Forest Research

Edinburgh Napier UNIVERSITY

Centre for Forest Protection

Royal Botanic Gardens Kew

WYRE COMMUNITY LAND TRUST

Flynn Scott – CFP Intern Diary

I began my journey as a CFP intern in October, after finishing an MSc in Environmental Forestry.

The project I have been working on is the development of non-destructive testing methodology for the detection of oak shake in standing trees.

October

- October was spent completing first aid training, as well as lone worker safety training for fieldwork.
- I conducted an initial site visit with Andy Price, to learn about shake ID, categorisation and assessment.
- This was a chance to get to know the site and speak to the site forester about how shake had affected their operations.

Left: Distinctive star shakes identifiable by the dark staining. Right: Oak stems were presented to us propped up to allow us to inspect the whole section.

A selection of examples of ring and star shake on the Wyre Forest study site. A large proportion of the trees are afflicted by shake, which compromises the value of the timber. Shake is a major problem facing the land trust who manage the site.

November

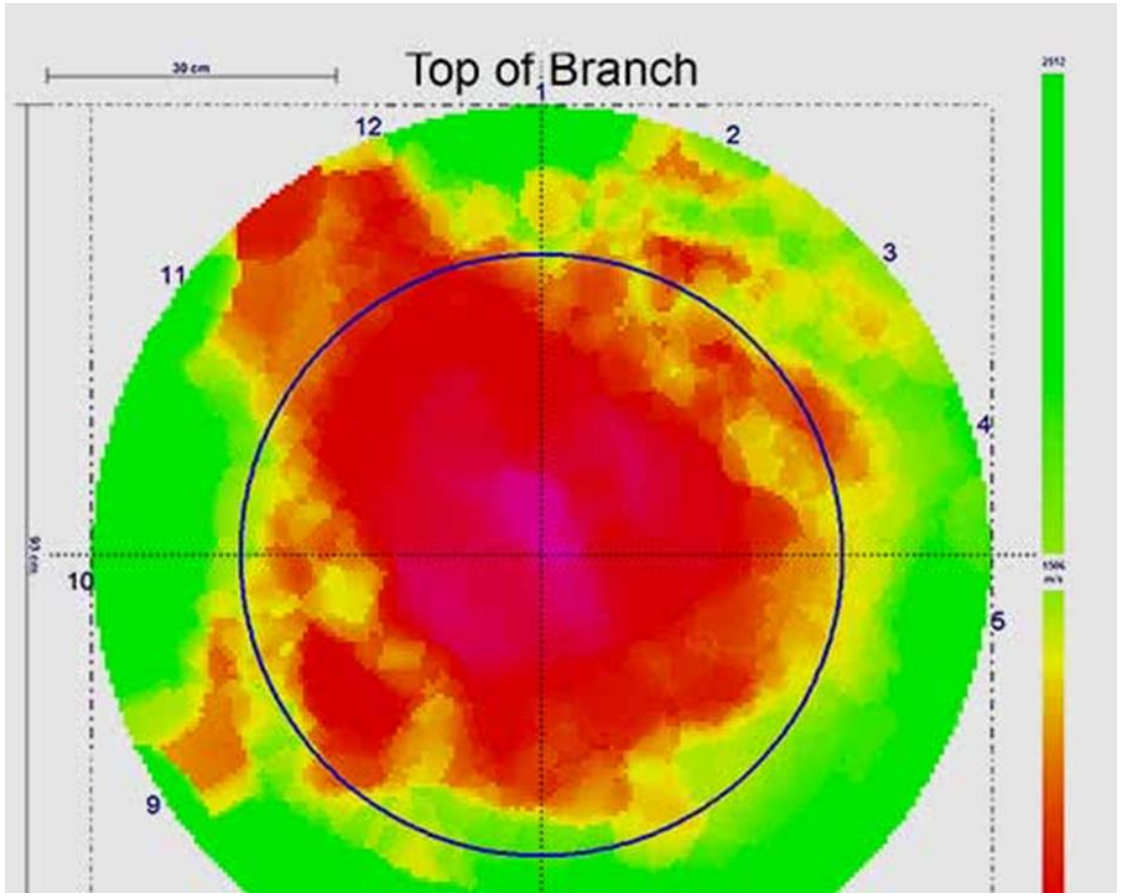
- In November, sample discs from the study site arrived at the Northern Research Station in Edinburgh.
- The study site is afflicted by acute oak decline, vectored by the Agrilus beetle. The discs were moved into a secure storage facility where I removed the bark from the samples and checked for signs of the bark beetle.
- The bark was then contained and frozen, to eliminate any chance of the beetle spreading.
- I also collected cambium samples from the discs to send down to Kew for DNA extraction.

