

Forest Ecology Bulletin



British Ecological Society
Forest Ecology Group

Introduction

by MARKUS EICHHORN

The build-up to [INTECOL 2013](#) in London, from 18-23 August, is in full swing. If you're coming then don't forget our [workshop](#) on Priorities in Global Forest Conservation, as well as our [symposia](#), plus six full sessions of forest ecology. There will also be a FEG mixer on the Wednesday night, so come along and mingle with other forest ecologists and let me know what you would like the group to do in future. We can provide funding for events, workshops, meetings and all sorts of activities; the budget will be finalised in September and now is the ideal time to start planning!

Contents

Contents:

- [Forest of the Month](#)
- [Notices](#)
- [Upcoming Meetings](#)
- [Grants & Funding](#)
- [Employment](#)
- [Graduate Openings](#)
- [Field Stations](#)
- [Courses](#)
- [Articles](#)
- [Dates for the Diary](#)

The contents of this newsletter are determined by what you submit, so if there's anything you think should be included then please pass suggestions on to either me (markus.eichhorn@nottingham.ac.uk) or Jake Snaddon (jlsnaddon@gmail.com) by **23 August** for inclusion in the next issue, which should come out at the beginning of September. If you have received the Bulletin indirectly then you can sign up to receive more on our mailing list by going [here](#) and clicking 'Subscribe', or follow news between issues on Twitter [@BESforests](#). Until then, may all your stems be cylindrical.

Forest of the Month

by SUE BENHAM & MATTHEW WILKINSON (FOREST RESEARCH)

Alice Holt Research Forest

Originally launched in 2006, the Alice Holt Research Forest (AHRF) is one of three research forests either managed by or in association with the Forestry Commission; the others are the Dyfi Catchment and Woodland Research Platform, Gwynedd, Wales, and the Queen Elizabeth Forest Park, Stirlingshire, Scotland (due for launch in 2013). These research forests provide integrated study sites where a range of field experiments, environmental monitoring and surveys can be carried out by inter-disciplinary scientists. However, the Alice Holt Forest has been studied since long before 2006, as the Forestry Commission established its Alice Holt Research Station here in 1946 (now one of the two main research stations of Forest Research, FR). One of the main advantages to users of the AHRF is access to long term experimental and environmental data sets, ensuring that research and monitoring studies are carried out within a well-characterised environment. The results and findings from the various monitoring and experimental studies outlined in this article are being used to provide evidence in the development of future forestry policy related to climate and environmental change.

OVERVIEW OF ALICE HOLT FOREST

Located on the Surrey/Hampshire border in the south-east of England, Alice Holt Forest is 850 ha in total, comprising 376 ha of broadleaves and 338 ha of conifers, with the remainder being made up of other land uses. The soil is predominantly Gault clay, although there are areas of gravel on the higher ground. The climate is characteristic of south-east England, with average annual rainfall 780 mm and a mean screen air temperature of 13°C. The forest also includes the Alice Holt Forest Park, a prime recreation area with over 300,000 visitors a year.

Long term environmental monitoring

ENVIRONMENTAL CHANGE NETWORK (ECN)

In 1994 an ECN site was established by FR in Alice Holt Forest. The site is part of a national network of 12 terrestrial monitoring sites run by various organisations ([ECN website](#)) all following a system of core measurements to standardised protocols. The presence of key climate change indicator species, detected through frequent monitoring, provides information on how the forest's biota is changing. In addition, a comprehensive set of physical parameters such as soil and water chemistry, growth, and meteorology are also monitored, complementing detailed botanical and forest mensuration surveys.



Long term results from the ECN monitoring network are yielding important findings. The decline in atmospheric pollutant concentrations observed over the past 20 years has resulted in a reduction in soil acidity, leading to changes in plant communities. A detailed study of long-term meteorological trends (Morecroft et al., 2010) showed evidence of increasing temperature and rainfall across a range of ECN sites. Declines in moth populations have been linked to changes in climate (Pitts et al., 2005). A decline in ground beetle populations which was seen at other ECN sites was not evident at Alice Holt, indicating the micro-climatic buffering capability of woodlands (Brooks et al., 2012). Increasing carbon stocks in the upper layers of the mineral soil ($0.34 \text{ tC ha}^{-1} \text{ yr}^{-1}$) have been linked to increases in masting and litterfall, whilst increasing soil nitrogen stocks have been attributed to insect herbivory in the forest canopy (Benham et al., 2012).

ICP FOREST LEVEL II NETWORK

Established in 1995, the intensive forest monitoring plot at Alice Holt is located within the ECN site. The plot is one of a network of up to 10 UK monitoring plots forming part of the Europe-wide "Level II" network ([website](#)). The original aim of this network was to improve understanding into the effects of air pollution on European forests, but it is now also providing valuable data to examine other factors, including climate change, which are affecting our forest ecosystems.

Bulk precipitation, throughfall and soil water collected at the site have allowed the calculation of long term-trends in chemical fluxes, showing the ecosystem response to changes in deposition and recovery from acidification. Increasing trends in Dissolved Organic Carbon (DOC) and Dissolved Organic Nitrogen (DON) in soil water are likely

to be a direct response to both recovery and increasing soil temperatures leading to increased microbial activity (Vanguelova et al., 2010). Increases in DON and K periodically detected in throughfall have been attributed to defoliating caterpillar infestation within the canopy, which added an extra c.16 kgN ha⁻¹ yr⁻¹ during infestation events, and affected not only the forest condition and production, but also the chemistry of the soil beneath (Pitman et al., 2008). Records of litterfall made since 2001 have shown a corresponding decline in Leaf Area Index (LAI) associated with these attacks.



FOREST CARBON DYNAMICS

In 1998 an eddy covariance (EC) instrumented tower was established by FR at the Straits Inclosure within AHRF. The EC technique provides a direct measurement of the exchange of CO₂, H₂O and energy between the atmosphere and the forest, enabling the study of the carbon dynamics of this 70-80 year old, oak dominated woodland and supporting the development of stand-scale carbon process models. Over the 14 years that the EC tower has been running, considerable inter-annual variation in the Net Ecosystem Exchange (NEE) of CO₂ has been measured, ranging from 296 gC m⁻² yr⁻¹ in 2010 to 629 gC m⁻² yr⁻¹ in 2007, with a long term mean of 486 gC m⁻² yr⁻¹ (Wilkinson et al., 2012). This relatively large inter-annual variation can be partially accounted for by changes between years in environmental conditions such as air/soil temperature, solar radiation and soil moisture. However, biotic factors such as the severe outbreak of defoliating caterpillars, which occurred in 2009 and 2010, have also had an important effect on NEE by reducing the effective canopy area. The EC measurements have continued to the current day making the site one of the longest continuous ‘flux sites’ in the UK, and hosting a number of MSc and PhD studies and other collaborations with University partners.

