

## The third annual BIFoR Community Meeting

30 and 31 January 2019, Writer's Suite, Edgbaston Park Hotel and Conference Centre

### Day One

- 11.00 **Welcome**, Prof Jeremy Pritchard, University of Birmingham
- Key note speech, The Tree Health Resilience Strategy: building the resilience of our trees, woods and forests to pests and disease**, Prof Nicola Spence, DEFRA
- Why plants haven't properly colonised the land**, Prof Jeremy Pritchard, University of Birmingham
- The Uses of Forest History**, Dr Frank Uekötter, University of Birmingham
- The new £1m, Leverhulme Trust Doctoral Scholarship Scheme (DSP) Forest Edge**, Prof Rob MacKenzie and Dr Simon Dixon, University of Birmingham
- 12.45 **Poster session and lunch**
- 14:10 **Afternoon session**, chaired by Dr Simon Dixon
- Past, Present and Future of Natural Capital in Forest Enterprise England**, Jacob Waller, Forestry Commission
- Priming trees for self defence against pathogens**, Dr Estrella Luna-Diez, University of Birmingham
- Development of tools for dissection of oak-tree diseases**, Dr Graeme Kettles, University of Birmingham
- Evaluating forest biodiversity: a macroecological perspective**, Dr Tom Matthews, University of Birmingham
- 15.10 **Tea and coffee break**
- A new governance model for the city's green estate**, Nick Grayson, Birmingham City Council/ University of Birmingham
- The multiple benefits of green infrastructure, including its impact (alongside urban form) on air quality at block-to-borough scales.** Dr Emma Ferranti, University of Birmingham
- The role of strategic green infrastructure in reducing exposure to road transport pollution at street scale, for improved public health**, Dr James Levine, University of Birmingham
- Low-cost sensors using raspberry pi technology – The leaves on the line problem: High resolution leaf fall monitoring and low adhesion forecasting using hemispherical Near Infrared imagery**, Jennifer Kirby, University of Birmingham
- 16:30 Conference closes

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### Day Two

Optional – morning tour of the Winterbourne gardens (must be booked in advance)







- 11:00 **Welcome**, Prof Rob MacKenzie, University of Birmingham
- Key note: CO<sub>2</sub> and carbon uptake by land ecosystems: towards a synthesis of theory, observations and models**, Prof Colin Prentice, Imperial College London
- An overview of the BIFoR Free-Air Carbon Dioxide Enrichment (FACE) facility**, Rob MacKenzie, Director of BIFoR, University of Birmingham
- Insects as key drivers of change in woodland systems under climate change**, Liam Crowley, University of Birmingham
- Soil respiration and biogeochemistry at BIFoR FACE**, Angeliki Kourmouli, University of Birmingham
- Fungi of the future: Assessing the effects of elevated CO<sub>2</sub> on fungal communities in temperate forests**, Aileen Baird, University of Birmingham
- Quantitative modelling of root growth and carbon allocation bridging theory and experiment**, Clare Ziegler, University of Birmingham
- 13:00 **Poster session and lunch**
- 14:30 **Afternoon session**, chaired by Prof Bill Bloss
- Drivers of differences in carbon turnover rates between global vegetation models**, Dr Tom Pugh, University of Birmingham
- UAV-based measurements of Solar Induced Fluorescence under elevated CO<sub>2</sub> in a mature oak canopy**, Dr Kadmiel Maseyk and Dr Rick Thomas
- Nitrogen cycling and sensing in forest soils**, Dr Sami Ullah, University of Birmingham and Dr Aleksandar Radu (University of Keele)
- 15:30 **Tea and coffee break**
- How does CO<sub>2</sub> enrichment influence leaf litter decomposition rates and within season tree growth?** Dr Alan Jones, Dr Martha Crockett, Earthwatch Institute
- Assessing elevated CO<sub>2</sub> effect on the physiological performance of seedlings of the most representative species found in Mill Haft**, Dr Carolina Mayoral
- A Distributed Heat Pulse Sensor Network for the quantification of subsurface heat and water fluxes**, speaker to be determined
- 16:30 Conference closes