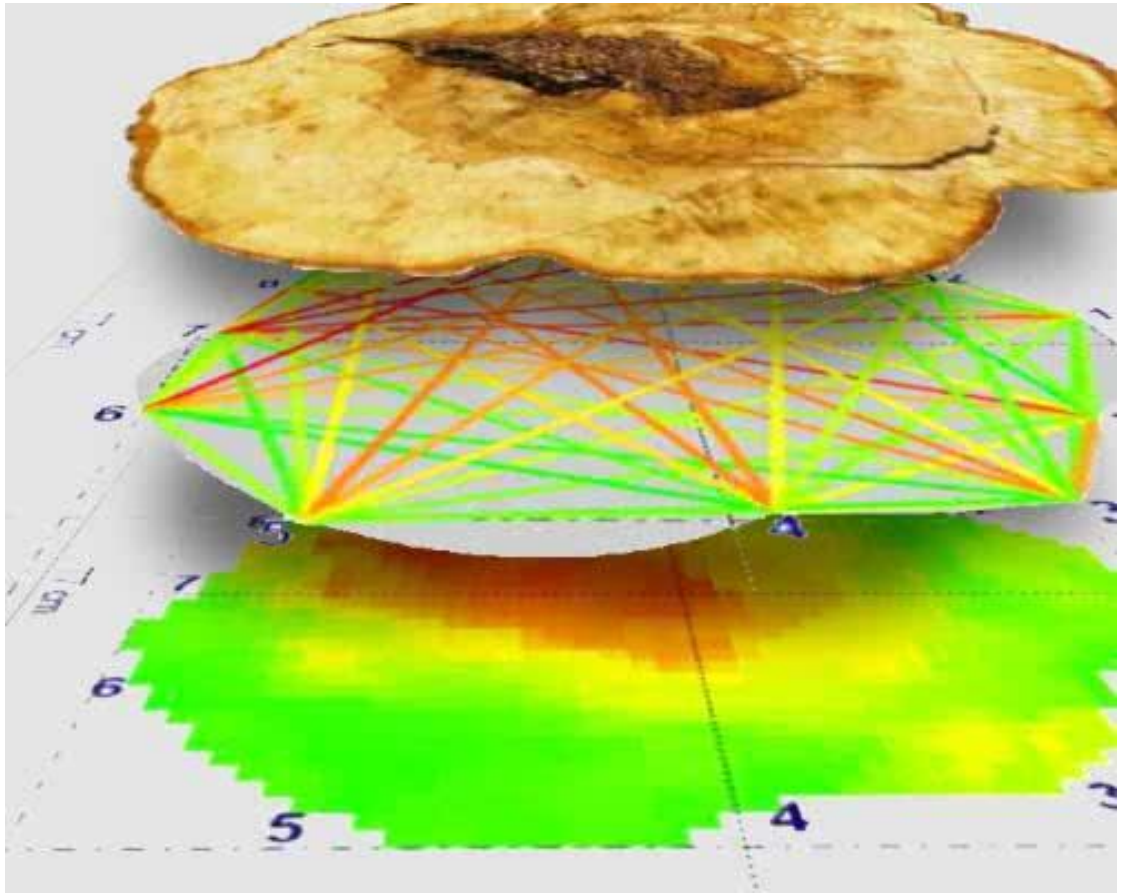
De-barked discs ready for the next stage of the process, core extraction.

Oak bark bagged up and ready for freezing.

December

- In December myself and two researchers from Edinburgh Napier University travelled down to the Wyre Forest Study Site.
- We set up acoustic sensors in a series to identify any cracks or irregularities in the stem.
- This data could then be compared and verified by the shake assessments which we had collected in October.

