UNIVERSITY OF BIRMINGHAM | BIFOR

Bud Burst

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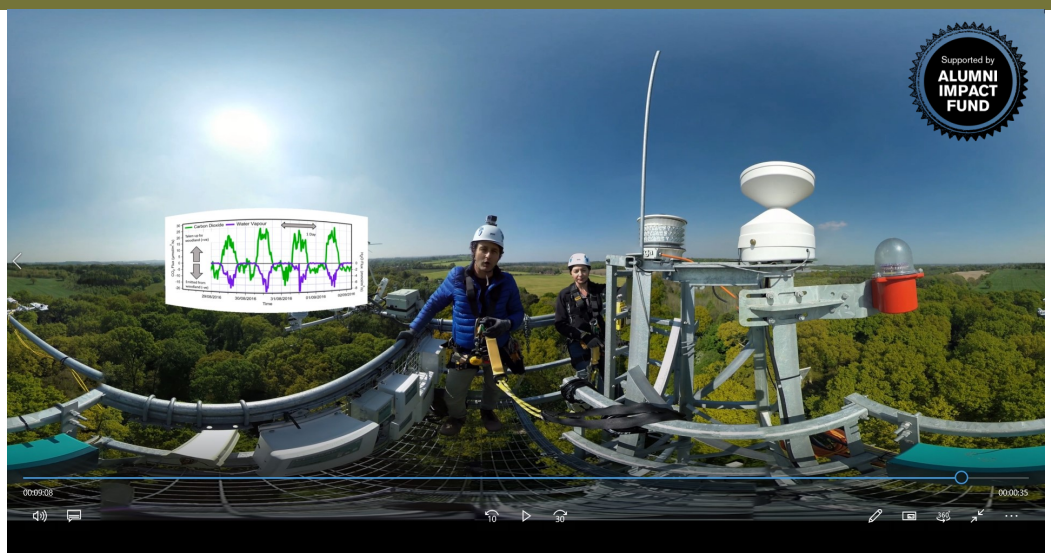
NEWSLETTER OF THE BIRMINGHAM INSTITUTE OF FOREST RESEARCH



Still image taken from our new 360 degree video about the Birmingham Institute of Forest Research (BIFoR) Free-Air Carbon Enrichment (FACE) Facility, available to view on the BIFoR Playlist of the University of Birmingham You Tube Channel.

Forest's Cutting Edge

Forests have been very much in the national news. The New Northern Forest has received a £5.7m 'vote of confidence' from government and woodlands are recognised as a key component of using and managing land sustainably in the government's 25-Year Environment Plan. Internationally, the Food and Agriculture Organisation (FAO) of the United Nations document State of Food and Agriculture places forests at the heart of productive-but-sustainable farming.

BIFoR brings together expertise in natural sciences, social sciences, and the humanities to address the 'wicked' complexity underpinning both the FAO call for agricultural transformation and the UK government's concept of 'Net Environmental Gain'. We are delighted to announce the first substantive funding for BIFoR in this multi- and interdisciplinary arena: the Leverhulme Trust £1m Doctoral Scholarship Programme, *Forest Edge*.

Although we are already active in many forested landscapes (see the research highlight overleaf) *Forest Edge* is our first opportunity to build a 20-PhD cohort – we think the UK's biggest-ever such cohort – charged with advancing the Institute's vision by providing linked fundamental science, social science, and cultural research of direct relevance to forested landscapes. The topics for 2018 are:

- Mangrove forest conservation and restoration: what are the keys to success
- Coppice management to reduce nutrient loads in forest streams
- Young people's experiences of & learning in urban woodlands: comparing formal & informal 'Forest Schooling' in the UK & Peru
- Focus on Cognition: Can forests balance the brain?
- Development and application of novel ecological and environmental proxies based on leaf wax lipids

Soil sampling 2018

The BIFoR soil team put away their snow shovels and took out the soil corer for the annual spring soil sampling campaign. The team included researchers from the Universities of Birmingham, Gloucestershire and Southampton together with a small army of volunteers from Birmingham and Gloucestershire Universities.

Rare solitary wasp found

A single female of the rarely seen Embolemine wasp, (*Embolemus ruddii* Westwood, 1883) was found by Liam Crowley, in a pitfall trap deployed at BIFoR FACE.

Very few individuals of this species have ever been seen. This record is the first confirmed UK sighting for 20 years, as well as the first in Staffordshire.

Photo above: John Horseman Trust funded, BIFoR PhD student Anna Gardner has joined the current team of 8 PhD students. Anna is using the recently installed, unique system to access different levels of the tree canopy. The system can be used without prior training and allows researchers to spend time in the top most canopy. Anna will be investigating the effect of elevated CO_2 on leaf-level photosynthesis by measurements of gas exchange, stomatal conductance & chlorophyll content.

Bringing the Forest to the Classroom

BIFoR FACE was "switched-on" for the 2018 growing season on 27 March 2018. Dr Rick Thomas and Prof Jerry Pritchard went to the University of Birmingham School, where year 12 geography pupils learnt about the BIFoR FACE facility and witnessed the switch-on via a live video link up. Students also saw live data streams and had a lively discussion about how BIFoR science connects to their curriculum.

Students also experienced a new 360 tour of the research woodland developed by Rick and supported by the University of Birmingham Alumni Impact Fund. You can see the video on the University of Birmingham YouTube Channel; go to the BIFoR Playlist.

Research highlight: Using drones to understand the impact of riparian tree shading on stream temperature

University of Birmingham's Steve Dugdale and David Hannah, working in conjunction with Marine Scotland Science (MSS, Iain Malcom) have developed a novel technique for quantifying the impact of riparian tree cover on river temperature. River temperature is highly important to a range of freshwater organisms, and there are concerns that climate change could render rivers too warm for native UK fish species (notably Atlantic salmon and brown trout). River managers across the UK are planting trees in an attempt to shade rivers. However, understanding the exact effects of riparian woodland on stream temperature requires precise information on tree cover; but these data can be difficult or costly to obtain, especially in remote locations. A new drone-based methodology was developed and will furnish river scientists and managers with a new tool with which to combat the threat of climate change to sensitive river environments.

Dugdale, S. J., Malcolm, I. A., Kantola, K., & Hannah, D. M. (2018). Stream temperature under contrasting riparian forest cover: Understanding thermal dynamics and heat exchange processes. *Science of The Total Environment, 610-611*,1375-1389.doi:10.1016/.scitotenv.2017.08.198

Green Infrastructure

The beginning of the year has been busy with promoting the First Steps in Urban Air Quality. A Trees and Design Action Group (TDAG) Guidance Document report.

It is available from:
http://epapers.bham.ac.uk/3069/

Student Engagement

Undergraduate students and masters students have been busy supporting BIFoR with our research. Funding from the Alumni Impact Fund will help us embed this culture of volunteering with BIFoR in future years. We're delighted that over **400** hours of volunteering have already been completed since September 2018.

Van Zhang, one of our volunteers, said, "Volunteering with BIFoR has been a great chance to participate in some world-leading research, which turned out to help my Master application dramatically."

Students from the BIFoR Network helping with tree planting organised by Birmingham Trees for Life.

Stay in touch

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BIFoR Annual Report available now