

Ecotype

Autumn 2011

Ecotype is the biodiversity and conservation newsletter produced by Forest Research's Centre for Human and Ecological Sciences.

IN THIS ISSUE

- Editorial

- Woodland structure and birds – effects of woodland management and deer browsing

- LiDAR continues to discover new woodland heritage

- People-wildlife interactions

- Adaptive genetic variation of Scots pine in Scotland

- News and conferences

- About Ecotype

- Contact details



Grey squirrel.

Autumn has arrived and as the days get shorter and cooler, grey squirrels are starting to collect and bury (cache) acorns in readiness for the winter months ahead. Squirrels also like to eat other large tree seeds like hazelnuts, beechnuts and sweet chestnuts, some small broadleaf and conifer seed, and when available, soft-bodied fruits like blackberries and crab apples.

Editorial

Welcome to the Autumn 2011 issue of *Ecotype*, the biodiversity and conservation newsletter produced by Forest Research's Centre for Human and Ecological Sciences (CHES).

What's in this issue:

Andrea Kiewitt and **Alice Broome** start this issue off with an introduction to a new project investigating the habitat needs of woodland birds. They are also looking for participants to join in with the survey so if you're a private woodland owner, make sure you don't miss this!

Peter Crow provides an update on some fascinating new data revealed by LiDAR surveys.

Two of CHES's Social Scientists, **Norman Dandy** and **Mariella Marzano** give us an insight into current research on positive interactions between people and wildlife.

Joan Cottrell and **Matti Salmela** explain some of the work carried out by Matti, and his findings, during his recently completed PhD entitled 'Adaptive genetic variation in Scots Pine (*Pinus sylvestris* L.) in Scotland'.

We round the issue off with our **news and conferences** page which contains a fond farewell to a valued member of CHES and notes from the UK IPBES workshop attended by CHES's Chris Quine.

All together these articles highlight a small selection of the current projects we are working on at Forest Research. I hope you find this Autumn 2011 issue of *Ecotype* informative and enjoyable to read.

Claire Noel
Editor

Woodland structure and birds – effects of woodland management and deer browsing

Andrea Kiewitt and Alice Broome

A new research project has been commissioned by **Defra** and the **Forestry Commission** to improve our knowledge of the habitat needs of declining woodland bird species. **Forest Research**, in collaboration with **The University of Nottingham**, **RSPB** (Royal Society for the Protection of Birds) and **BTO** (British Trust for Ornithology) have been engaged to carry out the research.

The populations of several woodland bird species have recently declined in Britain, especially in broadleaved woods. This is thought to be due to changes in vegetation structure, particularly the loss of low, understorey vegetation. The likely causes are reduced levels of woodland management (e.g. thinning, coppicing) which appear to have resulted in heavier shading; and increased numbers of both native and non-native deer which have led to more browsing.



Broadleaved woodland.

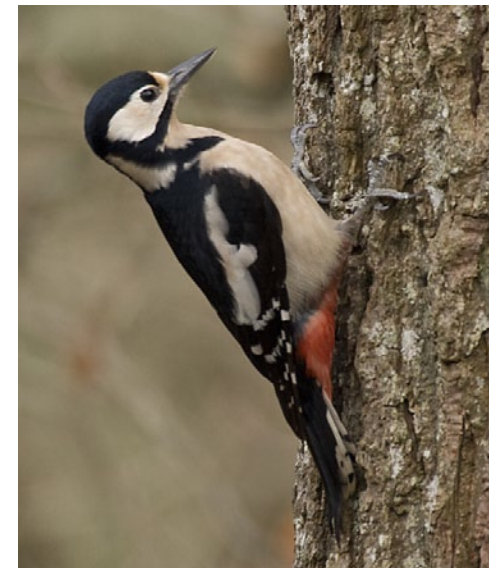


Coppice with standards.

The project aims to investigate how habitat quality for woodland birds is affected by woodland management and deer browsing by undertaking a large-scale survey of lowland broadleaved woodland in the UK. This will be complemented by a reference survey of upland conifer woodlands where populations of the target bird species have remained more stable.

The broadleaved woodland survey will involve around 150 study plots on land managed by the Forestry Commission and 150 study plots on privately owned land. It will cover a geographical area ranging from lowland Wales across the midlands to East Anglia and South East England. On each study plot the abundance of breeding birds, the vegetation structure and the deer browsing impact will be measured. The field work will be carried out by qualified field surveyors from the RSPB and the BTO.