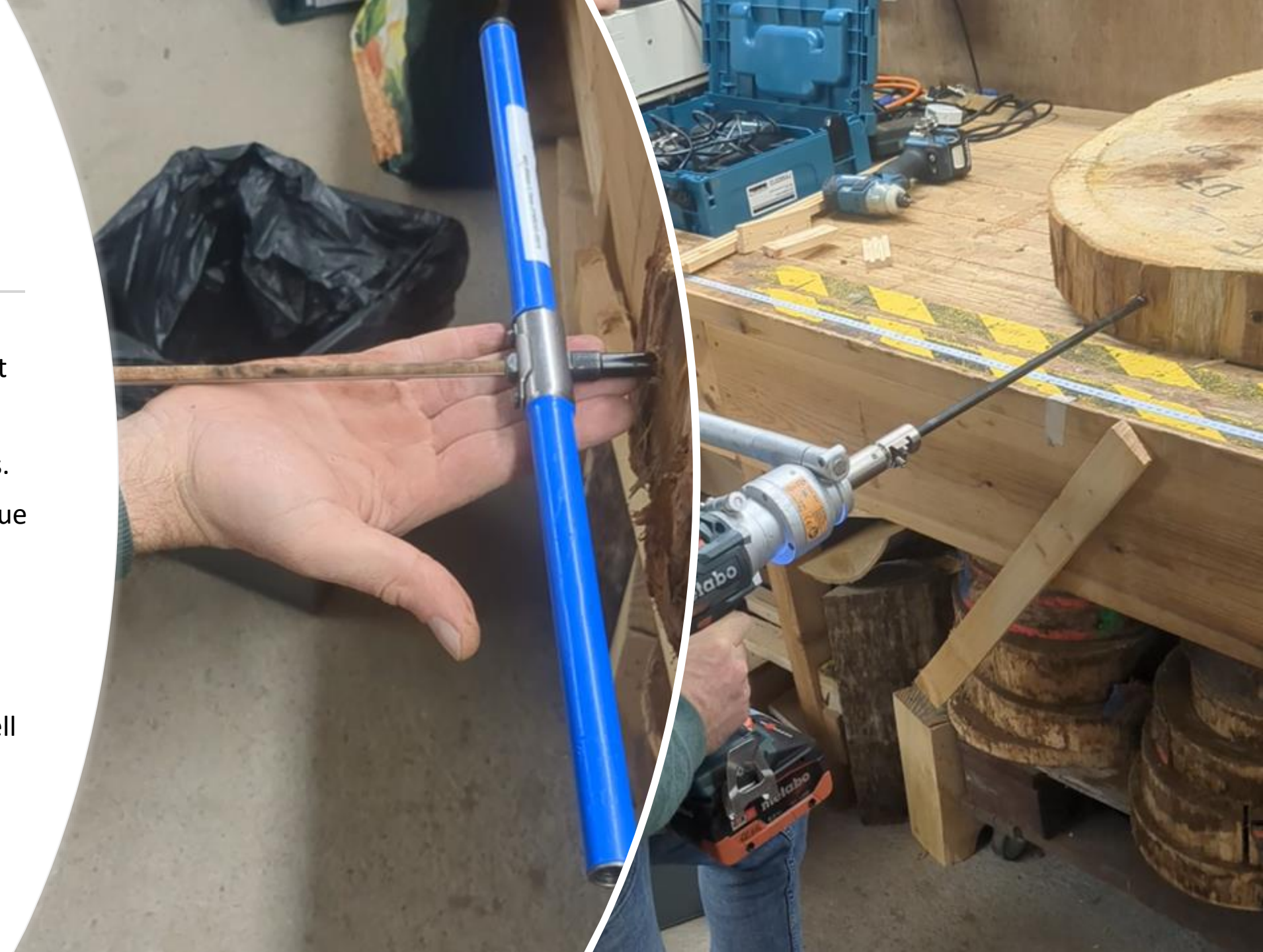




Generic examples of the kind of graphic outputs of the acoustic data. Images taken from the Rinntech website [Arbotom® 2D/3D Sonic Tree Tomography - RINNTECH]