REMOTE SENSING OF WOODLAND

Working in collaboration with the University of Edinburgh, changes in tree phenology and seasonal canopy development at the EC flux site have been closely monitored since 2009 (Mizunama et al., 2012) using high frequency repeat digital photography, a technique that

has become known as the “PhenoCam” approach. A remote PC-controlled, digital camera captures high quality images of the forest canopy every 30 minutes during daylight hours. The images can subsequently be inspected manually and the timing of key phenological events such as flowering, bud burst and the onset of autumn colouration identified without the need for intensive field visits. Alternatively the RGB digital numbers embedded within each image file can be used to calculate various quantitative canopy indices, such as the relative green index; this process can be automated using freeware software. Important seasonal differences have already been identified using both these approaches.

The AHRF has also been used in the development of other remote sensing applications such as aerial LiDAR which, when combined with conventional tree measurements, gives information on stand structure and tree growth.

Future directions

In order to protect and manage our woodlands and forests into the future, we need to continue to develop our understanding of the likely impacts of environmental and climate change. AHRF is a unique resource in the UK offering scientists the opportunity and environment to develop scientific understanding and ideas, and to address current gaps in our knowledge. We are keen to encourage a wide range of forestry and environmental research at this site, and we would welcome discussion about potential collaborations with interested individuals, institutes or universities.

For more information about long term environmental monitoring please contact [Sue Benham](#). For more information about the eddy-covariance, carbon dynamics and phenological monitoring please contact [Matthew Wilkinson](#).

References:

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- Vanguelova, E.I., Benham, S., Pitman, R., Moffat, A., *et al.* (2010). Chemical fluxes in time through forest ecosystems in the UK – soil response to pollution recovery. *Environmental Pollution* 158:1857–1869.
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Related web links:

- [Alice Holt Forest Park](#)
[Fluxnet](#)
[ILTER](#)

For a report on the recent joint meeting between the Farm Woodland Forum and Forest Ecology Group (13–14 June) held in Fife, Scotland, click [here!](#)



Farmer Andrew Mylius with his Aberdeen Angus herd grazing in amenity plantations on Brackmont Farm, Fife, Scotland.

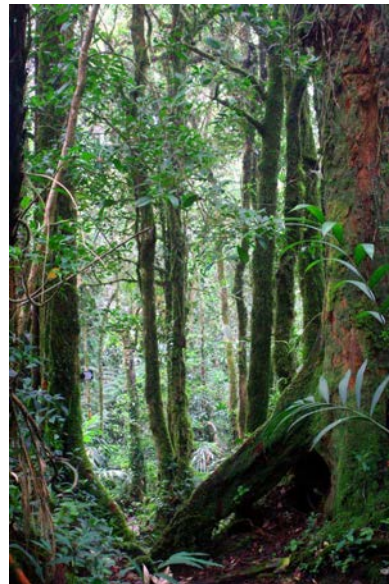
Notices

Forest ecology and conservation journal club

by PHIL MARTIN



If you are interested in joining in, and hopefully helping to run the club, please fill in this [short form](#). I will contact you all in the near future about this.



2009, and the FTC took no enforcement action.

ForestEthics is not transparent in declaring the sources of funding it receives and which it uses to promote FSC and undermine SFI. The truth of the matter is that both standards promote responsible forestry.

We invite ForestEthics to stop its campaign of misleading attacks and to devote its resources to working with SFI and millions of stakeholders across North America who are improving conditions in our forests day in and day out.

Forest certification has been widely adopted in North America and Europe; we encourage forest products, customers and consumers to help improve forest practices around the globe by supporting responsible forest certification programs including the Sustainable Forestry Initiative (SFI), Forest Stewardship Council (FSC), American Tree Farm System (ATFS), Canadian Standards Association Sustainable Forest Management Standard (CSA) and Program for the Endorsement of Forest Certification (PEFC).

Thomas Davreux
Secretary General
PEFC BELGIUM

Request for college-level ecology/forestry books in Spanish

by SHEILA WARD

On a Fulbright fellowship for forest resources in Quintana Roo, Mexico, I have become involved in a research project with forest engineering students at the Instituto Tecnológico de la Zona Maya near Chetumal. This is the only forestry program in the state of Quintana Roo, and there is a great need for it. The program recently received accreditation and has enthusiastic students. But the budget for the Institute is very tight, and the library is in dire need of books in Spanish in the basic sciences and mathematics, as well as in forestry and ecology. Anything will be useful.

Donations can be sent to: Sr. Vicente Sansores May, Bibliotecario,

Do you like forests?

Do you find it hard to keep up with the latest literature?

Do you want to meet other forest ecologists?

If you answered yes to any of these questions the forest ecology and conservation journal club may be for you.

Incidentally, if you answered no to these questions, why are you reading this newsletter?

My vision is that it would be a friendly chat using [google hangouts](#) (inspired by Jacquelyn Gill's [blog post](#)) where we can talk about whatever papers take our fancy, once a month. The only rule is they have to be something to do with forests.

I hope there will be something for you to get your teeth into at these meetings, whether you're into tropical trees or boreal bears. I hope we can also get something of a community going as well and help those involved network with people in the same fields of research.

I'm very aware that I'm meant to be handing my thesis in by December this year (as are my supervisors James Bullock & Adrian Newton), so I will need help to run this club.

Editor's comment: A notice in the last issue regarding a petition against the Sustainable Forest Initiative drew some critical feedback. I am pleased to print an opposing viewpoint below. I would further like to stress that the FEG does not take a stand on any issue, and this Bulletin acts solely as a means of communication among forest ecologists.

Setting The Record Straight

by THOMAS DAVREUX
T.DAVREUX@PEFC.BE

ForestEthics has accused the Sustainable Forestry Initiative® of "greenwashing" in violation of the Federal Trade Commission Green Guides. The Sustainable Forestry Initiative® (SFI®) is committed to complying with the U.S. Federal Trade Commission's Green Guides and the guidelines on environmental labeling and advertising issued by the Fair Business Practices Branch of Industry Canada's Competition Bureau. ForestEthics does not disclose that almost four years ago, they made this same accusation in a formal complaint to the FTC dated 9 September

Centro de Información, Instituto Tecnológico de la Zona Maya, Km 21.5 Carr. Chetumal-Escárcega, Chetumal, Quintana Roo, Código Postal 77617, México

Cell Phone Sr. Sansores: 001-44-983-753-3303

Email: visan256@hotmail.com

If you need more information, please contact me via [email](#).

