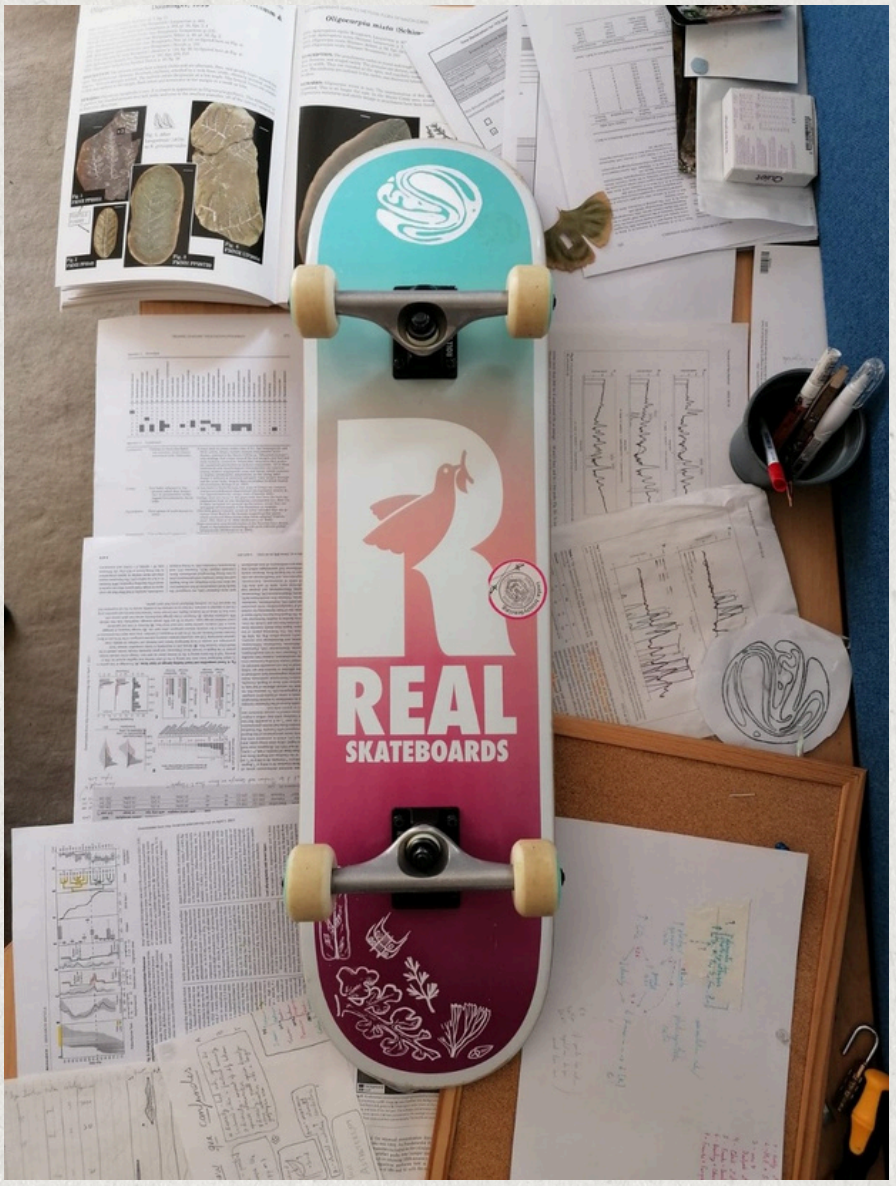
Phytobytes

Botany's newsletter, Trinity College Dublin



COVER BY

CATARINA BARBOSA

May-June 2024

People

We've a total of five new people in the department to introduce this month. **Sarah, Claire, Holden, Arthur,** and **Emily**.

*Hi, my name is **Sarah Larragy!** I am a post-doctoral researcher working in the People and Nature research group, led by **Prof Jane Stout** and **Dr Jessica Knapp**, here in Botany. I completed my undergraduate degree in Zoology, also in Trinity, in 2017. After graduating, I was awarded an IRC scholarship to do a PhD in Maynooth University, which was jointly supervised by Dr James Carolan and **Prof Jane Stout**. My PhD project was all about the buff-tailed bumblebee, B. terrestris, and, in particular, looked at comparing wild Irish populations of B. terrestris (ssp. audax) with other wild and commercial populations of the same. I examined several aspects of their biology including genomic, proteomic, and behavioural characteristics.*

Sarah introducing the RestPoll project at the Irish Pollinator Research Network meeting at TCD in January 2024.

Now, I am working on a Horizon Europe project called RestPoll, which stands for "Restoring pollinator habitats across European agricultural landscapes". This is a four-year innovation project with many collaborating research institutions (including both natural and social science disciplines), ministries, businesses, and an NGO. Together, our partners represent 16 countries across Europe. This project aims to create platforms and provide tools that will enable society to improve the quality and connectivity of wild pollinator habitats and help reverse the declines reported for many pollinating insects. As part of this project, I will be working with a network of farmers in the Co. Kildare region and assessing pollinator-friendly implementations and their impacts on wild pollinators. We are also interested in examining co-benefits provided by implementations for pollinators to see if there are any additional rewards to stakeholders e.g. increased soil health.

