dias
- Mark Lawrence, BSc, MSc
- Linda Legge
- Una McEvoy, BSc
- Andrew Peace, BSc
- Lynn Rooney
- Juan Suárez-Minguez, BSc, MSc
- Esther Whitton
- Adam Ward

FR employs 275 staff, some of whom work part time, giving a total staff number of 264 full-time equivalents at 31 March 2008.

KEY: ■ Alice Holt ■ Northern Research Station ● Technical Development Office ● Field Station

People

Ecology Division

- Chris Quine, MA, MSc, FICFor, PhD,
Head of Division
- Stuart A'Hara, BSc, MSc, PhD
- Russell Anderson, MSc
- Helen Armstrong, BSc, PhD
- Rebecca Brassey, BSc, MSc
- Alice Broome, BSc
- Robert Coope, BSc
- Joan Cottrell, BSc, PhD
- Jason Hubert, BSc, PhD
- Darren Moseley, BSc, PhD
- Liz Poulson, MSc
- Duncan Ray, BSc
- Sam Samuel, PhD
- Roz Shields
- Louise Sing, BA, MSc
- Mike Smith, BSc
- Shirley Spencer
(also with FMD and TSU)
- Tytti Vanhalla, BSc, MSc, PhD
- Georgios Xenakis BSc, MSc, PhD
- Amy Eycott, BSc, PhD
- Mark Ferryman
- Robin Gill, BSc, MSc, PhD
- Philip Handley, BSc, MSc
- Ralph Harmer, BSc, PhD
- Andrea Kiewitt, BSc, MSc
- Brenda Mayle, MSc
- Shirley Stephens
- Roger Trout, BA, PhD
- Kevin Watts, BSc, PhD

Environmental and Human Sciences Division

- Professor Andy Moffat, BSc, PhD, DSc,
Head of Division
- Lorraine Adams, BSc
- Nadia Barsoum, BSc, PhD
- Sue Benham, BSc
- François Bochereau, BSc, MSc
- Samantha Broadmeadow, BSc, MSc
- Andy Brunt
- Claudia Carter, BSc, MSc
- Sylvia Cowdry
- Peter Crow, BSc, MSc
- Norman Dandy, BSc, MA, PhD
- Cecile De Munck, BSc, MSc
- Kieron Doick, BSc, MRes, PhD
- Tony Hutchings, MSc
- Lynn Jordan
- Anna Lawrence, BA, MSc, PhD
- Vicki Lawrence
- Alberto Morales, BSc, PhD
- James Morison, BSc, PhD
- Jake Morris, MA, PhD
- Jacqui Neal
- Tom Nisbet, BSc, PhD
- Liz O'Brien, BSc, PhD
- Richard Pilgrim, BSc
- Rona Pitman, BSc, PhD
- Danielle Sinnett, BSc, MSc
- Elena Vanguelova, BSc, MSc, PhD
- Christine Whitfield
- Matthew Wilkinson, BSc, MSc
- Jeremy Wingate, BSc, MSc
- Sirwan Yamulki, BSc, MSc, PhD
- David Edwards, BSc, MSc, MSc, PhD
- Mariella Marzano, BA, MA, PhD
- Vadims Sarajevs, MSc, MSc, PhD
- Gregory Valatin, MA, MPhil, PhD
- Roz Owen, BA, MA (Aberystwyth)
- Huw Thomas, BSc, MSc

Forest Management Division Incorporating Technical Development

- Bill Mason, BA, BSc, DSc, MICFor,
Head of Division
- Cathleen Baldwin
- Colin Edwards, BSc, MRes
- John Fonweban, BSc, MSc, PhD
- Professor Barry Gardiner,
BSc, PhD, FRMetS
- Sophie Hale, BSc, PhD
- Alan Harrison, BSc, MSc
- Madge Holmes
- Steve Lee, BSc, PhD, MICFor
- Elspeth MacDonald, BSc, MSc
- Colin McEvoy, BA
- Shaun Mochan, MSc
- Bruce Nicoll, BSc, PhD
- Margaret O'Donnell
- Steven Osborne, BSc (also with TSU)
- Mike Perks, BSc, MSc, PhD
- Stefania Pizzirani, BA, MSc
- Shirley Spencer
(also with ED and TSU)
- Rob Sykes
- Peter Gosling, BSc, PhD
- Richard Jinks, BSc, PhD
- Gary Kerr, BSc, PhD, FICFor
- Shelagh McCartan, BSc, MSc, PhD
- Matt Parratt, BSc
- Victoria Stokes, BSc, PhD
- Christine Woods, BA
- Ian Willoughby, BSc, MBA