Upcoming Meetings

Workshop on bark and ambrosia beetles

by [JIRI HULCR](#)



8–13 May 2014

The Forest Entomology and Symbiology Lab at the University of Florida is pleased to invite you to the first comprehensive, fun and nerdy workshop on bark and ambrosia beetles in May 2014.

Are you a researcher or a student interested in bark and ambrosia beetles? Do you need to know more about beetle identification, damage, or biology? Learn from international experts through hands-on labs, field demonstration, lectures, and fun socializing. Choose one or all three modules: Regional Applied Focus, Hardcore Identification, and Understanding the Bug. See details on our [website](#).

Sign up for updates — no spam, and you will be notified of the registration opening!

Invitation for submissions

by [KRISTINA ANDERSON-TEIXEIRA](#)

9–13 December

We would like to invite submissions to the session "B022. Dynamics of Global Forests under a Changing Climate" at the [AGU Fall Meeting](#).

Forests are an influential component of the global carbon cycle and play an important role in Earth's climate system. Climate change is altering forest dynamics, driving biogeochemical and biophysical feedbacks to the climate system. This session will focus on impacts of climate change on forests globally and consequent climate feedbacks. In particular, it will address both the mechanisms through which altered atmospheric CO₂ and climate are likely to impact forest dynamics — including physiological responses, community dynamics, and biogeochemical cycling — and the implications of forest-climate feedbacks that could buffer or accelerate change.

We expect that this will be a very interesting session, and hope that you'll be able to participate. The deadline for abstract submission is 6 August.

Kristina Anderson-Teixeira, Sean McMahon & Matteo Detto (conveners).

Grants & Funding

Forest Ecology Group Support

by [MARKUS EICHHORN](#)

The Forest Ecology Group can provide support via BES for events including meetings, symposia, workshops, field visits, training courses, or anything else that acts to bring forest ecologists together or engages with wider society. We principally fund activities within the United Kingdom but will consider events overseas provided that they can demonstrate benefit to the British Ecological Society and its members (offers of collaborative meetings are welcome). Please

contact me in the first instance to discuss any suggestions. Our annual budget is set in September and a basic proposal and outline budget are required by then.

Employment

Postdoc in Seed Dispersal

Rice University, TX

A postdoctoral research scholar position is available to work with Dr. Amy Dunham (Rice University) on a project aimed at exploring how the temporal interactions between vertebrate seed dispersers and their host plants may have important consequences for the spatial patterns of dispersal within a community. The work will be focused on Madagascar's southeastern rainforest combining observational, empirical and modeling approaches.

Applicants should have a PhD in ecology or related field with research experience in plant ecology and/or seed dispersal ecology. Desired qualifications include demonstrated independent thinking, a strong quantitative and modeling background and grounding in population and community ecology. Some verbal command of French is preferred but not required.

While there are some targeted research objectives, the position offers much opportunity for intellectual contribution by the postdoc. These include potential for postdoc-led side projects, first authorship on manuscripts, and co-authoring grant proposal submissions.

This appointment is initially for one year, renewable for a second year based on performance. Renewal beyond the second year is contingent upon performance and acquisition of funding. The position will be based at Rice University with time spent in field excursions to Madagascar. The start date is flexible but can begin as early as 15 August 2013.

Applications should be submitted as a single PDF document, including a cover letter, CV and the names

and addresses of three referees, by email with the subject heading “postdoc application” to Dr. Amy Dunham, Dept. of Ecology and Evolutionary Biology ([email](#)). Screening of applications will begin no sooner than 9 July 2013.

Postdoc in phyloinformatics

Aarhus University, Denmark

A one-year postdoctoral position is available on “Paleoclimatic effects on the evolutionary dynamics of forest tree lineages”. See [here](#) for full details.

For further information on the positions, see [here](#). General information for internationals coming to AU is available [here](#).

Postdoc — Climate Impacts on Spruce-Fir Forests and Birds

The University of Massachusetts Amherst, MA

We seek a postdoctoral fellow to model the effects of climate change on spruce-fir forest bird populations in the Northeast and upper Great Lakes Regions. The candidate will use existing data sets to model bird occurrence, distribution, nesting phenology and productivity as a function of spruce-fir forest stand characteristics and climate. These models will then be applied to projected forest and climate conditions to identify potential refugia sites. The candidate will work closely with an interdisciplinary team of faculty, staff, and students at UMass, the University of Minnesota, Michigan Technological University, the University of Maine, as well as researchers from the USFS, USGS, USFWS, NPS and the Vermont Center for Ecostudies. The position is currently funded for 2 years, and the target start date is September 2013 (negotiable). Minimum qualifications are a Ph.D. in biology, ecology, natural resources or a related field, and strong quantitative skills, particularly bird habitat modeling and spatial data analysis/GIS. Experience working with climate mod-

els, and using both empirical historical data and climate forecasts, is desirable. A competitive salary including benefits is offered. To apply please email a short cover letter summarizing your relevant experience and interest in the project, CV, and contact information for three references to [Dr David King](#). Review of applications will begin in early July 2013 and continue until the position is filled.

Postdoc in linking hyperspectral-lidar data to tropical forest structure and dynamics

University of Florida, FL

This postdoc will use high resolution hyperspectral-lidar remote sensing to inform the PPA forest dynamics model (Strigul et al. 2008, Ecological Monographs; Bohlman and Pacala 2012, Journal of Ecology) in species-rich tropical systems. We seek to understand how tree structural and physiological attributes that can be quantified by the image data relate to growth, mortality and allometry, which are key model inputs. Our goal is to identify groups of trees and species that have both similar dynamic rates and structural properties and distinct image characteristics. The post-doctoral researcher will analyze and synthesize image data and field data, such as individual tree growth rates and species structural and physiological traits, in the context of the PPA forest model. This research provides a unique opportunity to connect cutting-edge remote sensing technology/analysis with the development of a cutting-edge model of tropical forest dynamics. The ultimate goal of the project is to extend understanding and predictive capability from intensive study sites to wide swaths of tropical forest that are only accessible by airborne remote sensing systems. The position will be based at the University of Florida and focused on field sites in Panama. The University of Florida provides a strong academic community for tropical and ecological research.

The position requires background

and skills in remote sensing, background in ecology, forestry and/or plant physiology, strong quantitative skills, demonstrated ability to publish and to assist in grant writing, and good ability to work collaboratively. Familiarity with forest models is a plus.

