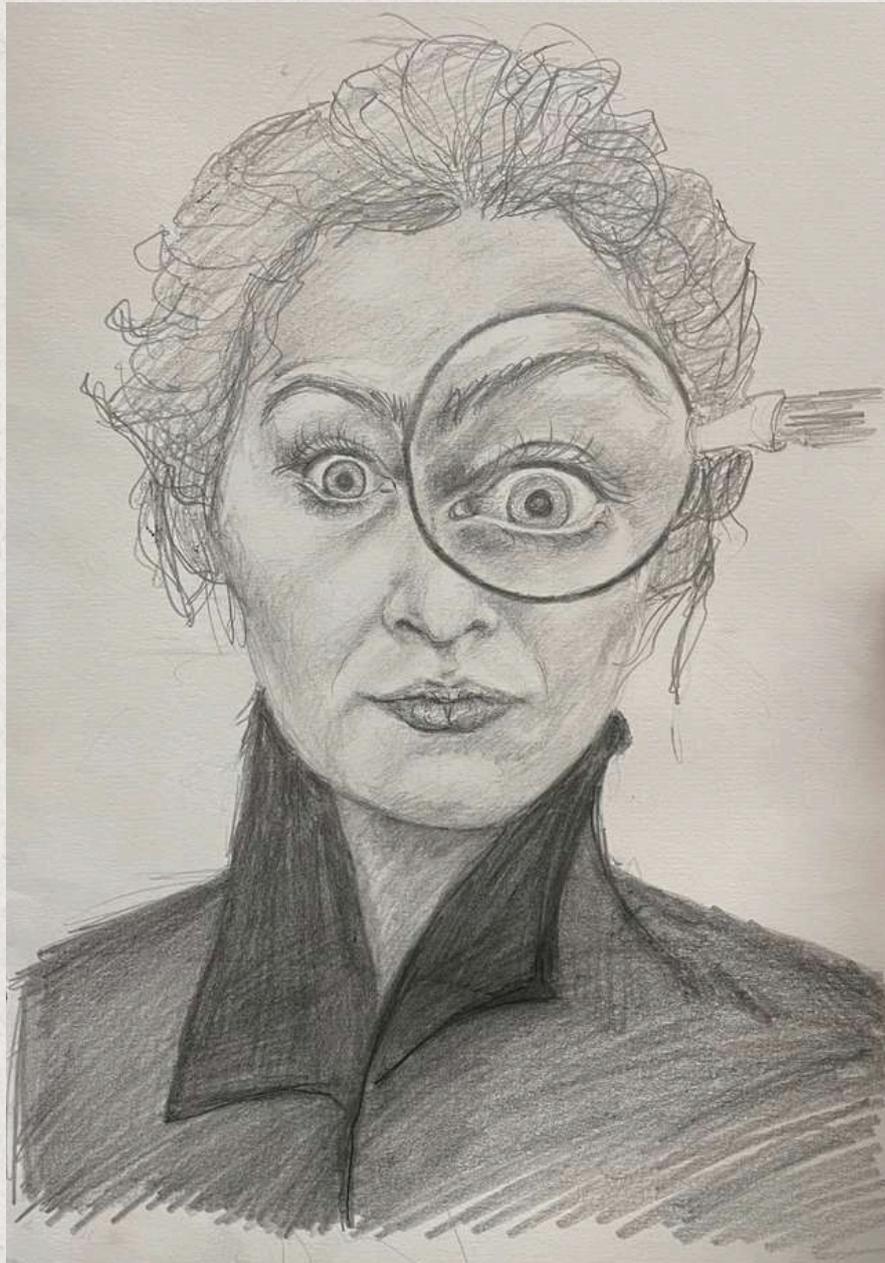


Phytobytes

Botany's newsletter, Trinity College Dublin



COVER BY
KATIE O'DEA

July-September 2024

People

As summer comes to a close and we settle into the new academic year we've had to say goodbye to many familiar faces 😞 and hello to many new 😊

Ed Straw recently finished his work in **Jane Stout**'s lab where they focused on the impacts of pesticides on bumblebees and the implications to sustainability and diversity. Throughout his time in the botany department Ed contributed a great amount to the community building here in botany especially noted is his organization of bake off and renowned quizzes. As a leaving gift Ed left an ample supply of forks to the botany kitchen. Bets are on for the projected number of forks left by Christmas with Catarina Barbosa graphing weekly counts going forward. As Ed moves on to new opportunities, we wish him the very best of luck in his future endeavors. Thank you, Ed, for everything you have done.



We are pleased to announce that **Mike Williams** is retiring after many years of dedicated service. Mike's hard work, expertise, and friendly demeanor have been an important part of the workplace, and he will be dearly missed. To celebrate his incredible career and wish him well for the future, a leaving party was held on the 5th of October at O'Neills. We wish Mike a well-deserved retiree and every happiness in retirement.

Tina and Morgane who stayed at Botany over the summer as part of their Erasmus program left a summary of their time as interns in the Plant Climate Lab. Here's what they shared:

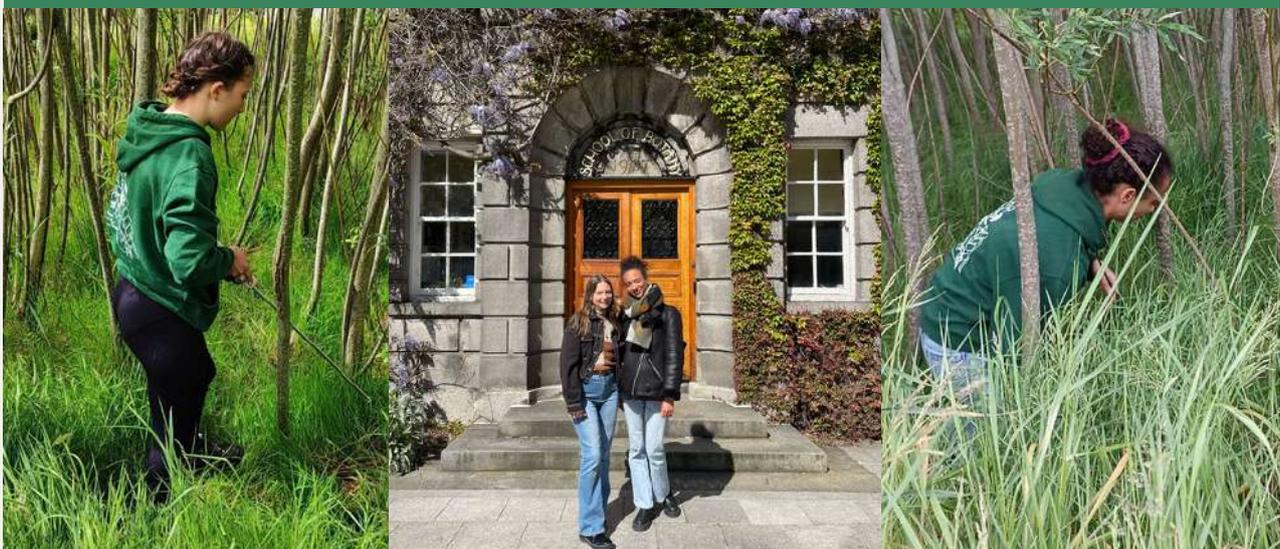
"Hi guys, we're Tina and Morgane, two French students who completed our six-month master's internship at the Trinity College Botanical Department. This internship was our first international experience and allows us to improve our English skills while learning a lot about botany.