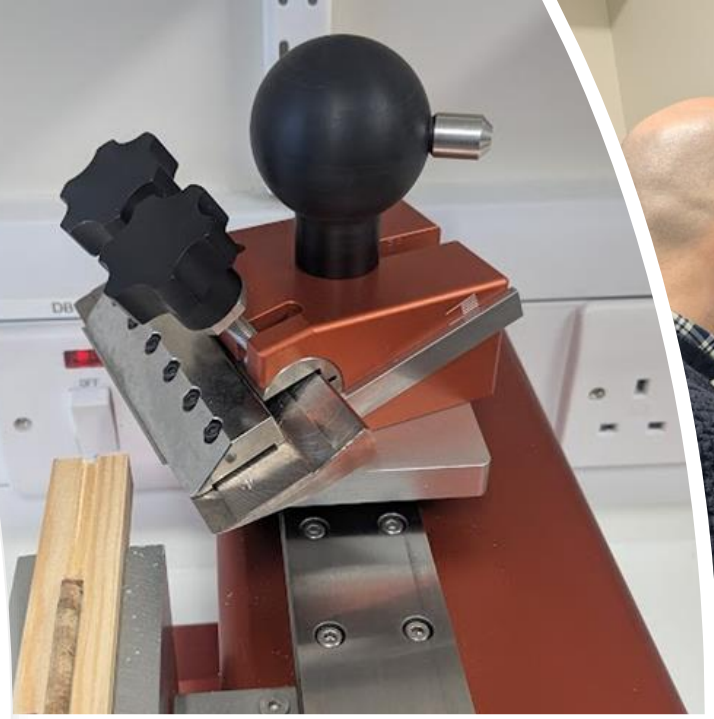
January

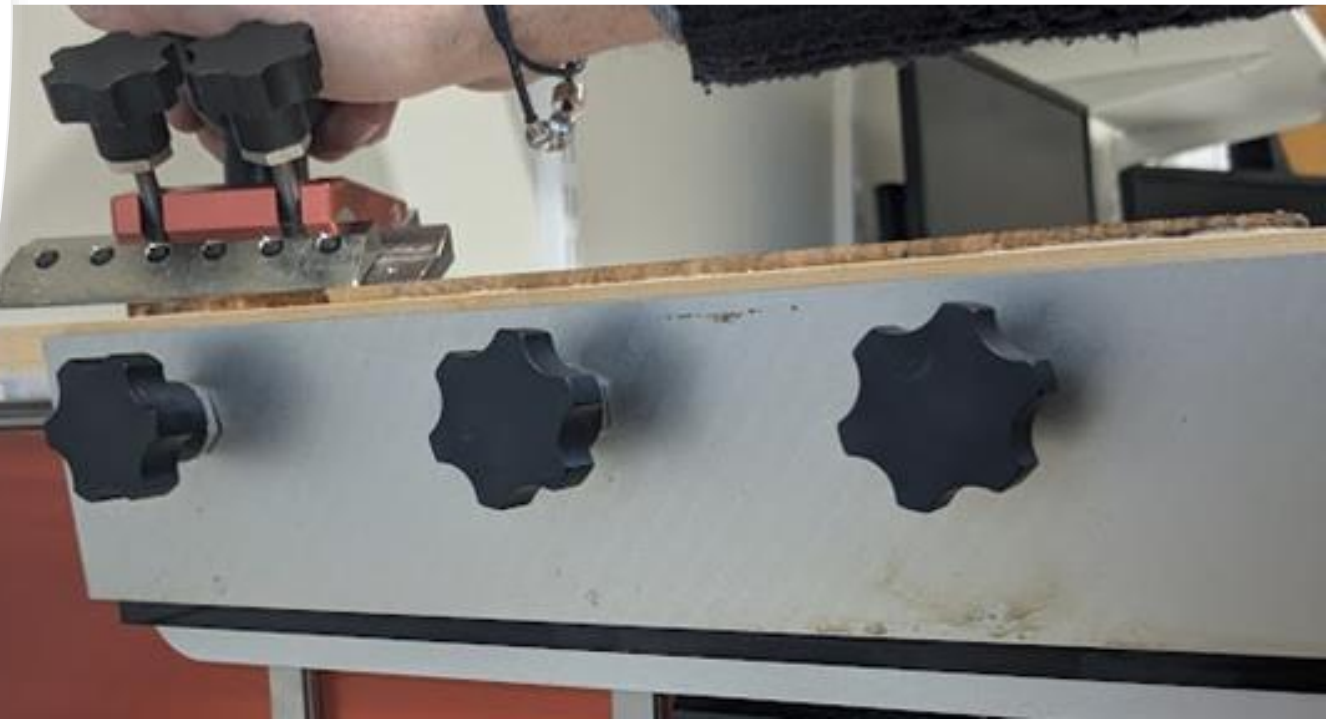
- In January, myself and research assistant Salvo set about extracting the cores from the sample discs for dendrochronology analysis.
- We used a drill with a torque converter to extract cores from the South and West aspects of the discs.
- These cores would be processed later to gather data on tree growth, as well as xylem vessel size distribution.



February

- In February, I leaned how to use the microtome to process the cores we had extracted earlier.
- The machine uses a sharp blade to skim material off the core to give a flat surface and expose the growth rings and xylem vessels.
- Samples were then scanned at a high resolution and inputted to software which would calculate the size and distribution of the earlywood xylem vessels.