Forest Research have several key tasks during the project such as assessing deer densities and interpreting how future forestry policy and practice may influence woodland birds, however our first task is to identify the field study sites. We are currently in the process of selecting suitable study sites using the criteria below and are looking for private woodland owners who would like to take part in this survey. The surveying field work will take place during 2012 and will involve one main survey visit followed by one or two shorter visits to assess the breeding birds. All of the assessments will be observations only and will not result in any disturbance or removal of material from the site.



Great Spotted Woodpecker.

(Continued on page 4)

Criteria for woodland survey sites

- 1 hectare minimum size.
- Not on acidic sands or heathland soil types; any other soil types are acceptable.
- Lowland broadleaved woodland, evenaged, single broadleaved species or mixed broadleaved species, but no conifers or conifer mixes (broadleaved stands that contain the occasional conifer are acceptable).
- High Forest of any age (but known planting date) or
- Coppice or Coppice with Standards, any age, any stage of rotation.
- Having received management interventions (e.g. felling, thinning, coppicing etc.) in last 20 years or having been unmanaged/no interventions for 20 years or more.
- Ideally with information on management history if known.

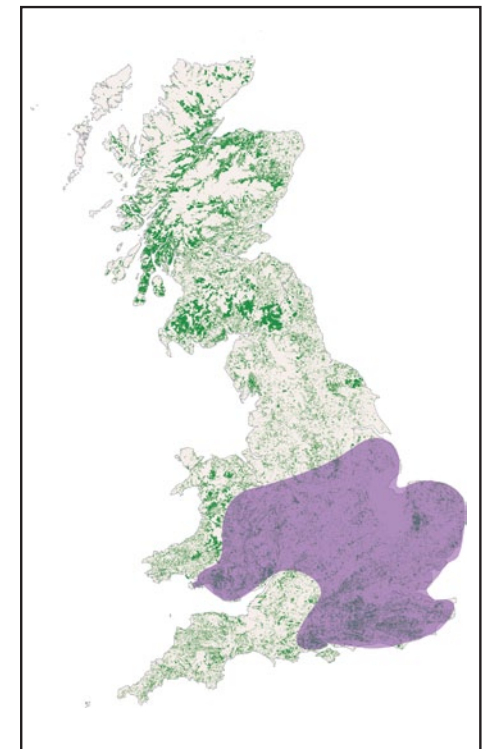


← Nuthatch.

- Geographical range:

Powys and South Wales, Shropshire, Hereford & Worcester, Gloucestershire, Staffordshire, West Midlands, Warwickshire, Oxfordshire, Buckinghamshire, Northamptonshire, Leicestershire, Nottinghamshire, Lincolnshire, Cambridgeshire, Bedfordshire, Hertfordshire, Norfolk, Suffolk, Essex, Hampshire, West and East Sussex and Kent.

Do you own an area of woodland that fits these survey criteria and would you like to take part in this survey? Then please contact [Andrea Kiewitt](#) before the end of October 2011.



Survey area.

For further information or to take part, please contact:

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LiDAR continues to discover new woodland heritage

Peter Crow

Following another successful winter of grant-funded LiDAR (Light Detection And Ranging) surveys, new data have been captured for the Medway Valley in Kent and the New Forest Crown Lands,

with a combined total area of over 480 square kilometres.

As with previous surveys, the focus was again on obtaining high resolution data for entire landscapes, allowing 3-dimensional surface models (including the canopy of wooded areas), terrain models

(also known as bare earth models where trees are processed out of the data) and vegetation height models to be created. These models are a practical tool to many land managers, planners, researchers and other stakeholders, allowing known landscape features and ecological habitats to be mapped and the discovery of previously unknown archaeological sites. Where previously unknown archaeological features are suggested from the survey (for example in wooded areas where the method is able to reveal features previously hidden beneath the canopy), many archaeologists are engaging with local volunteers to investigate them further.

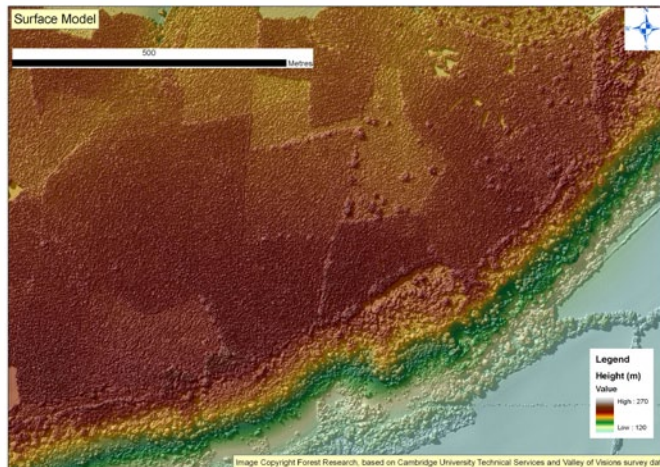


Image 1.

