UNIVERSITY OF BIRMINGHAM | BIFOR

Bud Burst

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NEWSLETTER OF THE BIRMINGHAM INSTITUTE OF FOREST RESEARCH

Photo credit Peter Miles, University of Birmingham

Reinvigorating Research

by Nicola Spence, co-director of BIFoR & Chief Plant Health Officer for Defra

One of the great joys of life is walking through native oak woodland in spring and the BIFoR FACE woodland is no exception: the woods are beautiful as we prepare for the third season of elevated CO_2 treatment. But, being a plant pathologist, I am always mindful that increasing globalisation means increasing pest and disease threats to our trees, particularly oak. I know that protecting the UK's trees from pests and diseases remains one of our highest priorities, and we need robust science to underpin our actions to combat these threats. That's why we are beginning a £0.5M project on "*Resistance strategies of oak trees in the arms race with pathogens*" under the auspices of Action Oak, and also why Defra, BBSRC and Scottish Government have collaborated to develop a new £17.7m strategic priorities research fund to tackle bacterial plant pathogens. That's why, with generous support of John and Lorna Powell and the Wolfson Foundation we are establishing controlled-environment glasshouse facilities on the University of Birmingham campus, so that I and my BIFoR plant-health colleagues Christine Foyer, Estrella Luna-Diez, and Graeme Kettles, are well-placed to contribute further to this strategic research.

A £12m component of the programme will support multidisciplinary research on a wider range of bacteria that threaten plant health, including Acute Oak Decline. By bringing together research expertise in plant pathology with state-of-the-art genomic and other new technologies, the UK is well placed to become a world leader in countering these threats and inspiring the next generation of plant health experts. Further information can be found online http://ow.ly/AIzS30ob1F6

Funding Success

A new gift by John and Lorna Powell will allow BIFoR to convert the listed building beside the £1m Wolfson Foundation funded new glasshouses into a bespoke education space. The space will include live data feeds, some of which are already available online

A new gift of over £500K from the JABBS Foundation has been awarded to our pathologists Dr Estrella Luna-Diez and Dr Graeme Kettles to study diseases that affect our British Oaks. In addition, Dr Luna-Diez and Dr Kettles have secured additional funding from the Gatsby Foundation and The Royal Society, respectively, to kick-start their tree pathology research programmes in BIFoR.

FUNDED BY A PARTNERSHIP GRANT FROM THE ROYAL SOCIETY GATSBY

Dr James Levine has received £120k from NERC, to continue his work on urban green infrastructure and air quality. A recent report from the Mayor of London, *Using Green Infrastructure to Protect People from Air Pollution*, has been produced in consultation with BIFoR (via James), and is available at online. Nick Grayson and Rob MacKenzie are leading the green infrastructure strand of WM-Air, a £4.7M NERC programme to improve air quality in the West Midlands led by Prof Bill Bloss.

Thinking Higher: Towards biosecurity of forest trees

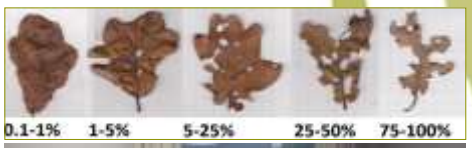
11 July 2019, University of Birmingham

This International Symposium, free and open to everyone, will showcase the latest research in plant pathology and tree research. We will welcome researchers from the UK & abroad with a background in forest & plant research.

www.birmingham.ac.uk/thinkinghigher

Research news

In January 2019 we held our third annual BIFoR community meeting #BIFoRCom19. The meeting was the busiest yet, with over 100 delegates attending over the two days. The majority of presentations and posters can be accessed on our website www.birmingham.ac.uk/biformeeting. We took the opportunity to introduce the new cohort of PhD researchers, set to reinvigorate forest research in the UK through BIFoR's doctoral training programme, Forest Edge. Research from our flagship research facility BIFoR FACE—the world's only place to study, by direct experiment, how the vast northern temperate forests will respond to future increases in atmospheric carbon dioxide - was also presented. 2019 sees our third season under elevated carbon dioxide. We're excited to see if the very different weather conditions of February (middle image right: top image is Feb 2019 and bottom is Feb 2018) will reveal any interesting stories. We are looking forward to welcoming Gael Denny as our new research technician and our heartfelt thanks and warm wishes go with those colleagues moving on from the Institute: Prof Michael Tausz, Dr Sabine Tausz-Posch, Dr Phil Blaen and Dr Xiaolong Liu.



Partnership News

Dr Scott Hayward has established a new collaboration with University of Lund's Dr Dan Metcalfe to investigate the impact of elevated CO_2 on insect herbivory in woodland systems. We're grateful to Tien Nguyen for her tireless 13 weeks with us working on image analysis of leaf litter samples to quantify herbivory and the impact of extreme biotic disturbance events (image top left) – as occurred with the major oak defoliation event during spring 2018.

Small Woods Association have hosted two University of Birmingham students. The students worked on the socio-cultural and craft aspects of Small Wood's collection and the more scientific elements, in particular a collection that they have inherited from eminent forest ecologist Oliver Rackham. Small Woods CEO Ian Baker is a co- supervisor for Forest Edge PhD student Ben Howard. (image bottom left).

Commendation for Excellence in Public Engagement

Congratulations to PhD student Liam Crowley for his recent commendation from the panel on the new University of Birmingham's Institutional Award for Excellence in Public Engagement, the Light of Understanding Award. The panel were impressed by Liam's quality and innovative podcast, Entocast. Listen at www.entocast.com

Research highlight: Role of forest regrowth in global carbon sink dynamics

World's biggest terrestrial carbon sinks are found in young temperate and boreal forests. More than half of the carbon sink in the world's forests is in areas where the trees are relatively young – under 140 years old. These trees have typically 'regrown' on land previously used for agriculture, or cleared by fire or harvest. Using a new combination of observations of forest age and computer modelling, Tom Pugh and co-workers showed that it is the young age that drives half of carbon uptake in young forests, with the remainder driven by CO_2 fertilisation.

Pugh, T. A. M. et al (2019). Role of forest regrowth in global carbon sink dynamics. *Proceedings of the National Academy of Sciences, 116*(10), 4382-4387. doi:10.1073/pnas.1810512116

Student Activism

Elizabeth Ogilivie a 2nd year Biosciences student at UoB says, "Volunteering with BIFoR has been a wonderful experience, I've learnt lots of new data handling skills, and become especially good at sorting the dried leaves collected from the woodland! It feels great knowing that the work I am doing is going to be used for real research that will help us to better understand the effects of climate change."

Stay in touch

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BIFoR Annual Report available now