We've been warmly welcomed by the entire team, which is quite diverse in botanical science and ecology, and allowed to learn about different fields of botany. The team was always there to help when needed and we had the chance to attend social events outside work. The botanical garden is a very peaceful place that we thoroughly enjoyed. We loved working in this environment and having the opportunity to take breaks by walking through the garden or sitting quietly in the arboretum to enjoy a ray of sunshine. It was also fascinating to observe the changes in the garden over the seasons, from winter to summer.

This internship allowed us to develop our autonomy and initiative, especially by adjusting our projects based on the skills we wanted to acquire. Working primarily independently taught us the importance of organization when handling long-term projects.

The experience of living in another country has enabled us to discover another culture, meet new people and discover amazing landscapes. It developed our self-confidence, independence, resourcefulness but also our English skills. The experience also enabled us to step out of our comfort zone and do things we'd never done in France. Being an Erasmus student in this team was a great experience that helped us shape our professional path and explore a field that really interested us. Doing this experience together helped us to support each other while sharing very good souvenirs.

If you are a person who wants to meet people from around the world, improve your plant biology skills, and enhance your English, this is the right place for you!"



Project news

“Ask a farmer: socio-ecological factors affecting pollinator conservation in agricultural landscapes”

Jess Knapp received the Trinity Research Doctorate Award for the project titled “**Ask a farmer: socio-ecological factors affecting pollinator conservation in agricultural landscapes**”. This work hopes to recognise those that play a key factor in pollinator conservation the complexities of human behavior that influence its success.

“FarmCredit”

Congratulations to all those involved in the establishment of FarmCredit. A new two-year research project funded by the Department of Agriculture, Food and the Marine (DAFM). FarmCredit is piloting insetting in the livestock sector in Ireland, an innovative approach that encourages sustainability within supply chains. Unlike offsetting, insetting involves corporates directly supporting their supply chain partners to adopt more sustainable practices. Well-designed insetting schemes can accelerate the transition to sustainability by closing the funding gap, complementing public incentives, and being more adaptive to new technologies and less reliant on policy cycles. FarmCredit will collaborate with key stakeholders — farmers, corporates, and regulators — to develop and test these schemes, which could play an important role in helping Ireland meet its climate targets. The project is coordinated by Prof. Yvonne Buckley, with **Prof. Jane Stout** and Prof. Martha O'Hagan Luff serving as Principal Investigators, and **Dr. Cian White** and Dr. Edward Knapp as post-doctoral researchers. For more information, please contact Cian at ciwhite@tcd.ie.

Events

Heritage Week

Marcus Collier attended the Heritage Week event organized by Wicklow Uplands Council, where he delivered a presentation on dry stone walls, exploring people's perceptions of them and their ecological significance. The event saw a fantastic turnout at the Annamoe Community Centre. For more information, visit

<https://m.independent.ie/regionals/wicklow/business/farming/wicklow-uplands-council-explore-the-vartry-reservoir-and-hold-presentation-on-dry-stone-walls/a2004190542.html?origin=app>

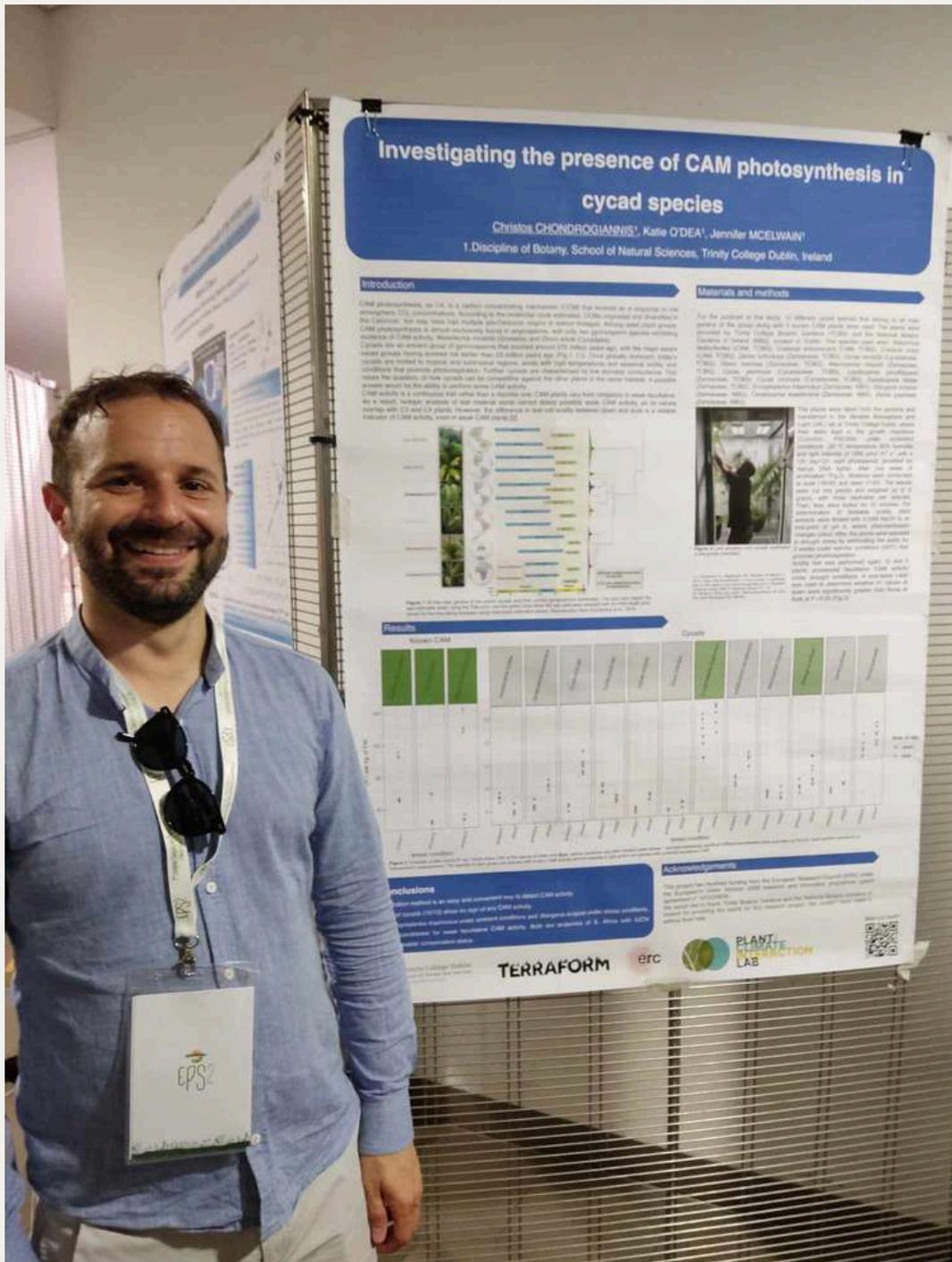
iCRAG

On June 25th and 26th, 2024, the iCRAG annual summit took place at in Athlone, bringing together researchers from various universities and institutions across Ireland to focus on Geoscience research. Among the attendees were **Jennifer McElwain** and **Sate Ahmad**. The summit provided updates on recent research in Earth System Change, Earth Science and Society, and Earth Resources. A presentation of the iCRAG Census results highlighted key areas for improvement in equity, diversity, and inclusion, followed by training on Education and Public Engagement (EPE) and innovation, including intellectual property and patents. During a poster session, Sate Ahmad presented preliminary findings on estimating transpiration and evapotranspiration from upflow willow-based treatment systems. On Day 2, Jennifer McElwain moderated a discussion on gaining insights into Ireland's future climate by analyzing past climate data from the Cenozoic era, using paleoproxies and climate archives.