Please send a cover letter describing your research interests and skills and how they relate to this position, along with a CV and the names/contact information of 3 references, to: Stephanie Bohlman, School of Forest Resources and Conservation, University of Florida, sbohlman@ufl.edu.

Assistant Conservation Forester

Manhattan, KS

The Kansas Forest Service is currently recruiting to fill an Assistant Conservation Forester position located at the State Office in Manhattan.

The incumbent responsibilities are to 1) promote conservation tree plantings through broadcast, social, and printed media, exhibits, tours, and field days, 2) work with related agencies to encourage and facilitate their involvement in the conservation tree planting program, 3) serve as the principle Conservation Trees order taking agent and provide leadership for others involved with order taking. This function includes inputting orders into the SAPS computer program, running credit cards through a First Data credit card machine, balancing accounts on a daily basis, and monitoring unpaid invoices, 4) serve as the principle for relaying shipping orders to the Shipping Department and provide leadership for others involved with relaying shipping orders to the Shipping Department in a timely manner, 5) assist Conservation Forester order, receive and inventory all supplies for tree sales so there is no interruption in daily operations, 6) prepare annual report, and, 7) serve as back-up for the greenhouse, shade house and shipping operations.

Minimum Qualifications: Bache-

lor's degree in forestry or closely related field, such as Natural Resource Management or Ornamental Horticulture. Ability to work effectively with others, both individually and in a team setting; organize work priorities and carry them to completion under limited supervision; and effectively communicate both orally and in writing. Computer skills such as database and word processing. Willingness to travel within state and out-of-state. Valid driver's license. A background check is required.

Salary: \$32,000-35,000. Salary is commensurate with education and experience.

Application procedures: Qualified applicants must submit: (a) letter of application; (b) current resume; (c) unofficial academic transcripts; and (d) the name, address and phone number of three professional references to Cathy Sandoval, Office Manager, Kansas Forest Service, 2610 Claflin Road, Manhattan, KS 66502. Review of applications begins 8 July 2013 and continues until the position is filled. Interested candidates may call (785) 532-3300 for more information or view the Kansas Forest Service [website](#). Our assistant forester position is posted on the Office of Affirmative Action [website](#).

Research Ecologist/Forester

Corvallis, OR

We are preparing to fill a permanent full-time (PFT) position in Corvallis, Oregon. The performance level of this Research Ecologist/Forester is GS-0408/0460-13/14/15. The Merit Promotion announcement is open to status eligibles. This announcement is open to current permanent federal employees with competitive status, reinstatement eligibles, persons with disabilities, VEOA eligibles, certain military spouses, 30% or more disabled veterans, former Peace Corps or VISTA volunteers, CTAP and ICTAP eligibles, and Farm Service Agency permanent employees of county committees. (Merit Promotion) — 13-2669-0243G-CAP. See [here](#) for details.

The DEMO announcement is open to all US citizens. (DEMO) — 13-2669-0243DP-CAP. See [here](#) for details.

Postdoc in Population Modeling

Department of Forest and Wildlife Ecology, University of Wisconsin-Madison, Madison, WI

The successful candidate will work on a NSF-funded project to develop a Bayesian population model that incorporates information on the spatial distribution of related individuals derived using genetic methods. The postdoc will be housed at Groningen University in the Netherlands, but will be a University of Wisconsin-Madison employee and collaborate with faculty at both universities.

Applicants should have a doctoral degree in quantitative ecology, biostatistics, population genetics, or closely related discipline by the start date. A strong publishing record, programming experience (Python, Perl, and/or C), population genetics background, and population modeling skills are essential.

The position will be available 1 Sept 2013 and the duration of the appointment is 13 months. Salary will be \$44,000 per year plus benefits.

Applicants should send a cover letter, curriculum vitae, and contact information for three references in a single pdf-file to [Dr Zach Peery](#). The CV should contain a list of publications and information describing relevant skills and experience. Reviews of material will begin 30 June 2013 and continue until a suitable candidate is found.

Technical Manager, Center of Forest Ecosystem Assessment

Alabama A&M University, Huntsville, AL

The Center of Forest Ecosystem Assessment (CFEA) at Alabama A&M University (Huntsville, AL) is seeking a technical manager to work closely with the Center's director and staff

to coordinate its research activities and daily operations. The center is funded by the National Science Foundation and composed of three thrust areas (biological community, ecosystem process and dynamics, and coupling human and landscape dynamics and patterns). The manager will coordinate multidisciplinary research activities; assist in developing proposals, prepare annual reports and newsletters and other related publications; coordinate seminar series; oversee the Center's website maintenance and updates; interact with the National Science Foundation, and other collaborating federal and state agencies and landowners; supervise technical support personnel; recruit students; and assist in coordinating the center's national and international collaborations.

Qualifications:

- MS degree or PhD in forestry, biology, ecology, wildlife or other natural resources related fields
- A good understanding of forest ecosystems and ecology
- Research experience and familiarity with the southern Cumberland region's flora and fauna
- Experience in field data collections and analyses
- Excellent written and oral communications skills
- Excellent time management and problem-solving skills
- Able to work with students and faculty with diverse cultural and professional backgrounds
- Experience in developing proposals, reports, newsletters, and manuscripts
- Webpage design and maintenance experience is a plus
- U.S. citizenship or permanent resident with valid clean driver's license

Preference will be given to candidates who have experience with NSF-CREST or forest ecosystems related research. Successful applicants will demonstrate the following skills: detail-oriented, effective communica-

tor, a good sense of direction, and possess a cheerful nature to endure unexpected conditions. International experience and language ability will help the center's recent international initiatives. Contract will be renewed annually depending on funding and performance. Pay Rate: \$35,000–\$46,000 (plus full benefits)

Closing Date: 1 September 2013 or until filled.

For application, please send cover letter, resume with three letters of references to Yong Wang, P.O. Box 1927, Department of Biological and Environmental Sciences, Alabama A&M University, Normal, AL 35762, yong.wang@aamu.edu.

Graduate Openings

Fully-funded PhD scholarships

University of Bangor, UK

We have fully funded PhD scholarships (including all fees, living costs and travel and research money) for capable students from anywhere in the world wanting to do research in the general area of Forests and Nature for Society. The students must work at two of the 7 partner universities (Copenhagen, Alnarp, Bangor, Dresden, Göttingen, Montpellier, Padova). Full instructions of how to apply are on the [website](#).

I am involved in three of the projects this year (see below). I am happy to discuss these ideas with interested students if they get in touch with some of their own ideas of how they'd like to develop the project and attaching a CV.

[Dr Julia Jones \(website\)](#).

HOW DOES BIODIVERSITY CONTRIBUTE TO THE CULTURAL SERVICES PROVIDED BY FORESTS?