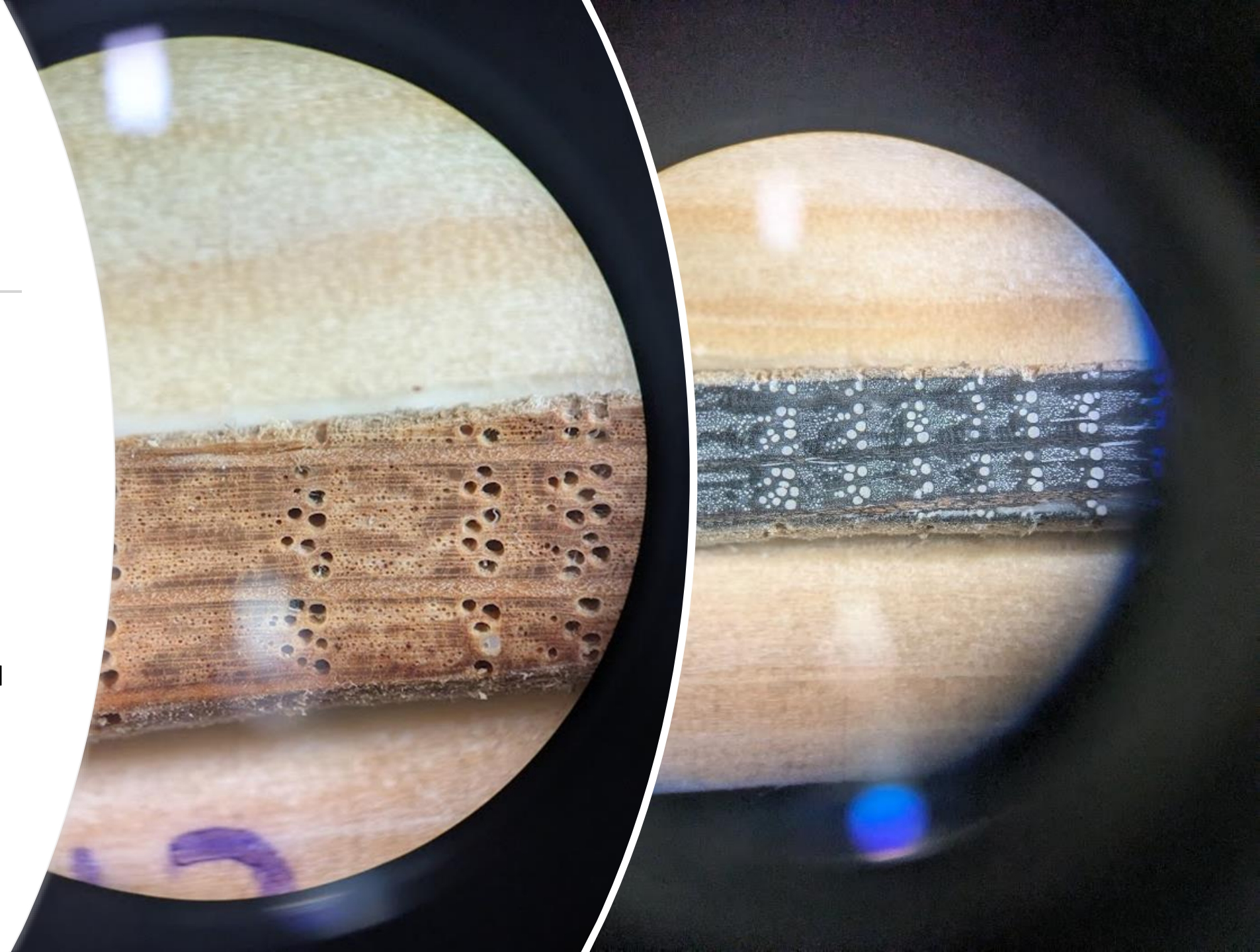


February was also a chance to meet up with the other CFP Interns at the Millenium Seed Bank in Wakehurst.

Dr Efisio Mattana and Elena Fouce Hernandez presented research about germination traits in native trees, and we also received a fascinating tour around the seed vaults and the grounds of the estate.

March

- In the last month of my internship, I have been mainly scanning the core samples and processing them through dendrochronology software.
- Data on tree rings will be compared with historical climate data and the shake assessments to understand the effect of drought and waterlogging on shake occurrence.



In the past month, I have also been writing a draft ‘In-Brief’ report for the Forest Research communications team. The report highlights observations we made in fieldwork of ring shake originating from lower crown deadwood. We hope this report will be a useful resource for foresters to show the importance of high pruning in broadleaf silviculture.

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Next Steps...

The CFP Internship scheme has been an invaluable opportunity for me, and a great stepping stone in my career.

After the internship is finished, I will continue working for Forest Research on the same project, conducting acoustic testing on trees which have been whole genome sequenced by Kew.

I would like to extend my thanks to all those who have mentored and helped me throughout the last six months on this project, and the CFP for making all of this possible!