The European Congress for Photosynthesis Research

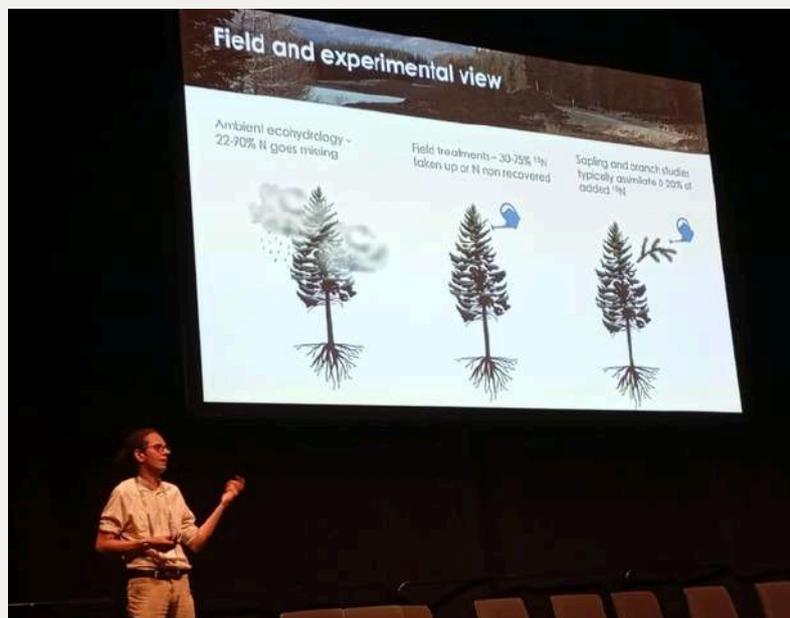
The European Congress for Photosynthesis Research came back for its second edition from June the 25th to the 28th 2024. Experts in the field of natural and artificial photosynthesis gathered in the historic city of Padova (Italy). **Christos Chondrogiannis** presented his research on the presence of CAM activity in the ancient group of cycads. He proposed two species as potential candidates for facultative CAM activity. This project carried out in collaboration with Trinity College Botanic Gardens and National Botanic Gardens in Dublin, generated a lot of interest and led to in-depth discussions about the significance of the findings and the prospects of the project.



Christos at the conference

The 26th IUFRO World Congress

Richard Nair attended the 26th IUFRO World Congress, held in Stockholm on 23-29 June 2024. Richard delivered a talk on forest canopy nitrogen uptake and N competition with microbes – supported by a dissemination grant from the COST action Cleanforest



Charity Half Marathon

Katie O'Dea was involved in the organization of a fundraiser to support the Botany-Zoology participation to the Charity Half Marathon in aid of the Irish Refugees Council. Link to contribute is <https://gofund.me/7e29ddc2>.



“Bee walk and talk” workshop

Ed Straw held a “bee walk and talk” workshop at the Airfield Estate. Showcasing Irish pollinators to a group of excited children. Explaining bee life cycles, myths and biology.



The Witness Tree Project

The Witness Tree Project at Trinity's Botanic garden established a collaboration with the National Botanic Garden for its long-term monitoring program. A new video was produced – feel free to check it at <https://youtu.be/QQ81YXSYKkc>

National Ploughing Championship

Richard Nair, Asrit, and Nadja were at the National Ploughing Championship on the 17th September representing ‘RootCheck’, funded by the National Challenge Fund in the EU tent.



ICOS 2024

Ian was at the ICOS 2024 Conference in Versailles, France. Where he presented a poster on partitioning respiration in peat soil using automated chambers under different water table heights and convened two sessions on using in situ data for policy and educational services. A highlight of the trip was the conference dinner which was on the River Seine on a boat!



The 19th Flora of Thailand Conference

Pongsakorn Kunasit (Cesar) visited Naturalis Biodiversity Center (Leiden, Netherlands) and Aarhus University Herbarium (Aarhus, Denmark) for his ongoing research in the first two weeks of July. The following week, Aarhus University hosted the 19th Flora of Thailand Conference, where he gave a talk on his PhD progress.



The Karlsruhe Institute of Technology International Summer School

Josua Seitz attended The Karlsruhe Institute of Technology (KIT) international Summer School at its 'Campus Alpin' in Garmisch-Partenkirchen, Germany, on the topic of land use and ecosystem change, held from the 30th July to the 7th August.



Land Use & Ecosystem Change Summer School 2024



Upcoming

Botany seminar series

The aim of the seminar is to showcase all of the exciting research going on in Botany at TCD. Drop a line to Richard Nair if you would like to do a seminar in future

Tuesday 08- Oct-24	Botany Lecture Theatre	Stephen Byrne	Inter-annual variability of Net Ecosystem Carbon Exchange in a mature broadleaf dominated forest
Tuesday 22- Oct-24	Botany Lecture Theatre	Francesco Martini	Harnessing publicly available datasets to inform conservation and land management
Tuesday 05- Nov-24	Botany Lecture Theatre	Thibault Durieux	Early woody plant diversity and biology
Tuesday 19- Nov-24	Lloyd Building, SL LB08	Jamie Waterman	The dynamic relationship between herbivory and plant defence
Tuesday 03- Dec-24	Lloyd Building, SL LB08	Ailbhe Brazel	Dynamic control of plant stress responses
Tuesday 17- Dec-24	Botany Lecture Theatre	Renata Asprino	TBC

Quantitative Botany Journal Club

The journal club is held every month, where researchers meet and discuss a recent paper, focused on data analysis and/or modelling across the broad spectrum of plant research in the department. Everyone welcome – it doesn't matter if you're an expert on the paper topic, or want to learn more or simply want to chat science and complain about bad figures.