It is increasingly recognised that society gets many benefits from ecosystems. Biodiversity in its broadest sense clearly underpins the supply of these ecosystem services as without biodiversity there would be no functioning ecosystems. However in a world where anthropogenic activi-

ties are resulting in loss of biodiversity at unprecedented levels, a much better understanding of the complex linkages between changes in biodiversity and human welfare is urgently needed. The importance of cultural services is increasingly recognised as evidence mounts that people value nature highly, that exposure to natural areas impacts wellbeing and that recreation in natural areas is important to mental and physical health. However, the extent to which biodiversity, rather than other environmental variables, influence the cultural services provided by ecosystems such as forests is poorly known. This project will include field work in at least three countries (possibly including the UK, Denmark, Madagascar, Bangladesh or Mauritius). Field work (involving choice experiments, analysis of national geographical data sets on biodiversity and cultural services, and semi-structured interviews) will aim to answer the following questions: 1) To what extent do various aspects of biodiversity influence the cultural services people obtain from forests? 2) How do these patterns vary with cultural background? 3) How is this affected by knowledge about biodiversity?

Principal supervisor at Bangor University, co-supervisor at University of Copenhagen.

WHOSE KNOWLEDGE COUNTS? HOW DIFFERENT FORMS OF KNOWLEDGE ARE USED IN POWER STRUGGLES OVER FOREST RESOURCES.

State forest administrations are the dominant forest management institutions in both the developed and the developing world. Usually, state administered forest management is based, at least in theory, on scientific information such as estimates of forest stock and growth based on standardized forest inventories that are fed into a management plan. The need to plan, perform and, not least, pay for such standardized forest inventories and management plans is invoked as a justification for the state retaining control over forests. Knowledge held by communities and tra-

ditional forest management practices and institutions are often not seen as valid in such negotiations. This raises several pertinent research questions. First, are forest management plans, generally, based on rigorous standardized forest inventories? Second, what forms of knowledge are used in the day-to-day forest management by state forest administrations and local communities, respectively? And, finally, what forms of knowledge are recognized in negotiations of rights and responsibilities over forest resources? This proposal calls for empirical research that engages one or more of these questions. The research would involve field work in one or more case studies. This could include cases in developed and/or developing countries.

Principal supervisor at University of Copenhagen, co-supervisor at Bangor University.

ASSESSING STRUCTURAL AND FUNCTIONAL LANDSCAPE CONNECTIVITY FOR MULTI-SPECIES CORRIDOR DESIGN

Landscape connectivity is important for avoiding species extinctions and for maintaining ecosystem functions. While structural landscape connectivity is relatively easy to quantify in a GIS, understanding functional landscape connectivity from the perspective of species requires an understanding of the behavioural response of individuals to landscape characteristics. In this project, we aim to use a multi-species simulation approach to compare models of structural versus functional landscape connectivity (the exact study area will be finalized in discussion with the student). We will use GIS data to first model structural landscape connectivity for the area, and then parameterize individual-based simulations to model landscape influences on realized movement and gene flow (potentially validating our models with genetic data). Key research aims are to: (i) develop a GIS database for quantifying landscape attributes (i.e., fences, land cover, etc.) that will likely affect movement and gene flow

in selected wildlife species; (ii) use individual-based simulations to assess how landscape complexity likely influences movement and gene flow in the different species; (iii) compare the resulting landscape models to identify corridor areas that are particularly important for maintaining functional landscape connectivity for multiple wildlife species in the study area.

Principal supervisor at University of Göttingen, co-supervisor at Bangor University.

MS in Urban Forestry Biometrics

University of Alabama, Al

A M.S Graduate Assistantship in the Department of Biological Sciences is available immediately at the University of Alabama for a highly motivated student to work on models of urban tree attributes, such as crown dimensions and biomass. The goals of this project are to better characterize and understand urban tree attributes and their value to society. The student will have the opportunity to interact with scientists from the University of Alabama, University of Florida, and USDA Forest Service. A general knowledge of forestry and/or urban ecosystems is required, as well as a solid background in statistical analysis, such as generalized linear mixed modeling. This is a fully funded teaching assistantship that includes: stipend, health insurance, tuition waiver, and summer salary. Interested students should send a copy of their CV, statement of research interest, and unofficial copy of transcripts to [Dr Christina Staudhammer](#).

Graduate Assistantship: Forest Demography

Utah State University, UT

I am seeking applications for a graduate student at either the MS or PhD level looking to work in large forest demography plots — the Yosemite Forest Dynamics Plot, the Wind River Forest Dynamics Plot, and

the naissant Utah Forest Dynamics Plot, all affiliated with the Smithsonian CTFS global network of forest plots. This position can involve studies of woody species demography, diversity, productivity, vertical and horizontal structure, or disturbance. This opening is at Utah State University, where I will be joining the faculty in autumn of 2013. Andrew Larson (University of Montana) is a collaborator on this project.

When enquiring, please include sufficient information to begin a dialog (at a minimum, your CV, an unofficial transcript, and GRE scores). Please also read some of my publications and those of my collaborators on related topics. The minimum GRE scores required for admission to Utah State University are the 40th percentile. But because our work in fire ecology, landscape ecology, and community ecology is computationally and quantitatively intense, I prefer students with good quantitative backgrounds (science, math, or engineering), and quantitative GRE scores above the 85th percentile (although that is certainly not a requirement). Our work environment includes R for statistics, MySQL for database work, ESRI for GIS and remote sensing, ENVI for spectral remote sensing, FUSION for LiDAR remote sensing, and Trimble and Leica for surveying. Any experience with those tools is great but not required. Paradoxically, field experience is not a requisite for application, but you will probably be doing a lot of it (I provide considerable in-the-field training for my students). My objective is to work as a partner with students to produce significant work, publishable in high quality journals.

Current email: jlutz@uw.edu.

M.S. Assistantship in Forest Entomology

University of Georgia, GA

The Warnell School of Forestry and Natural Resources at the University of Georgia, Athens invites applications from highly motivated and enthusiastic students for a

M.S. Assistantship starting in Fall 2013/Spring 2014. This collaborative work will focus on a newly documented scale insect species (*Matsucoccus macrocitrices*) from southeastern U.S., its interaction with associated fungal species, and its contribution to canker formation and dieback/mortality of eastern white pine. Our major objectives are to: determine the range and severity of dieback, and fate of symptomatic white pine trees in the southern Appalachians; assess if white pine health varies as based on site conditions; and determine correlations between the scale insect, fungal pathogens, cankers, and health of eastern white pine. This work will be conducted in close collaboration with the USDA Forest Service, Virginia Department of Forestry, and other cooperators.