Technical Development Ae, Scotland

- Andy Hall,
Head of Technical Development
- Duncan Ireland, BSc
- Bill J. Jones
- Ian Murgatroyd
- Joyce Rammell, BSc
- Colin Saunders
- Jean Saunders

Delamere

- Andy Hall (also at Ae)
- Paul Webster
- Stephanie Roux, MSc

Wales

- David Jones, EngTech, AMIAgrE
- Finlay McAllister, BA, BSc

KEY: ■ Alice Holt ■ Northern Research Station ● Technical Development Office ● Field Station

Tree Health Division

- Hugh Evans, BSc, DPhil, FRES, *Head of Division*
- Elizabeth Beal, BSc, PhD
- Professor Clive Brasier, BSc, PhD, DSc, Research Fellow
- Anna Brown, BSc, PhD
- Sandra Denman, BSc, MSc, PhD
- Daegan Inward, BSc, MSc, PhD
- Andrew Jeeves
- Martin Jukes, Cbiol, MIBiol
- Susan Kirk
- David Rose, BA
- Joan Rose
- Claire Sabin, BA
- Nigel Straw, BSc, PhD, FRES
- Christine Tilbury, BSc
- Kath Tubby, BA, MSc, DPhil
- David Wainhouse, MSc, PhD, FRES
- Joan Webber, BSc, PhD
- David Williams, BSc, PhD
- Sarah Green, BSc, PhD
- Steven Hendry, BSc, PhD
- Stuart Heritage, MBA, Cbiol, MIBiol
- Grace MacAskill
- Roger Moore, BSc, PhD
- Heather Steele, BSc

Field Stations

Technical Services Unit

- Janet Dutch, BSc, PhD, *Head of Unit*

NRS Engineering Services

- David Brooks, *Head of Engineering Services*
- James Nicholl
- John Strachan

Inver

- Nick Evans
- Andrew Kennedy, BSc
- Bill Rayner
- Pauline Simson, BSc

Ae and Bush Nursery

- Dave Watterson, *Head of Stations*

Ae

- James Duff
- Martin Mackinnon, BSc
- Patrick Home Robertson, BSc
- Will Thompson, BSc
- Harry Watson
- James White

Bush Nursery

- David Clark, *Nursery Manager*
- John Armstrong
- Colin Gordon
- Hamish Howell

Newton and Lairg

- Alistair MacLeod, *Head of Stations*

Newton

- Hazel Andrew
- Sam Catchpole, BSc
- Julie Gardiner, BSc
- Philip James, BSc
- Fraser McBirnie
- Stuart McBirnie
- Stephen O'Kane
- Gary Servant, BSc
- Colin Smart

Lairg

- Alexander Bowran
- Calum Murray
- Duncan Williams

Alice Holt and Exeter

- Mark Oram, BSc, MSc, *Head of Station*
- Jamie Awdry
- Bob Bellis
- Sue Bellis
- Tony Bright
- Steve Coventry
- Kate Harris
- Ian Keywood
- Jim Page
- Bill Page

Alice Holt Workshop

- Jon Davey
- Clive Muller

Exeter

- Alan Ockenden
- Anthony Reeves
- Barnaby Wylder

Fineshade, Thetford and Wykeham

- Elizabeth Richardson, *Head of Stations*

Thetford

- John Lakey
- Paul Turner
- Alistair Whybrow, BSc
- Steven Whall

Wykeham

- Lee Cooper
- Nicola Corney
- Patricia Jackson
- William Riddick
- Jake Thompson, BSc