You can also suggest paper you want to discuss, the criteria are: focused on plants or ecosystem science, quantitative (large meta-analysis, machine learning, process based models) and recent (ideally last 6 months, no older than 2 years)

Every second Wednesday of the month at 15:00 in the Botany Library. Join the Teams here [TCDGroup-QBot Journal Club](#) | [General](#) | [Microsoft Teams](#)

Ecology, Evolution and Environment Seminar Series for 2024-25

The Ecology, Evolution and Environment seminar series hosts presentations from invited speakers from other institutions on a variety of topics - from microbiology to global change research - and providing opportunities for our research teams to interact with colleagues, collaborators and future collaborators

School of Natural Sciences Ecology, Evolution and Environment Seminary series 2024/25

Semester 1: Thursdays at 13.00

Venue: Paccar Theatre, Naughton Institute

Date	Speaker and Title (research area)	Host
October 3rd	Dr Greg Albery, Zoology, Trinity College Dublin Title: <i>Animal social and spatial networks, from individual to global scales</i>	Paula Murphy
Oct 10 th	Prof Louis Schipper, University of Waikato, New Zealand Title: <i>Measuring soil carbon changes in grazed pastures: mitigation practices and nitrous oxide trade-offs.</i>	Matt Saunders
Oct 17 th	Dr Marta Shocket, Lancaster University. Title: <i>Thermal disease ecology in a changing world</i>	Pepijn Luijckx
Oct 31 st	James Richardson, University College Cork Title: <i>Can the wild relatives of Theobroma cacao safeguard the future of our chocolate?</i>	Peter Moonlight
Nov 7 th	Prof Karen Wiltshire, Chair of Climate Science, Trinity Title: <i>Coastal systems in the fast lane of Climate change: a question of resilience</i>	Nessa O' Connor
Nov 14 th	Dr. Jonathan Atherton Title: <i>Remote sensing of plant physiology and ecosystem processes</i>	Richard Nair
Nov 21 st	Dr Thomas Connor, Californian Det of Fish and Wildlife Title: <i>The case of giant pandas in the land of the lying dragon: Exploring the effects of habitat amount and fragmentation on functional connectivity in a habitat specialist.</i>	Paula Murphy
Nov 28 th	Dr Jamie Waterman, Trinity College Dublin Title: <i>Dynamic patterns shape plant-herbivore interactions</i>	Marcus Collier

Publications

Gorman, C. E., **Martini, F., Conroy, K., King, E.**, Mcleod, R., Obst, C., **Stout, J. C.**, Donohue, I., & Buckley, Y. M. (2024). A decision methodology for site-level ecosystem accounting. In *Journal of Environmental Management* (Vol. 366, p. 121814). Elsevier BV. <https://doi.org/10.1016/j.jenvman.2024.121814>

Nair, R., Luo, Y., El-Madany, T., Rolo, V., Pacheco-Labrador, J., **Caldararu, S.**, Morris, K. A., Schruppf, M., Carrara, A., Moreno, G., Reichstein, M., & Migliavacca, M. (2024). Nitrogen availability and summer drought, but not N:P imbalance, drive carbon use efficiency of a Mediterranean tree-grass ecosystem. In *Global Change Biology* (Vol. 30, Issue 9). Wiley. <https://doi.org/10.1111/gcb.17486>

Ed Straw, alongside colleagues at UCD, published a paper in *Data In Brief*, creating a database on Irish and UK pesticide products. They found that there are an astonishing 876 different pesticide products on sale to farmers in Ireland, and 275 on sale to household users. These findings draw into question the rigour of pesticide regulation, given so many products cannot be individually tested in depth.

Straw, E. A., & Stanley, D. A. (2024). A dataset exploring the substantial diversity of pesticide products: Insights from the UK and Ireland. In *Data in Brief* (Vol. 56, p. 110843). Elsevier BV. <https://doi.org/10.1016/j.dib.2024.110843>

Saget, S., Styles, D., & **Williams, M.** (2024). Comparative Life Cycle Assessment of alternative winter salad value chains supplying the United Kingdom. In *Science of The Total Environment* (Vol. 952, p. 175870). Elsevier BV. <https://doi.org/10.1016/j.scitotenv.2024.175870>

Castañeda, N. R., Pineda-Pinto, M., Gulsrud, N. M., Cooper, C., O'Donnell, M., & Collier, M. (2024). Exploring the restorative capacity of urban green spaces and their biodiversity through an adapted One Health approach: A scoping review. In *Urban Forestry & Urban Greening* (Vol. 100, p. 128489). Elsevier BV. <https://doi.org/10.1016/j.ufug.2024.128489>

Luke Quills had his first publication of many. Here is what he had to say.

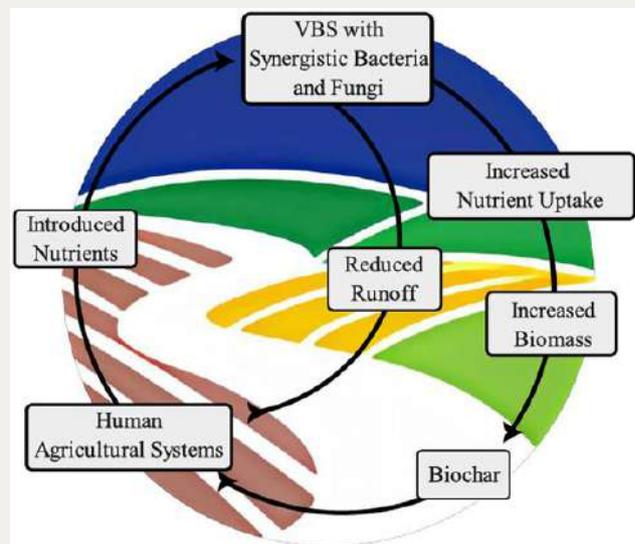
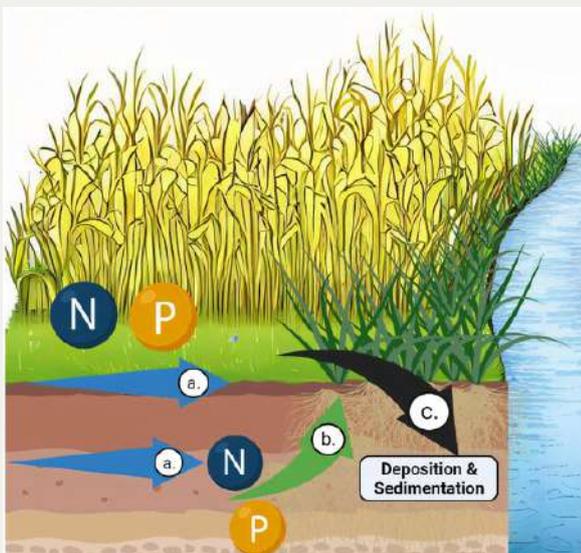
I'm delighted to announce the publication of my first paper, "An Integrated Mitigation Approach to Diffuse Agricultural Water Pollution – A Scoping Review". This work represents a collaborative effort from NuReCycle, a multi-disciplinary team of four PhD researchers, including myself (Botany), Diogo Ferreira (Environmental Engineering), Brian Joyce (Microbiology) and Gabriel Coleman (Environmental History).

Our review examines the challenges of nutrient runoff and explores innovative strategies for ameliorating this issue. It begins with a discussion on the socioeconomic factors that have driven the intensification of fertiliser use, which has culminated in the necessity for more effective nutrient management strategies. While vegetative buffer strips (VBSs) have long been used to filter agricultural pollutants, research shows that their effectiveness declines over time.