These two images show the surface and terrain models of part of the Medway Valley in Kent. Whilst the surface model (Image 1) is dominated by woodland canopy, the terrain model (Image 2) shows a previously unrecorded defensive trench of substantial size. This long trench was dug as part of a network to defend Britain in the event of a successful Channel crossing by enemy forces. Its position following the line of the hilltop would have provided a good defensive line against invading forces in the valley below.

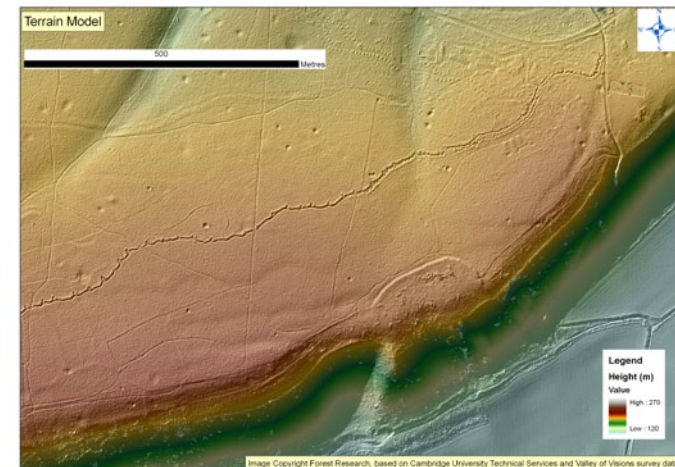


Image 2.

For further information on [Woodland Heritage](#) and [LiDAR](#), please contact:

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People-wildlife interactions

Norman Dandy & Mariella Marzano

People and wildlife interact in many and varied ways. Often focus is on negative interactions, or 'conflicts', such as crop damage or road-traffic accidents. However, there are also many positive interactions including the contributions wildlife make to human well-being, and providing economic



Main picture: Red Squirrel. Inset: Red Squirrel viewing hide.

opportunities. The Human Dimensions of Species Management project aims to improve understanding of these interactions to inform wildlife management and policy.

We are currently reviewing literature relating to the impacts of recreational activities on forest wildlife. Significant knowledge gaps exist around the human dimensions of these impacts including the social and cultural differences between recreationists, what affects their behaviour, and how they perceive their own and others' impacts on wildlife. These factors have a profound influence on when, where and to what extent impacts occur. Crucially we found no studies aimed at directly comparing the benefits of outdoor recreation against the impacts on wildlife, nor considering what a legitimate balance might be - exactly the kinds of judgement land-managers have to make. This review will be available via the [HDSM webpage](#) soon.

CHES scientists recently welcomed DEFRA wildlife policy and research colleagues to Alice Holt to discuss this work and their evidence needs. It was clear that social scientific analysis will be an increasingly important element of the evidence underpinning government policy and action on wildlife. CHES demonstrated FR's capacity to provide this, referring to recent work such as two RELU projects; '[Collaborative frameworks in land management: a case-study of wild deer in Britain](#)' and '[Assessing and communicating animal disease risks for countryside users](#)' and the '[Management of roe deer in the peri-urban environment](#)' project completed for the Scottish Government.

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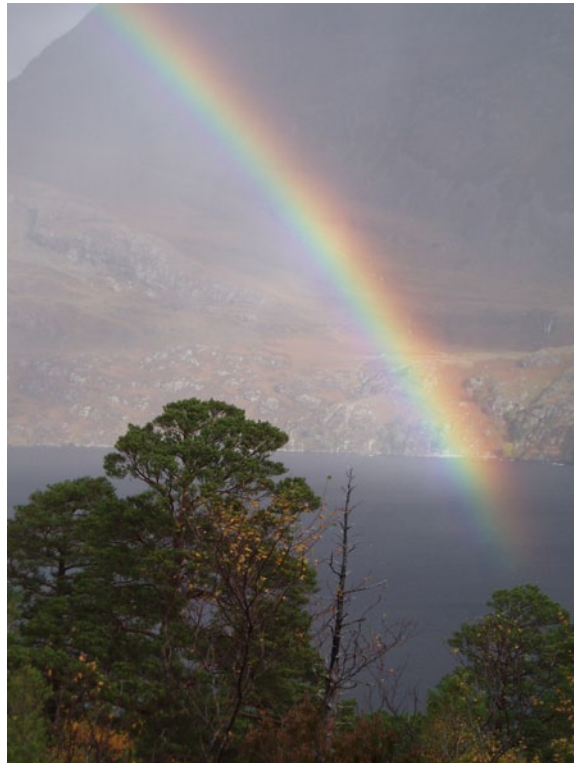
Adaptive genetic variation of Scots pine in Scotland

Joan Cottrell and Matti Salmela

Genetic differentiation of forest trees taken from different environments has frequently been observed in common-or-garden studies. However, this variation, which has often been adaptive, had not previously been studied in detail in the different Scots Pine (*Pinus sylvestris* L.) populations in Scotland.