The Forest Entomology laboratory ([website](#)) at University of Georgia is a dynamic group that works on a broad range of forest health issues, insect species, and ecosystem-types. We invite applications from highly self-motivated and enthusiastic students that are genuinely interested in working at the forefront of forest health issues. Training in forest entomology will be provided. Prior experience in forestry, entomology, and ecology will be an asset. A competitive M.S. assistantship for two-years along with full tuition waiver will be provided. Interested students should submit a letter of interest, current CV along with contact information for 2-3 referees, and unofficial transcripts to Dr. Kamal JK Gandhi (kjgandhi@uga.edu).

The Warnell School of Forestry and Natural Resources ([website](#)) is the oldest forestry school in the south, has >75 faculty working in diverse fields, and provides exemplary training of students in the fields of forestry, ecology, and conservation biology. The School is housed in a four-building complex on campus, and has >23,000 acres in the state for research, teaching, and service activities.

Ph.D. assistantship: Impacts of climate change on boreal forest soil organic matter chemical composition

Memorial University, Canada

A Ph.D. graduate assistantship is available for a keen and motivated student interested in research and training centered around understanding the impact of climate change on boreal forest soil organic matter reservoirs. This assistantship is available as part of an NSERC Strategic Project research team made up of foreign collaborators, provincial and Canadian Forest Service partners as well as Memorial University researchers in Earth Sciences and Chemistry. The project is focused on exploiting the established Newfoundland and Labrador Boreal Ecosystem Latitudinal Transect (NL-BELT) with four sites located in western Newfoundland and southern Labrador. The project is focused on the potential alterations in microbial transformations of soil organic matter (SOM) and losses of relatively slow turnover pools of SOM that may occur with warming along this boreal forest transect. To isolate the potential impact of warming while maintaining an ability to apply the results to intact boreal forests, our group has been conducting investigations of soils along the NL-BELT and combining these with manipulative warming experiments to develop biogeochemical indicators of soil responses to increasing temperature. It is anticipated that this Ph.D. student will focus on the alteration of the chemical composition of soil pools and their sources with warming and across this boreal forest latitudinal gradient via multiple techniques but with a focus on solid state nuclear magnetic resonance (NMR) spectroscopy. Experience with soil biogeochemistry, organic geochemistry, and/or environmental chemistry particularly at the M.Sc. level will be important. Consideration of students seeking a M.Sc. degree will only be considered in cases where a strong background of experience in environmental chem-

istry is demonstrated (e.g. successful B.Sc. honors thesis). Applicants should be willing and able to conduct field research at remote study sites for weeks at a time.

This assistantship will be available as early as 1 September 2013 through the Department of Earth Sciences or the Ph.D. program in Environmental Sciences at [Memorial University](#). Memorial is the largest university in Atlantic Canada. As the province's only university, Memorial plays an integral role in the educational life of [Newfoundland and Labrador](#). Offering a diverse set of undergraduate and graduate programs for approximately 18,000 students, Memorial provides a distinctive and stimulating environment for learning in [St. John's](#), a very safe, friendly city with great historical charm, a vibrant cultural life, and easy access to a wide range of outdoor activities.

Please direct inquiries or send applications, including letter of interest and detailed curriculum vitae (including contact information for 3 references), to: Dr. Susan Ziegler (sziegler@mun.ca). Applications will be considered until 15 July 2013.

PhD Scholarship — Ecophysiology of a canker-affected eucalypt species

The University of Western Australia

This PhD project is part of a larger ARC linkage project entitled: "Understanding the underlying causes and practical management solutions to marri (*Corymbia calophylla*) decline in the South West of Western Australia". Marri is an iconic overstorey eucalypt species which is widely distributed throughout the south-west of WA. Stem cankers on marri have been found to occur throughout SW Australia since the late 1960s, with increasing rates of mortality attributed to cankers in the 1970's and recommendations to urgently determine cause and effect and to develop options for disease control in the 1990s. More recently it was

shown that the incidence and severity of the disease was increasing and that large bleeding cankers on the trunk and branches were caused by a novel pathogen (*Quambalaria coyrecup*). Today more than 80% of trees of all age classes are infected in some areas by a range of *Quambalaria* species, with the potential for major economic, social and ecological implications. The increase in disease occurrence and severity is likely to be at least partly associated with the decreasing rainfall in the SW of Australia which has resulted in declining groundwater tables and severely drought-stressed ecosystems.

We are seeking a highly motivated PhD student to determine how genotype and environment interact to influence plant condition and disease progression, and how disease affects plant condition. Drought stress will be of particular interest. Experimental work will involve glasshouse trials, common garden experiments as well as work in natural stands and will involve a range of techniques including measurements of gas-exchange, sapflow rates and water potential. A background in plant ecophysiology, with experience in plant water relations or in plant phytopathology is desirable. The successful candidate will work in close collaboration with other partners on the Linkage grant (i.e. at Murdoch University and the Department of Environment and Conservation) and will be part of the multidisciplinary state-funded Centre of Excellence for Climate Change Woodland & Forest Health.

For information about the position and how to apply, please see [here](#). For more information about the Centre of Excellence for Climate Change Woodland & Forest Health see [here](#). Closing date for the position is 20 July 2013.

PhD Assistantship: Forest Ecology & Management

University of Idaho, ID

We seek a PhD student with interests in forest ecology, forest management, and ecosystem science to help conduct a research project on forest management. The goal of the project is to evaluate how the collection of woody residues to generate bioenergy following commercial harvests and pre-commercial thinning will affect forest carbon sequestration and greenhouse gases emissions relative to “business as usual” management. The PhD student would be responsible for estimating effects of management activities on pools of carbon and nitrogen in the soil, roots, trees, and woody debris. This would include supervising undergraduate students to conduct field sampling and sample processing. This is one of several new forest bioenergy research projects at the University of Idaho, so the PhD student will have the opportunity to engage with a cohort of graduate students with similar research.

Candidates should have experience conducting fieldwork in forests or similar settings, and demonstrated organizational and analytical skills. Funding has been granted for a three-year research assistantship, including tuition and a competitive stipend. Applicants should send 1) a letter of interest and qualifications, 2) a resume that includes contact information for three references, 3) GRE scores, and 4) transcripts to [Mark Coleman](#) and/or [Alan Talhelm](#). We anticipate the student would officially apply to enroll for the winter semester, starting January 2014. However, the project is on-going and funds are available for the student to begin work immediately. Applications will be reviewed as they are received and review will continue until a suitable candidate is selected.