We propose a sustainable, nature-based solution that harnesses the synergistic relationship between plants, arbuscular mycorrhizal fungi (AMF) and plant beneficial bacteria (PBB). Massive quantities of nitrogen and phosphorus compounds are mobilised from the soil as a result of these microbial interactions, leading to enhancing plant nutrient uptake. Vegetation must be periodically harvested and resown to retain buffer functionality. The harvested material can be converted into biochar, a sorbent material that can passively absorb nutrients in waterways. Once saturated, it can be reapplied as a biofertilizer, engaging in a circular system that minimises nutrient losses in a sustainable manner.

I hope you enjoy the read, and if you have any questions please ask away at coffee or lunch!

<https://doi.org/10.3389/fenvs.2024.1340565>



Trinity College Botanic Garden's Witness Tree Project announcement got a lot of traction in the media. Have a look at some of the many articles written about it.

- https://www.tcd.ie/news_events/top-stories/featured/scientists-enlist-witness-trees-to-track-climate-change-and-pinpoint-which-species-can-best-clean-our-air/
<https://www.irishexaminer.com/lifestyle/outdoors/arid-41482234.html>
- <https://www.independent.ie/irish-news/trinity-college-enlists-witness-trees-for-30-year-project-to-track-climate-change-and-air-pollution/a868093078.html>
- <https://www.irishtimes.com/environment/climate-crisis/2024/09/23/witness-trees-to-track-irish-climate-change-overcoming-decades/>

Call for editor!

The EcoEvo Blog is looking for new editors! If you are interested please reach out to Josua (seitzj@tcd.ie)



Gallery

Summer is notoriously field season, here is what researchers in Botany have been up to:



ARCHAEOPTERIS CAST

Thibault Durieux

Thibault Durieux & Carla Harper



PARTIALLY ANATOMICALLY PRESERVED
LYCOPHYTE SPECIMENS

ARCHAEOPTERIS BRANCH OR STEM CAST

Thibault Durieux

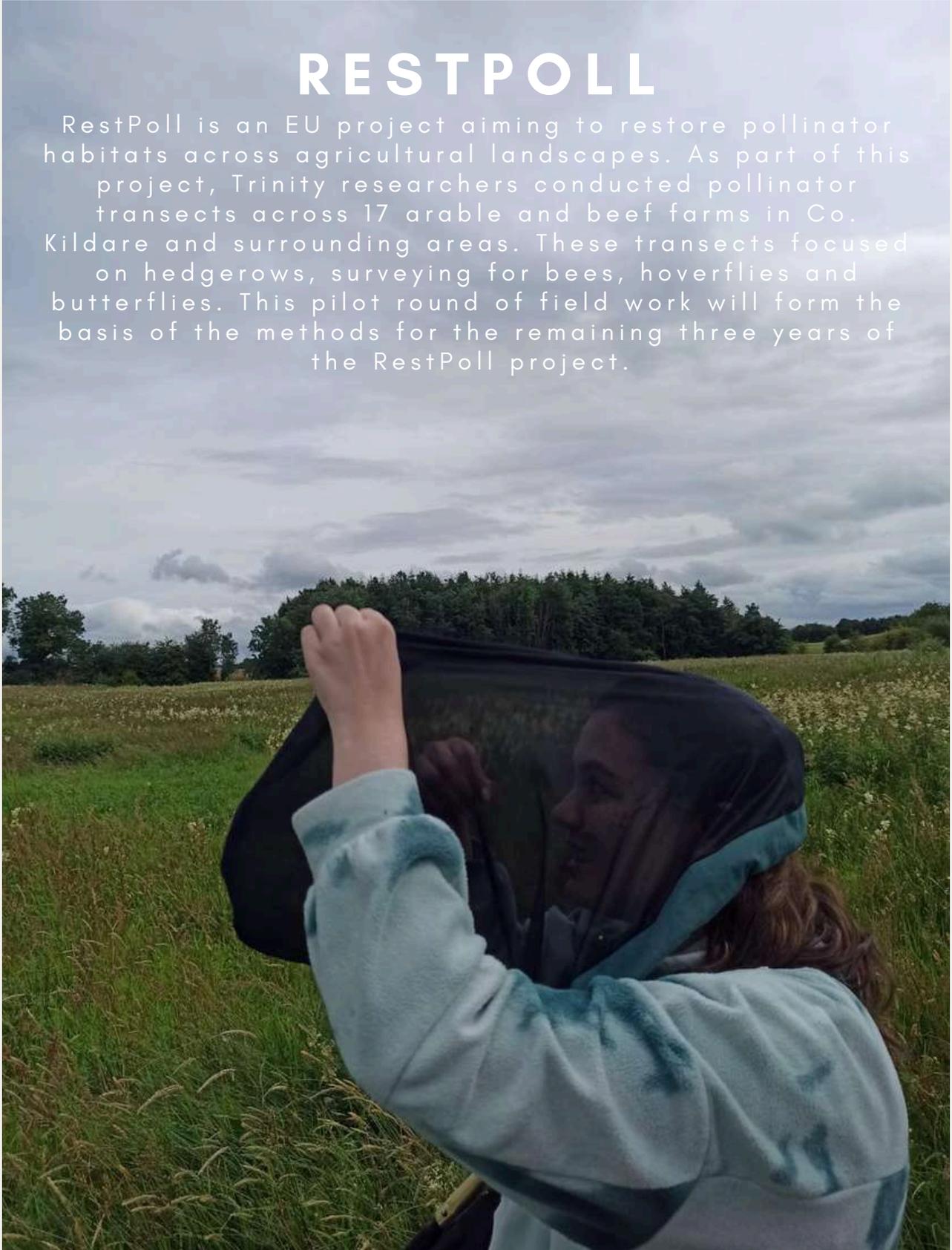


day 3 stop 5



RESTPOLL

RestPoll is an EU project aiming to restore pollinator habitats across agricultural landscapes. As part of this project, Trinity researchers conducted pollinator transects across 17 arable and beef farms in Co. Kildare and surrounding areas. These transects focused on hedgerows, surveying for bees, hoverflies and butterflies. This pilot round of field work will form the basis of the methods for the remaining three years of the RestPoll project.