Speaker biographies - Day One

	<p><b>Prof Nicola Spence, DEFRA</b></p> <p>Nicola is Defra’s Chief Plant Health Officer (CPHO) and is the Head of the National Plant Protection Organisation for the UK. The role of CPHO involves advising ministers, industry and others about the risks posed by plant pests and diseases, and ensuring that measures are in place to manage those risks and minimise their impact, as well as leading the operational response in the event of a disease outbreak. Although plant health is a devolved matter; the CPHO co-ordinates the UK response to European and International plant health matters and takes the lead on national plant health emergency response. Nicola is an experienced research plant pathologist and worked on virus diseases of horticultural crops in the UK and internationally for over 20 years. She is an expert in plant health and international plant trade and was previously the Head of Plant Health and then Chief Scientist at the Food and Environment Research Agency.</p>
	<p><b>Prof Jeremy Pritchard, University of Birmingham</b></p> <p>Director of Education for BIFoR and the College of Life and Environmental Sciences. Jerry is a plant physiologist and supervises two BIFoR PhD student. Jerry was recently given a Chair in recognition of his many innovative contributions to Life Sciences education.</p>
	<p><b>Dr Frank Uekötter, University of Birmingham</b></p> <p>Frank is a reader in environmental humanities at the University of Birmingham. He has published widely on environmental issues in history and recently completed an environmental history of the modern world.</p>
	<p><b>Rob MacKenzie &amp; Simon Dixon, University of Birmingham</b>, are the lead academics delivering the Leverhulme Trust Doctoral Scholarship Scheme (DSP) called Forest Edge. The scheme will bring together a cohort of 20 doctoral researchers around a single organising principal: to what extent Forest existence, form and function emerge from detailed interactions within and across scales, from molecules and organisms, to communities and societies.</p>
	<p><b>Estrella Luna-Diez, University of Birmingham</b>, is a plant pathologist working towards understanding the plant immune system for the protection of crops and trees against filamentous pathogens. Dr Luna-Diez studies how plants acquire immunity in a phenomenon known as priming of defence, a form of plant “vaccination” that enhanced the capacity of the plant to defend itself against pathogenic attackers.</p>

	<p><b>Graeme Kettles, University of Birmingham</b>, a molecular plant pathologist with diverse interests across the range of biotic threats that plants encounter. His most recent projects involved study of the virulence strategies used by fungal pathogens of wheat. He is currently establishing a program of tree pathology at Birmingham, in collaboration with the Birmingham Institute of Forest Research (BIFoR).</p>
	<p><b>Tom Matthews, University of Birmingham</b>, a Birmingham Fellow who researches global environmental change issues using macroecological, macroevolutionary and biogeographical approaches. He applies a mixture of theoretical and empirical methods to investigate various macroecological topics, including species-area relationships and species abundance distributions.</p>
	<p><b>Jacob Waller, Forestry Commission England</b></p> <p>Jacob is Strategy and Insight Support Officer, with the Forestry Commission England working on FEE's Natural Capital Accounts and internal indicators/data analysis. He is relatively new to the Forestry Sector and has worked previously in the private sector in the telecoms industry. Jacob has a master's in History and Philosophy of Science and studied English literature as undergraduate.</p>
	<p><b>Nick Grayson - Birmingham City Council</b></p> <p>Nick is Climate Change and Sustainability Manager for Birmingham City Council, with a current lead on natural capital. He is also a Senior Research Fellow at the University of Birmingham on the research programme called Liveable Cities (EPSRC) – 'transforming the engineering of cities for global and societal wellbeing'.</p>
	<p><b>James Levine, University of Birmingham</b>, is particularly interested in the benefits of green infrastructure – to both people and planet – in the context of ecosystem services and Natural Capital. He is currently Co-Investigator / Researcher of a NERC Innovation Pathfinder project (ref. NE/S00582X/1) to scope, through a process of consultation and co-design with its end-users, the development of a computer-modelling platform to predict quantitatively the impacts of strategic green infrastructure on roadside air quality at planning.</p>
	<p><b>Emma Ferranti, University of Birmingham</b>, is a Natural Environment Research Council (NERC) Knowledge Exchange Fellow working on a range of projects in the field of green and grey urban infrastructure. She also facilitates the <a href="#">Trees &amp; Design Action Group</a> in the Midlands which connects individuals and organisations with a passion for making our urban areas greener. With TDAG and Rob MacKenzie, Emma recently produced <a href="#">First Steps in Urban Air Quality for Built Environment Practitioners</a> which has had ~ 1,800 downloads thus far in 2018.</p>
	<p><b>Jennifer Kirby, University of Birmingham</b>, is undertaking doctoral research into improving leaf fall monitoring and modelling around the UK rail network. This involves engineering a device to automatically model changes in tree canopies using near infrared imagery. Her PhD currently involves working alongside the Met Office and the Rail Safety and Standards board to improve understanding of the rail network issues during the autumn season.</p>