As a result, current seed transfer guidelines do not consider environmental or adaptive genetic variation. To investigate whether genetic variation has occurred in response to environmental variation across Scotland, a glasshouse-based common-or-garden trial of ~3,360 seedlings from 21 populations and 84 open-pollinated families was established in 2007.

Various traits were examined. Timing of bud flush showed evidence of differentiation between populations, with those from cooler origins generally flushing earlier. Variation was also found



Scots pine.

among families taken from the same populations, suggesting that the trait is genetically controlled. Chlorophyll fluorescence was used to examine drought response in three-year-old seedlings. The response was not related to rainfall, but possibly to more complex moisture variables that also take into account additional factors such as evaporation. Photosynthetic capacity in response to cold winter temperatures also varied significantly among eight populations that were kept outdoors, and the largest reduction occurred in seedlings from the mildest, most maritime coastal site. The following spring, height growth and needle flush started earlier in seedlings from cooler locations.

Together, these data suggest that despite significant historical population size decrease, environmental gradients have resulted in genetic differentiation among native pinewoods. To minimise the risk of planting poorly adapted stock and maximise the success of replanting programmes, it is important that the origins of planting stock are carefully considered in management guidelines for the species.

This work was carried out by Matti Salmela, a PhD student jointly supervised by Joan Cottrell (Forest Research) and staff at Edinburgh University, the Centre for Ecology and Hydrology, and the James Hutton Institute

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News and conferences

Note of Meeting - UK IPBES (International Platform for Biodiversity and Ecosystem Services) Workshop

Chris Quine attended a meeting to discuss the focus of UK involvement in IPBES. There were four main topics of discussion, mirroring the four priority areas for IPBES:

- Catalysing knowledge generation
- Options for assessments
- Policy relevant tools and methodologies
- Capacity building

The meeting was run by Defra/JNCC (Joint Nature Conservation Committee) with substantial representation from UK nature agencies and academic departments. Further information on IPBES is available via JNCC, at the website <http://jncc.defra.gov.uk/page-5871>.

Amy is off to 'landscapes' new...

We would like to take this opportunity to announce the departure of Dr Amy Eycott for pastures, or more appropriately 'landscapes', new – and to wish her well.

Amy has been a key member of our landscape ecology group at Alice Holt for the past 5 years. During this time she has been influential in the development and application of some key topics. In particular, she has aided the translation of habitat networks from theory into policy and action, working with a range of people across the UK including foresters, policy makers and fellow scientists.



In addition to the applied work, Amy has been particularly passionate about the science behind our landscape ecological work at FR, as evidenced by her recent **systematic review** of whether different matrix types have an impact on species movement.

Amy's new role, a 4 year postdoc research position in the Ecological and Environmental Change Research Group, University of Bergen, Norway, builds on her landscape ecology track record providing an opportunity to take this scientific interest further. Her new work will look at the impacts of subsistence agroforestry and tea plantations on species movement between forest patches in Uganda.

Amy will be sadly missed by her colleagues at FR but we wish her great success in her new role in Norway & Africa.

About Ecotype

Ecotype addresses forestry practitioners and conservation professionals, in both the public and private sectors. Amongst our readership are people from:

- County and District Councils
- Natural England
- DEFRA
- Wildlife Trusts
- National Trust
- British Trust for Ornithology
- RSPB
- Woodland Trust
- Forestry Commission, Forest Enterprise
- Centre for Ecology & Hydrology
- Natural Environment Research Council
- Universities, Museums
- Private consultants
- Interested individuals

Who contributes

Most of the articles are written by people within the Centre for Human and Ecological Sciences and sometimes other parts of Forest Research about work related to biodiversity and conservation management of forests and woodlands. Contributions may also be invited from other parts of the Forestry Commission, and others working within forest biodiversity and conservation, subject to relevance to the main themes of Ecotype.

Note that the editor reserves the right to edit, delay or reject articles depending on the space available and relevance of the subject.

Contacts

To comment, provide material for future issues, or if you wish to receive Ecotype by e-mail, please contact the editor:

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Web links

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