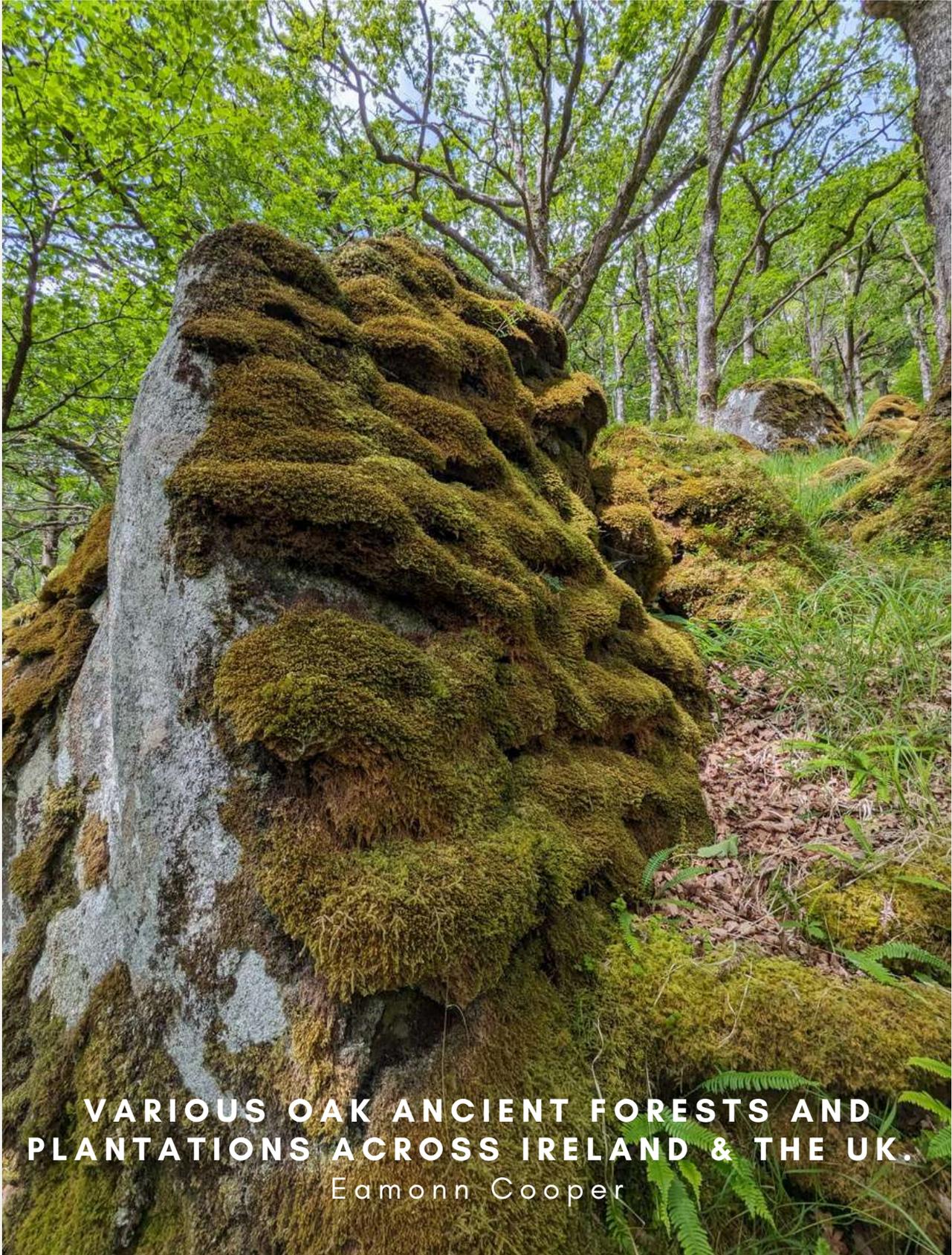
RESTPOLL

RESTPOLL



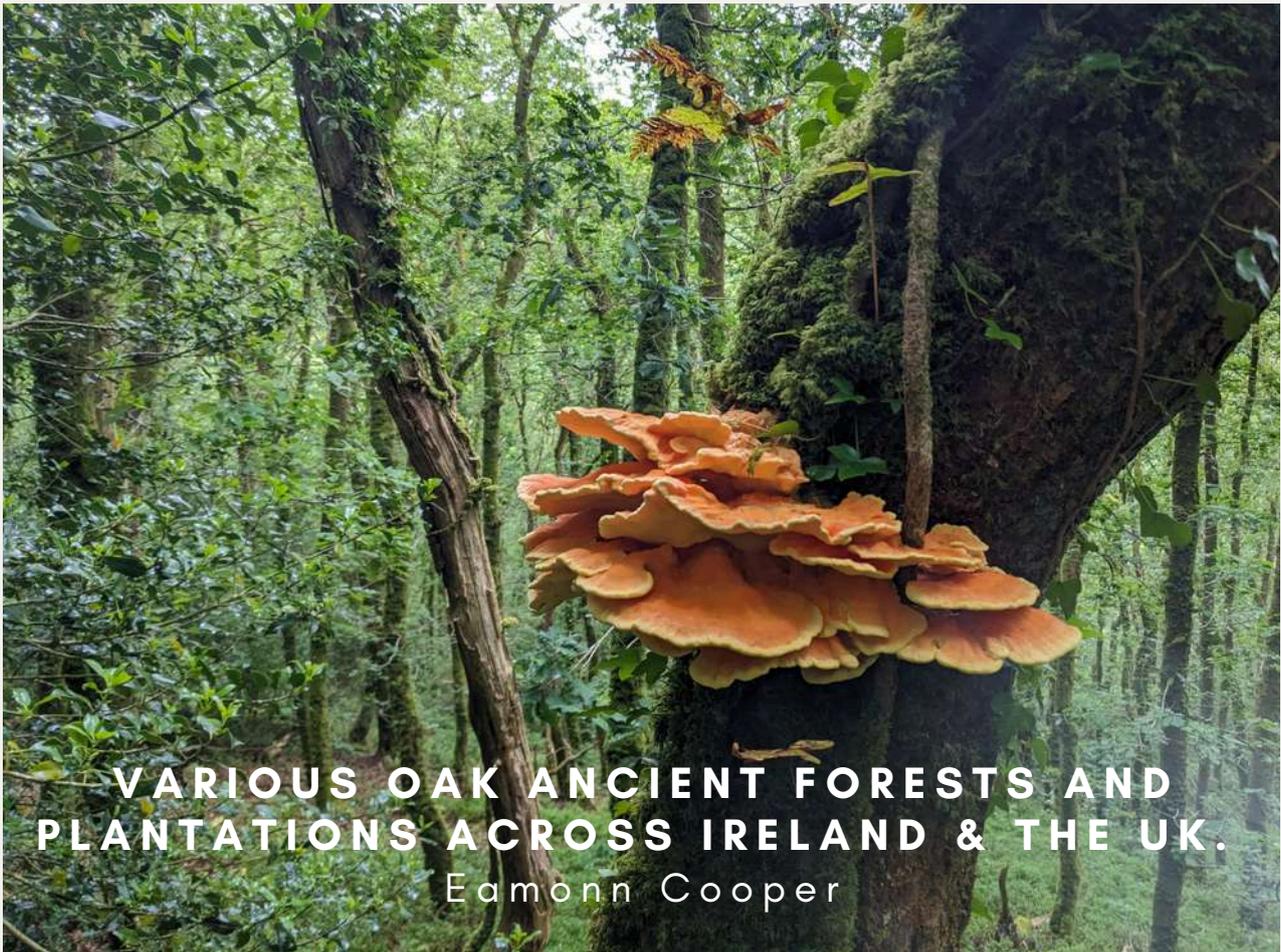
VARIOUS OAK ANCIENT FORESTS AND
PLANTATIONS ACROSS IRELAND AND THE
UK.

