

January 27th and 28th 2021 fifth annual BIFoR Community Meeting - a focus on pests, diseases and their impacts

Day One 27th January 2021

12:00	Welcome – BIFoR Directors, Prof Rob Jackson and Prof Nicola Spence
	Impact of pests, unravelling plant responses to aphids , Prof Christine Foyer, University of Birmingham
	Bacterial canker in trees – How do we control them? Dr Mojgan Rabiey, University of Birmingham
	Near complete genomes give new insight into old stories of horizontal gene transfer , Dr Megan McDonald, University of Birmingham
	Tree diseases: wider ecological impacts and policy implications , Dr Ruth Mitchell, James Hutton Institute, Action Oak
	Processing of emotional faces after forest versus city exposure , Eszter Toth, University of Birmingham
	Exploring land manager perceptions and preferences and the impact on designing treescapes for wider benefits, focusing on Natural Flood Management , Jenny Knight
	Wooden hurdles and policy jams – a brief guide to forestry , Anthony Geddes, National Manager for Wales, Confor (Confederation of Forest Industries)
15:00	Poster session Our research team have prepared posters which will be available to read on our website. The team will stay on the zoom call to answer any questions
16:00	Conference closes

Day Two 28th January 2021

9:00	Welcome – BIFoR Directors, Prof Rob Jackson and Prof Nicola Spence
	Insect-Plant interactions (and beyond) under climate change , Dr Scott Hayward, University of Birmingham
	The effect of elevated CO₂ in tree defence responses against diseases: what do we know so far? Dr Estrella Luna-Diez, University of Birmingham
	Is photosynthetic enhancement sustained after three years of elevated CO₂? Anna Gardner, University of Birmingham
	Fighting disease/tree genomics Prof Richard Buggs, Queen Mary University of London, Kew Gardens, Action Oak
	Towards the biogeography of tree mortality , Dr Adriane Esquivel-Muelbert, University of Birmingham
	Quantifying human-driven shifts in forest disturbance regimes across biomes , Nezha Acil, University of Birmingham
	Hearts & Minds: How to Talk Trees with Non-Experts , Jon Drori, Eden Project, Cambridge University Botanic Garden and Cambridge Science Centre and an Ambassador for the WWF
12:00	Annual Meeting closes

Chairs

Prof Rob Jackson, Chair in Tree Pathology and Director of BIFoR, University of Birmingham

Professor Rob Jackson is an expert in bacteria-plant interactions, making major contributions to the understanding of how pathogens cause disease and how pathogens evolve to evade host immunity. He also has interests in applied biology questions relating to biocontrol approaches to treat plant diseases. R.W.Jackson@bham.ac.uk

Prof Nicola Spence, Chief Plant Office for Defra and Director of BIFoR

Professor Nicola Spence is Defra's Chief Plant Health Officer (CPHO) and is the Head of the National Plant Protection Organisation for the UK. 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. She is a Vice President of BSPP, a Fellow of the Royal Society of Biology, Visiting Professor at Harper Adams University, a member of Court at the University of York and a Trustee of The Yorkshire Arboretum. Nicola.spence@defra.gov.uk

Keynote Speaker Profiles

Prof Richard Buggs

Professor Richard Buggs leads the Plant Health research group at Kew. Richard's research uses evolutionary genomics methods to understand the basis of pest and pathogen susceptibility of plants. His largest project is on the genomics of ash tree species, seeking genes for low susceptibility to ash dieback and the emerald ash borer. His students also work on birch tree genetics in the context of climate change. He has recently started a project on disease and stress tolerance in hazelnut. He is a Professor of Evolutionary Genomics at Queen Mary University of London where he also has a research group and teaches an MSc module. R.Buggs@kew.org

Jonathan Drori

Jonathan Drori CBE is author of *Around the World in 80 Trees*, an acclaimed and much-loved bestseller, now in 14 languages. He is a Trustee of The Eden Project, Cambridge University Botanic Garden and Cambridge Science Centre and an Ambassador for the WWF. He spent nine years as a Trustee of the Royal Botanic Gardens, Kew and of the Woodland Trust and has previously been a documentary film-maker and executive producer with the BBC, and Editorial Director of BBC Online. [He has been a Visiting Industrial Professor at Bristol University, specialising in science misconceptions and his talks at ted.com, mostly on botanical subjects have had millions of views.]

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Prof Christine Foyer

Professor Christine Foyer is an expert in plant metabolism and its regulation under optimal and stress conditions. She is the President of the Association of Applied Biologists, an elected Board Member of the American Society of Plant Biologists and a Member of the French Academy of Agriculture. She is also the Editor in Chief of Food and Energy Security. She is also a senior Editor for Plant, Cell and Environment and an Associate Editor of the Biochemical Journal, The Journal of Experimental Biology and Physiologia Plantarum. Christine has over 400 published papers and currently has an H-Index of 99. Focusing particularly on reduction/oxidation (redox) biology, her lab investigates how primary processes (photosynthesis respiration) alter the redox status of the cell and associated phytohormone signalling under optimal and stress conditions. Using model (Arabidopsis) as well as crop plants (wheat, barley, maize soybean and tomato) Christine lab investigates plant responses to abiotic (drought, chilling, high light) and biotic (aphids) stresses. c.foyer@bham.ac.uk

Anthony Geddes, National Manager for Wales, Confor (Confederation of Forest Industries)