PhD position: Climate-related tree dieback

University of Alberta, Canada

A PhD position is available in the Department of Renewable Resources at the University of Alberta to study climate-related tree dieback in western Canada.

In North America, Europe and elsewhere, many forests may be at increasing risk of climate-related dieback. Climate change-related forest dieback is an emerging topic with global significance. The PhD student will study potential causes of climate-induced tree mortality, using forests in western Canada as a model system. The project aims at studying how drought episodes promote dieback via changes in xylem (the water-conducting pipes of a tree) structure and function. Most of the research will be done in the laboratory, but the project will also involve some limited field work. There will be collaboration with a research group in Germany, which studies this topic in European forests. The student will spend several months with the collaborating team in Munich as part of the program.

The student will work under the supervision of Dr. Uwe Hacke. Candidates interested in plant physiology, ecology, forestry and/or climate change are encouraged to apply. Selection will be based on academic achievements, reference letters and if applicable previous research experience. Strong verbal, written, and analytical skills are essential. Excellent English skills are important. The applicant must meet the entrance requirement for the University of Alberta, Department of Renewable Resources (see [here](#) for details).

Interested candidates should email their transcripts (scanned would be fine for the unofficial application), CV, a letter describing their research experience and interests (2-page limit), recent TOEFL scores (if appropriate), and the names and contact information of three references to [Dr Uwe Hacke](#) and/or [Dr Vic Lieffers](#).

MSc Assistantship — Effect of deer browsing and environmental factors on forest vegetation

Alabama A&M University, AL

I am looking for a Master's student to investigate the effect of deer browsing and environmental factors on the composition, diversity, and dynamics of forest vegetation in Alabama. More details about the position and how to apply can be found [here](#).

[Luben Dimov](#)

MS position in vegetation dynamics

Texas State University, San Marcos, TX

Open immediately: Research/teaching scholarship available for a qualified MS student at Texas State University — San Marcos. The focus of this research opportunity is the recent tree die-off event that affected the state of Texas in the aftermath of the drought years of 2009 and 2011. The student will travel throughout west and central Texas and collect field data to quantify tree mortality rates and their site-specific correlates. Interested students are invited to participate in working with a dynamic vegetation model to improve the prediction of drought-related tree mortality events. For more information contact [Dr Susan Schwinning](#) and visit the Schwinning Lab [website](#).

Field Stations

No items this issue.

Courses

Fungi for Forest Ecologists

by MARTHA CROCKATT



8 October

The John Krebs Field Station,
Wytham, Oxford, UK

SPONSORED BY FEG!

A one day workshop in Wytham Woods (Oxford) for forest ecology research professionals, postgraduate students or other interested parties to increase their understanding of the roles of fungi in forest ecosystems.

Fungi are vital to forest ecosystems functioning through their roles as plant symbionts and decomposers. Perhaps due to the difficulty in studying fungi, combined with lack of interaction between forest ecologists and mycologists, the impact of fungi within forests is often not fully acknowledged or understood within mainstream forest ecology. This workshop will bring together research professionals in both fields, to enable forest ecologists to learn directly from mycologists about the basic functions of fungi within forests, and how this knowledge might be applied to, or influence, their research.

The day will consist of a combination of classroom and field based activities within Wytham Woods, focussing on saprotrophic and mycorrhizal fungi and their roles in forest ecology. Sessions will be lead by Prof Lynne Boddy (Cardiff University), Dr Andy Taylor (James Hutton Institute) and Dr Martha Crockatt (event organiser; Earthwatch). The event is sponsored by the British Ecological Society.

Costs are £50 (£30 students), plus a booking fee.

Please contact [Martha Crockatt](#) to sign up for the event, or if you have any questions.

Online Graduate Certificate in Forest Carbon Science, Policy and Management

by DAVID ROTHSTEIN

Michigan State University

Starting Fall 2013, the Michigan State University, Department of Forestry will once again offer the Graduate Certificate in Forest Carbon Science, Policy and Management. And we are pleased to announce that each of the four courses required to complete the certificate are now available online.

The Graduate Certificate in Forest Carbon Science, Policy and Management offers students the interdisciplinary tools and conceptual background to plan, implement, manage and evaluate forestry-based, climate-change mitigation projects. The Certificate program gives students an edge in competing for employment in carbon mitigation projects of corporations, governments, and non-governmental organizations.

The program teaches students how forest management actions affect forest carbon balance, the ins and outs of forest carbon markets, the social context of managing forests for carbon sequestration, and the tools for measuring, monitoring, and accounting for forest carbon — including satellite imagery, remote sensing, and integrated carbon sequestration models.

The program is open to a wide range of students, including students with a bachelor's degree who are not enrolled in an M.S. or Ph.D. program, as well as current M.S. and Ph.D. students at MSU and other universities. To be considered for admission into the Graduate Certificate in Forest Carbon Science, Policy and Management program, applicants should have completed a bachelor's degree in forestry, natural resources, envi-

ronmental sciences, or a related field. The program is open to students in any environment-related graduate program at MSU.

Given the need to integrate sustainability and climate change mitigation across all economic sectors, the program will consider applicants from all backgrounds, including those involved in business, law, forestry, natural resources, environmental consulting, and government. Students without experience in forestry or a related field may need to supplement the certificate courses with independent study or additional coursework. The certification will appear on transcripts of MSU Graduate Students. Students not enrolled in an MSU graduate degree program will receive an MSU Certificate.

To earn the Certificate, students must complete all of the following courses:

- Forest Biogeochemistry and Global Climate Change (FOR 831)
- Human Dimensions of Forest Carbon Management (FOR 833)
- Forest Carbon Policy, Economics, and Finance (FOR 835)
- Measurement and Monitoring of Forest Carbon (FOR 837)

FOR 831 and FOR 833 will be offered during Fall Semester 2013 and FOR 835 and FOR 837 will be offered in Spring Semester 2014. See MSU Schedule of Courses for more detail. For more information, visit the [website](#) or contact Dr. David Rothstein at rothste2@msu.edu.

Veteranisation Course

by [NICKY DANIEL](#)



12 November

Hatfield Forest, Essex, UK

Managing for deadwood habitat in living trees — a comprehensive one day course designed for countryside managers, rangers, arborists and advisors.

The course complements the already popular Veteran Tree Management course run at Hatfield Forest. It is the ideal setting, with a long history of managing veteran trees and “bridging the age gap” between these and the new generation of young pollards. The course will take

you through the theory as well as the practical techniques to encourage faster development of habitat in younger trees. There will be a practical demonstration of pioneering work using explosives.