Edmond Cooper



**VARIOUS OAK ANCIENT FORESTS AND
PLANTATIONS ACROSS IRELAND & THE UK.**

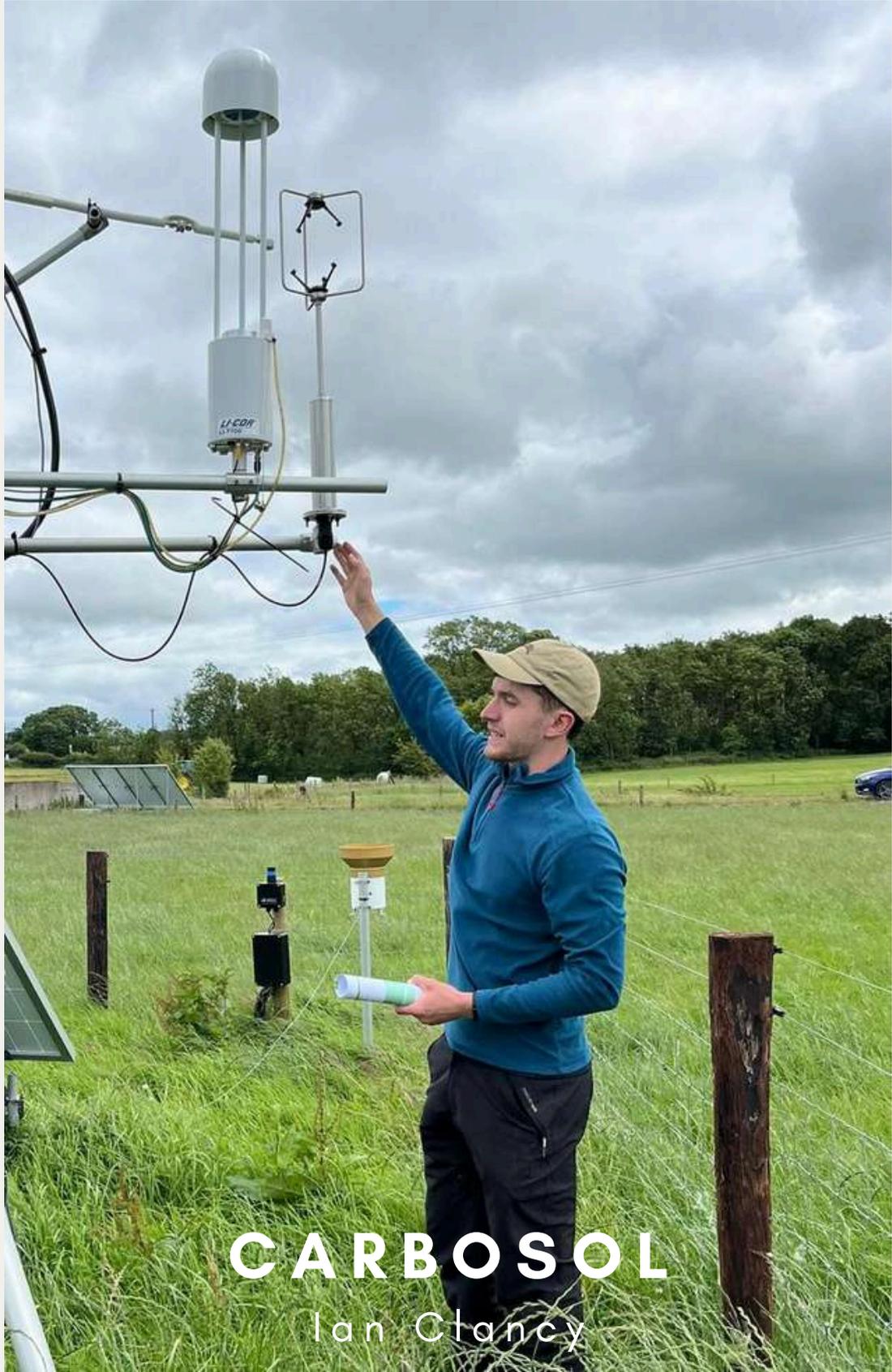
Eamonn Cooper



**VARIOUS OAK ANCIENT FORESTS AND
PLANTATIONS ACROSS IRELAND & THE UK.**
Eamonn Cooper



**VARIOUS OAK ANCIENT FORESTS AND
PLANTATIONS ACROSS IRELAND & THE UK.**
Eamonn Cooper



CARBOSOL
Ian Clancy



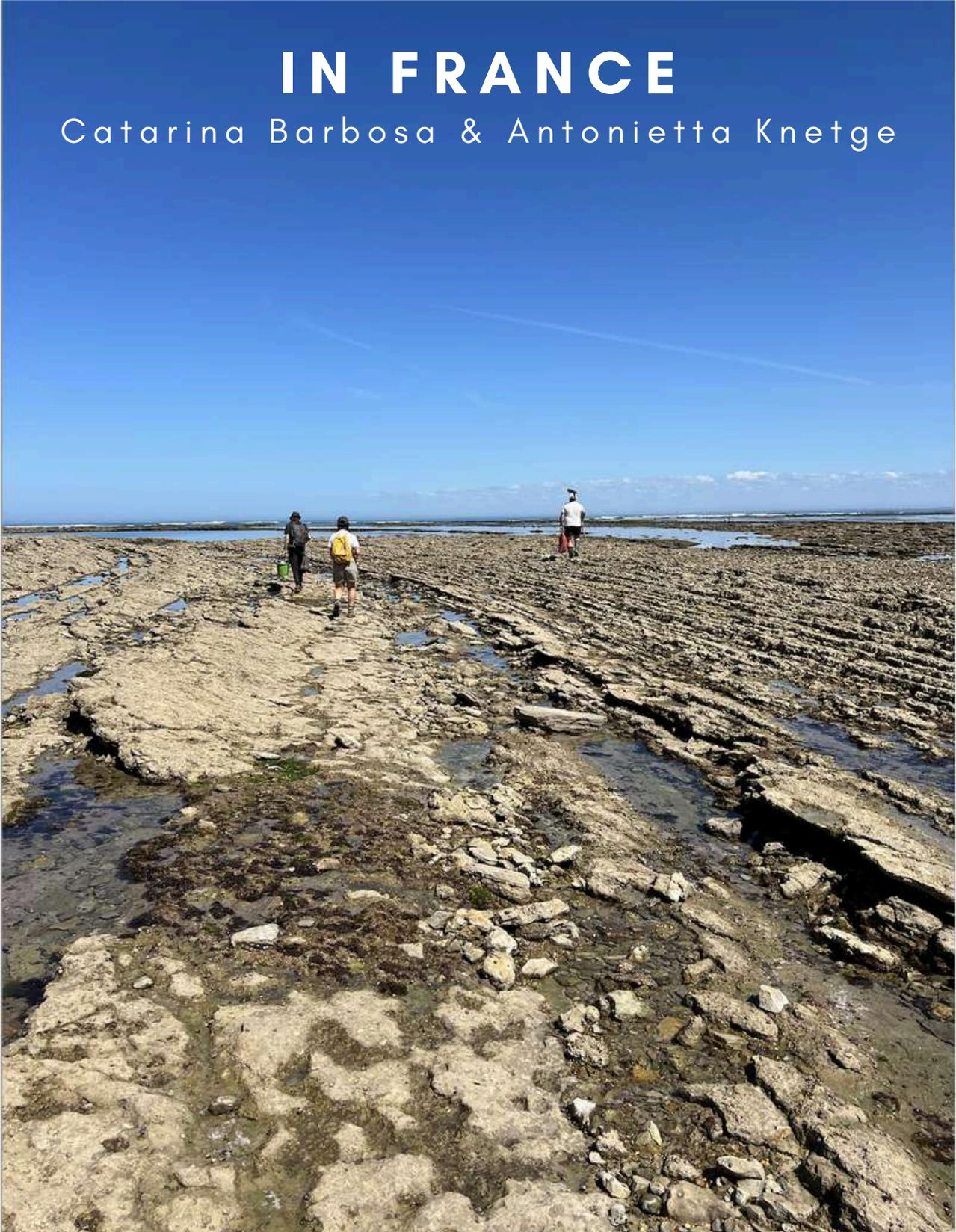
CARBOSOL

Ian Clancy



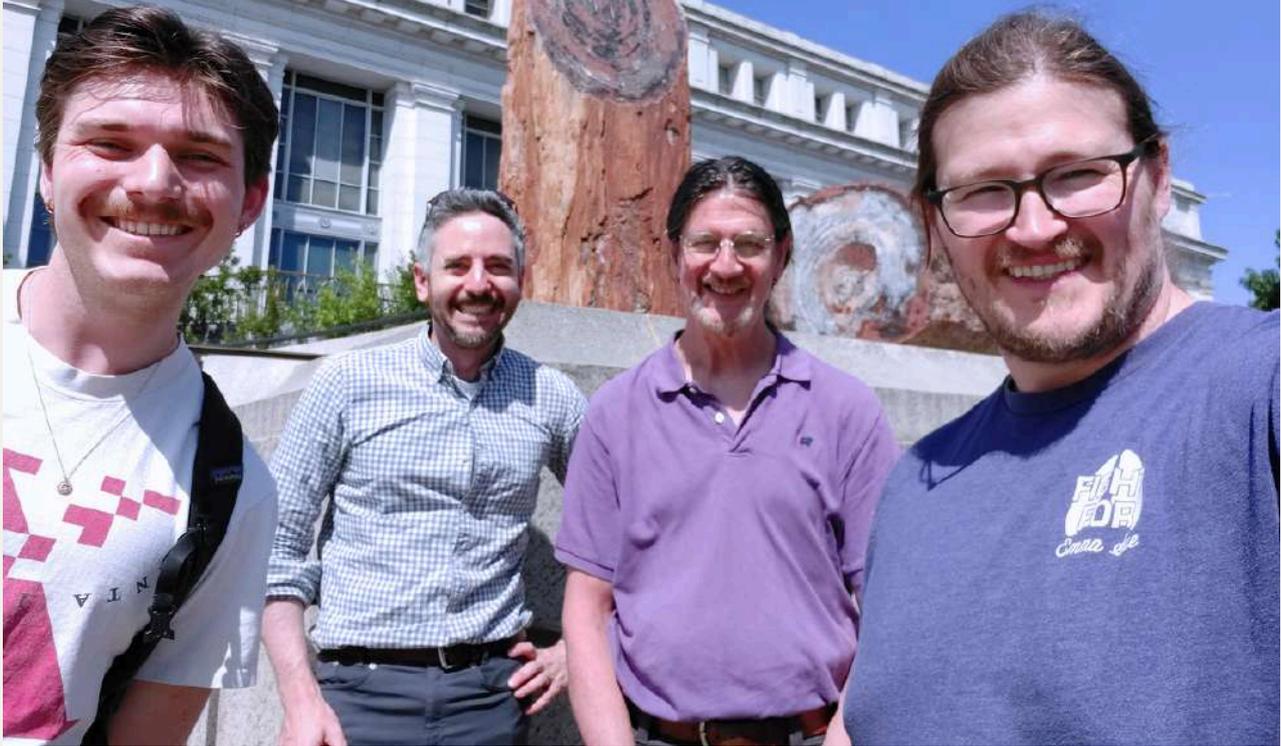
IN FRANCE

Catarina Barbosa & Antonietta Knetge



SMITHSONIAN NATIONAL MUSEUM OF NATURAL HISTORY, WASHINGTON D.C

William Matthaeus



A MICROGRAPH OF
XYLEM TRANSVERSE
SECTION.

HAND SAMPLES OF XYLEM TRANSVERSE SECTION

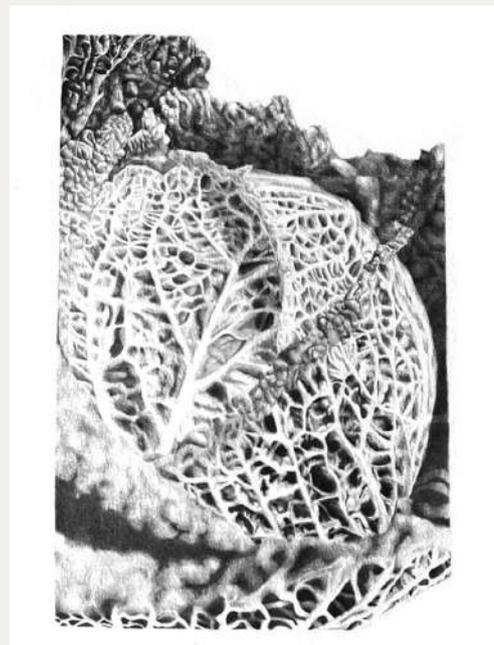
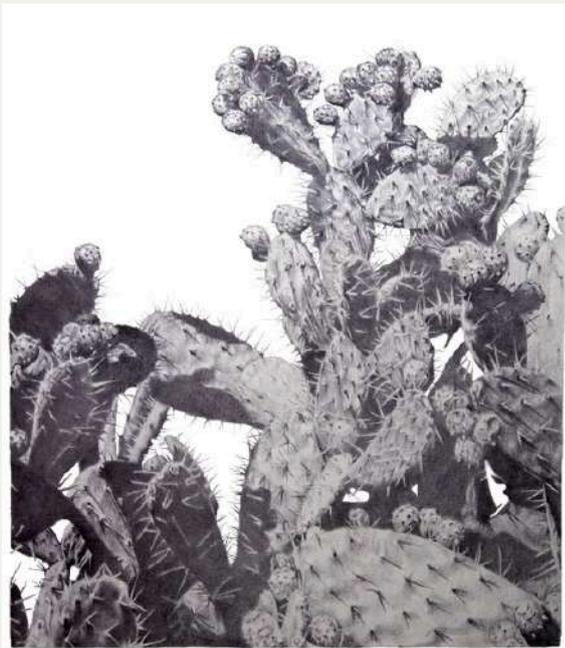


Phytoart

Valeria Brambilla is an Italian artist who specializes in botanical illustration using only a black ballpoint pen. Her art has featured in Kew Gardens, Society of Botanical Artists, and Bangkok Art and Cultural Centre.

For her botanical art and naturalistic illustration are not only a passion but also a social commitment, to keep track of the changes that take place in nature and represent them.

Find more at <https://www.valeribrambillaart.com/>



Thanks for reading!

Midori Yajima
News editor
myajima@tcd.ie



Eamonn Cooper
Content editor
cooperea@tcd.ie



Jie Huang
Design editor
jihuang@tcd.ie



Call for cover art

We are looking for different art (preferably related to botany) for the cover every issue. Please do not hesitate to send us a photo of your drawing/arts! There is no deadline for this. Email us anytime!