Shobdon and Talybont

- Nick Fielding, *Head of Stations*

Shobdon

- Sharon O'Hare
- Martin Page-Jones
- Andrew Price, BSc
- John Price

Talybont

- Lyn Ackroyd
- Justin Chappell
- Dai Evans
- Ben Griffin, BSc
- Steve Howells
- Richard Keddle
- Michal Maniakowski, BSc
- Tony Price
- Tyrone Waldron

PhD students linked with Forest Research as at 31 March 2008

Tom Adams

University of Edinburgh
Modelling complexity in native
pinewoods

Sarah Archibald

Imperial College London
Classification of the UK population of
Dothistroma septosporum

Dave Auty

University of Aberdeen
Scots pine timber quality in Scotland

Matt Aylott

University of Southampton
Modelling climate change impacts on the
availability of short rotation coppice

Kate Beauchamp

University of Edinburgh
The biology of heartwood formation and
its influence on timber quality

Sophie Bertin

University of Edinburgh
Physiological ecology of understorey trees
in alternative management systems

Freia Bladon

University of Ulster
The impact of defoliating insects in a
changing forest environment

Niels Brouwers

University of Bournemouth
Wood cricket movement on the
Isle of Wight

Lois Canham

University of Stirling
Ecology of Capercaillie within a managed
pine forest

Fiona Caryl

University of Stirling
Pine martins

Vanesa Castan Broto

University of Surrey
Lay perspectives in coal ash pollution

Jo Clark

University of Wales, Bangor
Provenance selection for climate change

Filipa Cox

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

Julia Cox

University of Surrey
In-situ magnetic resonance of water
distribution and movement in living trees

Cathy Dowling

University of Durham
Use of manganese oxide for land
remediation

Helen Ellison

Imperial College London
Roundwood storage in the forest
environment

Ruth Fitzgerald

University of Reading
Quantifying soil carbon exchange in
lowland deciduous woodland

Priya Gadepalle

University of Surrey
Development of novel materials for land
remediation

Rachel Gaulton

University of Edinburgh
Remote sensing for continuous cover
forestry

Nicole Harris

University of Southampton
Differential gene expression in high
and low wood density poplar and
Sitka spruce trees

Theresa Huston

University of Exeter
Soil microbial population dynamics and
function, and soil carbon fluxes within
forest systems as influenced by climate
change and increased atmospheric CO₂

Clare Jones

University of Liverpool
An investigation into Holocene stand-
scale forest dynamics of British
woodlands

Stuart Kennedy

University of Aberdeen
Determining the genetic heritability of
wood properties of Sitka spruce critical to
timber strength

Katherine King

University of Brighton
Understanding teenage leisure and
woodlands

Laura Kruitbos

University of Aberdeen
The hitchhikers' guide to the forest

David Messenger

University of Edinburgh
Effect of UVB radiation on leaf litter
decomposition

Helen Murray

University of Glasgow
The impact of the Whitelee Wind Farm
development on the export of carbon
and nutrients to catchment runoff

Jenny Owens

University of Stirling
Restock vegetation for Black Grouse

Philippa Reid

University of York
The role of biotic interactions in
determining species' responses to climate
warming

Sabrina Reignoux

University of Edinburgh
Molecular ecology of *Lophodermium*
spp. on Scots pine

Matti Salmela

University of Edinburgh
Adaptive variation in natural populations
of Scots pine in Scotland

Helen Sneath

University of Surrey
The sustainability of charcoal as an
ameliorant in soil remediation

Juan Suárez-Minguez

University of Sheffield
LiDar analysis

Armand Tene

University of Dublin

Tree species adaptation to climate change

Emma Thorpe

University of Essex

Impact of nitrogen deposition on microbial diversity and function in relation to nitrogen/carbon cycling in different forest soils

Claire Twiddle

University of Exeter

Modelling the vegetation history of Inchriach Forest, Cairngorms

Leena Vihermaa

University of Glasgow

Tree growth influences on wood properties

Jeremy Wingate

University of Surrey

Use of charcoal for land remediation

Kirsten Wright

University of Reading

Investigation into best practice for the design and management of successful engineered wetland habitats on brownfield land

Patricia Xavier

University of Cardiff

Investigation of the hydraulic impact of floodplain woodland