## Speaker Biographies – Day Two

	<p><b>Colin Prentice</b> holds the AXA Chair in Biosphere and Climate Impacts in the Department of Life Sciences, Imperial College London, and an Honorary Chair in Ecology and Evolution at Macquarie University. He has a PhD in Botany from Cambridge University and has held academic and research leadership positions in several countries, including the Chair of Plant Ecology at Lund University and a founding Directorship of the Max Planck Institute for Biogeochemistry. His current research applies eco-evolutionary optimality concepts to develop and test new quantitative theory for plant and ecosystem function and land-atmosphere exchanges of energy, water and carbon dioxide, with the goal of more robust and reliable numerical modelling of land processes in the Earth System.</p>
	<p><b>Professor Rob MacKenzie, University of Birmingham</b>, has been a Director of BIFoR since its inauguration in 2014. Rob is Professor of Atmospheric Science, with expertise in computer simulation of air quality at urban and regional scales, and the effects of vegetation on atmospheric composition. Rob is a supervisor of 5 PhD students research at BIFoR FACE.</p>
	<p><b>Liam Crowley, University of Birmingham</b> is a third year PhD student. Liam's research will seek to elucidate the effects of elevated CO<sub>2</sub> (eCO<sub>2</sub>) on insect communities and the associated impacts these have on their role as ecosystems drivers.</p>
	<p><b>Angeliki Kourmouli, University of Birmingham</b>, a third year PhD student. Her research focuses on two main questions. The first one, is whether the trees can increase carbon allocation below ground under elevated CO<sub>2</sub>, by measuring the soil respiration at the BIFoR FACE woodland. The second one, is whether the CO<sub>2</sub>-fertilisation effect is going to be hindered by the soil fertility, by measuring the available nutrients in the soil</p>
	<p><b>Aileen Baird, University of Birmingham</b>, is a second year PhD student. Aileen is working to both characterise the fungal populations at BIFoR FACE, and to investigate how these populations may be affected by elevated CO<sub>2</sub>. Her work combines traditional fungal survey techniques with modern DNA-based methods to investigate the fungal communities across the Mill Haft woodland.</p>
	<p><b>Clare Ziegler, University of Birmingham</b>, is a third year PhD student, Clare is using cutting-edge statistical and simulation tools to analyse lab and ecosystem observations of root structure, to elucidate the role of elevated carbon dioxide.</p>

	<p><b>Tom Pugh, University of Birmingham.</b> Tom's research investigates the interactions and feedbacks between the terrestrial biosphere and the atmosphere. His particular interests are:</p> <ul style="list-style-type: none"> <li>• Interactions and feedbacks between climate change and forest mortality, including ecosystem disturbances</li> <li>• CO<sub>2</sub> fertilisation of vegetation and the global terrestrial carbon sink</li> <li>• Effects of biotic agents on forest vitality and biogeochemical cycling</li> <li>• How anthropogenic actions modify the structure and function of global forests</li> </ul>
	<p><b>Kadmiel Maseyk, Open University</b> is interested in ecosystem responses to environmental variability and global change. Coming from a background in plant ecophysiology, he is particularly interested in how plant function affects ecosystem carbon and water cycling. His recent research has focussed on new ways to study photosynthesis across scales in order to disentangle photosynthetic and respiration fluxes and improve our understanding of photosynthesis at ecosystem to regional scales.</p>
	<p><b>Dr Sami Ullah, University of Birmingham and Dr Aleksandar Radu University of Keele</b></p> <p>Dr Sami Ullah's research is mainly focussed on the biogeochemistry of nitrogen and its linkages to carbon and phosphorus cycling under global change in soils under forest, peatland/wetland, grassland, and agricultural crops. Aleksandar Radu joined Keele University as Lecturer in Chemistry in December 2011 and I am a member of the Research Institute for Environmental Physics and Applied Mathematics EPSAM.</p>
	<p><b>Alan Jones, Earthwatch Institute,</b> Alan works for Earthwatch Institute, which is an NGO that aims to empower people to save the natural world through direct action and policy influence on critical environmental issues. Alan oversees their volunteer-led research on woodlands, carbon and climate change impacts. Earthwatch have installed 198 dendrometers on trees at BIFoR FACE, Alan visits regularly with trained volunteers from their corporate clients who help him take measurements of tree stem growth.</p>
	<p><b>Dr Carolina Mayoral, University of Birmingham,</b> is a post-doctoral researcher for BIFoR. She has an overview of all the ongoing research at BIFoR but also has her own research areas of interest including assessing elevated CO<sub>2</sub> effects on the physiological performance of seedlings of the most representative species found at BIFoR FACE.</p>
	<p><b>TBC Dr Francesco Ciocca is an Engineer working with Silixa Ltd,</b> a UK-based business which is a specialist service company operating globally in the environmental monitoring sector. Francesco will provide details about a fully automated fibre optics system that monitors soil moisture and soil temperature. The system measured without supervision along 1,500 m of fibre optics for 12 weeks.</p>