Course Costs: £150 excl. VAT. For details call 01279 870678 or email [Nicky Daniel](#) for details. Visit our [website](#) or find us on [Facebook](#).

Veteran Tree Management Course

by [NICKY DANIEL](#)



29-30 January 2014

Hatfield Forest, Essex, UK

Do you work with veteran trees? This comprehensive two-day course is a must for anyone with veteran trees in their care — countryside managers, arborists and advisors.

The course will provide you with the necessary toolkit to effectively manage your veteran tree population. Hatfield Forest is the perfect case study due to its long term, consistent approach to pioneering “environmental” arboriculture. Using a mixture of classroom and outdoor sessions, Day One will provide the

background surrounding the management of veteran trees, the aging process, surveys, practical techniques for conservation and considerations when using contractors. During Day Two you will get to see trees being worked on. The final session will summarise the morning’s work and also discuss how environmental arboriculture can be put into practice at your own site.

Course Costs: £150 excl. VAT. For details call 01279 870678 or email [Nicky Daniel](#) for details. Visit our [website](#) or find us on [Facebook](#).

Ecological Statistics

by SOLEDAD DE ESTEBAN TRIVIGNO

Barcelona, Spain

Registration is open for the following courses:

- A Friendly Introduction to Ecological Statistics, 18-19 November ([website](#)).
- A Toolkit of Ecological and Environmental Data Analysis, 20-22 November ([website](#)).

Instructor: Dr. Øyvind Hammer (University of Oslo, Norway). Location: [Els hostalets de Pierola](#), Barcelona, Spain. Organized by: [Transmitting Science](#) and the Council of Hostalets de Pierola. More information: courses@transmittingscience.org.

Free PAST software will be used in the courses. Participation in both courses has a discount.

Articles

2013 Annual Meeting of the Farm Woodland Forum

SPONSORED BY FEG!

by JO SMITH (ORGANIC RESEARCH CENTRE) & DAVID PILBEAM (UNIVERSITY OF LEEDS)

Woodland Grazing was the focus of this year's Farm Woodland Forum annual meeting held jointly with the Forest Ecology Group of the BES in the beautiful surroundings of the Falkland Centre for Stewardship in Fife, Scotland on 13–14 June. Presentations on the first day focused on the ecological impact of grazing in woodlands, as well as hearing from representatives from Natural England and Forestry Commission Scotland on how agroforestry is being considered for the next rural development programme in the two countries. Presentations will be available shortly on the [Farm Woodland Forum website](#).

An interesting afternoon was spent first visiting a new orchard on the Falkland estate where apple trees have been planted into an existing ryegrass/bent grass/clover pasture in east-west rows, with the intention that in a few years (when the trees have grown to about 4.5 m) it can be grazed by sheep. The delegates then visited Brackmont Farm and Forestry at the St Fort Estate, Fife, by kind invitation of the owners, Andrew and Hilary Mylius. The estate comprises 1,500 acres (607 ha), two thirds arable land, split equally between grass and arable fields, and one third woodland. The farm keeps pedigree sucklers, one herd of 85 pedigree Aberdeen Angus and one herd of pedigree Lincoln Reds. In 1994, tree planting was carried out on the farm as cereal prices were low. Some of the lighter land was planted, with the aim of providing further shelter but with the emphasis on amenity plantations (for landscape and shooting) rather than production plantations. As well as Scots pine and sitka spruce, the hardwoods ash, cherry, oak, silver birch and sycamore have been planted.



Figure 1: Aberdeen Angus herd grazing in amenity plantations on Brackmont Farm, Fife, Scotland.



Figure 2: Agroforestry trials at Glensaugh Research Station, Kincardineshire, Scotland. Sheep grazing in the sycamore plots planted at 100 trees/ha.

land site at Loughgall, DANI), one site in the Brecon Beacons in south Wales (Bronydd Mawr, IGER) and a lowland site in Devon (North Wyke, Rothamsted Research). The delegates were given an overview of the work at Glensaugh by the Farm Manager, Donald Barry, and were then shown the agroforestry plots by Dr Alan Sibbald. The agroforestry experiments were planted in 1987, and they have been managed on a care and maintenance basis since 2001. Some research on the soils have been carried out since that time, but the plots are used as part of the grazing of the farm. The trees provide valuable shelter for the livestock, with some of the woodland blocks acting effectively as a 'living shed' in winter.

A more detailed meeting report can be found on the FWF website [here](#).

In 2009 the hardwood blocks (and some of the better conifer blocks) were fenced off, so that the cattle could be introduced without damaging the trees. The hardwood trees are now of such a height that the fencing could possibly be removed. Cows and calves are moved in and out of the wooded areas as weather dictates, with the trees giving good shelter. The grazing (ryegrass/bent grass, with some cocksfoot, plantains, black medic, clover and vetch) is productive. The ambience and sporting use of the estate has improved, and the suckler herd has been expanded without new sheds being required.

On 14 June the delegates visited Glensaugh, part of the James Hutton Institute. The site is part of the UK Silvopastoral Network (with other sites a lowland site at Bangor in North Wales, two sites in Northern Ireland (one upland site at Broughshane, DANI, and one low-

Dates for the Diary

2013

- **4–9 August** ESA *Sustainable Pathways: Learning From the Past and Shaping the Future* Minneapolis, MN ([website](#))
- **18–23 August** INTECOL 11: *Ecology: Into the Next 100 Years* London, UK ([website](#))
- **17–20 September** 17th Evolutionary Biology Meeting Marseilles, France ([website](#))
- **19–20 September** Central African Forests and Institutions Paris, France ([website](#))
- **23–27 September** European Forest Institute *Our forests in the 21st century – ready for risks and opportunities?* Nancy, France ([website](#))
- **8 October** Fungi for Forest Ecologists Wytham, Oxford, UK ([email organiser](#))
- **8–10 October** Wildland Fire in the Appalachians Roanoke, VA ([website](#))
- **9–11 October** Silvilaser *13th International Conference on LiDAR Applications for Assessing Forest Ecosystems* Beijing, China ([website](#))
- **9–13 December** AGU Fall Meeting San Francisco ([website](#))

2014

- **13–15 January** American Society of Naturalists *Next generation naturalists: new perspectives on integrating evolution ecology and behavior* Asilomar Conference Center, CA ([website](#))
 - **8–13 May** Bark & Ambrosia Beetle Academy Gainesville, FL ([website](#))
 - **19–23 May** Association for Fire Ecology *Large Wildland Fires: Social, Political & Ecological Effects* Missoula, MT ([website](#))
 - **28 June – 4 July** International Statistical Ecology Conference Montpellier, France ([website](#))
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