Anthony Geddes joined the Confor National Team following four years with the established forestry surveying and consultancy business John Clegg & Co. Having trained as an engineer and diversified with a Masters in asset management his subsequent 15 years' experience in investment, timber recycling and renewable energy provide an excellent grounding for promoting Welsh Forest Industries. His aim is to strengthen the role of sustainable forestry and wood-using businesses through political engagement, market promotion and supporting members' competitiveness. Notably his work with Natural Resources Wales and the Welsh Assembly Government explores afforestation's prospects for achieving decarbonisation, climate change, air quality and flood reduction targets whilst increasing timber availability. When not talking about trees he is most often found on a bike riding around them. Anthony@confor.org.uk

Dr Scott Hayward

Dr Scott Hayward is an expert in insect ecophysiology with a specific focus on seasonal adaptations, responses to environmental stress and understanding the impact of climate change. He is a former Fulbright-Royal Society Scholar and US Presidents Scholar. He is a Fellow of the Royal Entomological Society and leads the RES Special Interest Group on Climate Change. His research within BIFoR has focussed on characterising insect biodiversity and phenology patterns at the FACE facility, as well as the impact of increased CO₂ on key plant-insect interactions. He is currently supervisor/co-supervisor of three PhD projects within BIFoR. S.A.Hayward@bham.ac.uk

Dr Ruth Mitchell

Dr Ruth Mitchell is head of the Biodiversity and Ecosystem group at the James Hutton Institute in Aberdeen. She is a plant and soil ecologist whose research covers the how different drivers (especially pollution and land management) impact on biodiversity, particularly upland semi-natural plant communities and on their interactions with the chemical, physical and biological aspects of soil. Ruth's current research focusses on 1) the impacts of woodland expansion on soil properties and biodiversity and 2) the ecological impacts of tree diseases and potential mitigation measures. In particular she has worked on the impact on biodiversity of the tree diseases Ash Dieback and Acute Oak decline. Her work is strongly focused on being policy relevant as is evident in her roles on NatureScot's science advisory committee and Chair of British Ecological Society's Scottish Policy group. Ruth.Mitchell@hutton.ac.uk

BIFoR Early Career Researchers

Nezha Acil, final year PhD student

Nezha Acil has a background in ecology and geoscience, with practical experience in forest assessment and land surface monitoring. She is interested in combining remote sensing techniques with field measurements to explore, at the landscape level, the effects of environmental change on forest dynamics. For her current PhD project, she is carrying out a global assessment of stand-replacing disturbances, with a focus on storm-related tree mortality and its influence on carbon cycling. NXA807@student.bham.ac.uk

Dr Adriane Esquivel Muelbert, lecturer in Global Forest Ecology

Dr Adriane Esquivel Muelbert is a forest ecologist with deep roots in the tropics. She has focused her work on Neotropical forests combining biogeography with forest dynamics to study the impacts of global change on tree communities and tree turnover across the Amazon. Adriane is part of the TreeMort team. A.EsquivelMuelbert@bham.ac.uk

Anna Gardner, final year PhD student

Anna Gardner is a Biosciences PhD student. As part of her PhD, she uses the BIFoR FACE Canopy Access system to study at the top of the canopy. She is investigating the response leaves may have to future levels of carbon dioxide. Anna is exploring questions regarding the water use of these trees and the fate of carbon dioxide, as well as bigger questions regarding whole forest carbon uptake.

Jenny Knight, final year PhD student

Jenny Knight has been addressing key questions through her study such as; Can 'socially' determined parameters be integrated into traditionally quantitative methodologies of planning for land use change?; Can a qualitative understanding of lived experience explain the political behaviour and preferences of Land Managers when considering forested landscapes for Natural Flood Management; How does farmer/land manager knowledge and expertise inform the process of planning forested landscapes for Natural Flood management? Does involvement in this process affect the uptake and long-term planning of Land Managers? Jenny is currently working with the Welsh Government on a short term policy placement to support the delivery of the 'Woodlands for Wales' strategy JXK850@student.bham.ac.uk

Dr Estrella Luna-Diez, Lecturer in Plant Pathology

Dr Estrella Luna-Diez's research interests are driven by the exceptional ability of plants to adapt to hostile environments, she investigates the molecular, genetic, biochemical and epigenetic mechanisms that mark plant defence responses to diseases. Her research aims to make the plant immune system stronger so that plants are able to fight diseases better. E.LunaDiez@bham.ac.uk

Dr Megan McDonald, Birmingham Fellow

Dr Megan McDonald uses next-generation sequencing tools identify and characterise virulence genes from fungal pathogens of wheat and barley. To do this Megan has worked extensively with long-read *de novo* genome assembly, genome annotation and transposon annotation. Megan's background is in population genetics of plant pathogens, studying their origins and global movement during her graduate studies. More recent interests include transposon mediated horizontal gene transfer and 3D chromosomal reconstruction techniques using sequencing data. M.C.McDonald@bham.ac.uk

Dr Mojgan Rabiey, Senior Postdoctoral Research Fellow

Dr Mojgan Rabiey works on plant pathogens and biological control of plant diseases, with an interest in understanding the fundamental and applied biological characteristics of bacteriophage in the context of treating bacterial diseases. She is currently identifying factors that regulate pathogen ability to persist on trees, to understand how new strains of pathogens emerge and evolve on potential hosts. M.Rabiey@bham.ac.uk

Eszter Toth, final year PhD student

Numerous experiments showed that nature exposure enhances well-being. To measure nature exposure, these often only use total time spent in nature, neglecting various other aspects, such as activities done whilst there. To overcome this, we adopted a more comprehensive approach where participants reported the amount of time they spent in nature performing various activities their regularity and the number of people involved. EXT586@student.bham.ac.uk