Another important component of the RestPoll project is to establish annual 'Living Lab' workshops with key stakeholders such as farmers, farm advisers, policy makers, businesses, and researchers. These will provide a platform for knowledge exchange, collaboration, and co-design of pollinator restoration measures. These workshops will be key in gaining insight into stakeholder perceptions of pollinator conservation, as well as facilitate investigations into the incentives and barriers facing pollinator conservation from a stakeholder perspective e.g. in national, EU and global policy.

At the moment, myself and research assistant Claire are getting this project off the ground by meeting farmers who will be involved in RestPoll and getting cracking with our first season of pollinator monitoring at farm sites!

Hi, my name is **Claire Kearney**! I recently graduated from sustainability with environmental sciences in UCD as part of the first class to graduate with this degree. Alongside my studies I spent a year as an intern for the BiOrbic operations team where I developed an interest in ecological research. I will be working in the botany department as a research assistant for the RestPoll project this summer. I'm looking forward to getting some experience in the field and developing my pollinator catching skills!

Hello! My name is **Holden Taylor**, and I'm a visiting undergraduate researcher from Yale University working with R-based mapping and statistics for the summer. I am conducting a study on the land cover changes within the Republic of Ireland, particularly on whether "protected lands" or those used for forestry perform better at preserving natural environments from certain human activities. The study will also look at the type of ecosystems that exist within these two land categories and how they have changed over time. I am grateful to be working with such intelligent and excited individuals and to be on the beautiful campus of Trinity this summer!

Arthur Lartigue-Peyrou is a visiting student from the Department of Education and Research in Biology at the Ecole Normale Supérieure Paris-Saclay. His interest in plant biology, evolution, and ecology brought him to TCD Botany to work with **Jennifer McElwain** and **Richard Nair**. Arthur is performing beaker experiments to investigate the different effects of leaf leachates on chemical weathering, using leaf material from species from two groups that span a broad evolutionary gap: ferns and angiosperms.

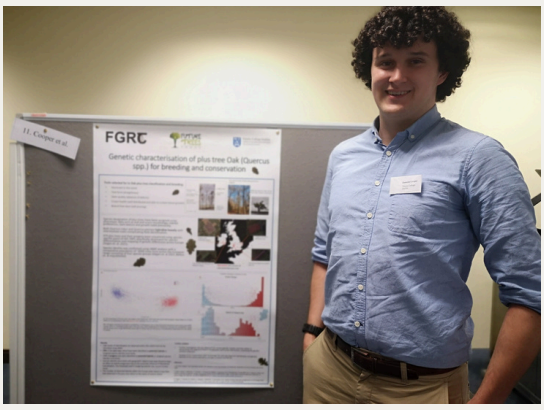
Welcome also to **Emily Symington**, who will work as research assistant with Richard Nair for the summer on the RootCheck project. The project aims to build visual tools for measuring roots and will host three more interns over the summer!

News

Irish Plant Scientists' Association Meeting (IPSAM) 2024

Jie Huang gave a talk on her ongoing work on alder tree improvement at IPSAM in University College Cork. Her presentation focused on the potential uses of genomic and conventional methods of selection in tree improvement/breeding in Ireland. In addition to this **Eamonn Cooper** participated in the poster presentation event showing off his ongoing work.

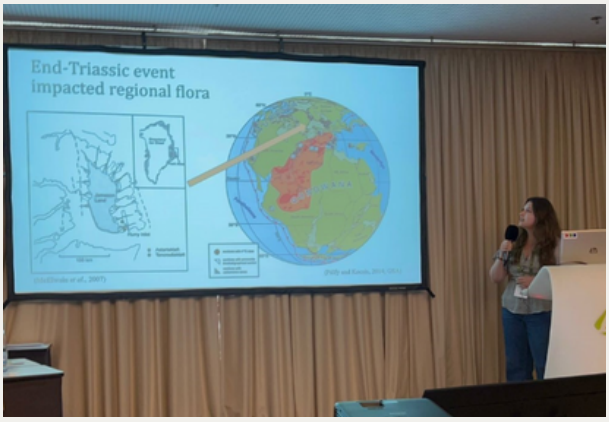
Jie



Eamonn

XV. International Palynological Congress (IPC) & XI. International Organisation of Palaeobotany Conference (IOPC)

Antonietta Knetge and **Catarina Barbosa**, presented their first major conference talk at IPC/IOPC in a session focused on the biotic crises of the Mesozoic. **Catarina** talked on paleoecology and turnover in the T/J boundary of East Greenland featured carefully developed visualizations of community composition through time at South Tancrediakløft. **Antonietta** presented on diversity and taphonomy, using rarefaction curves to compare between that same locality and Astartekløft, historically one of the most important sites for the Greenland T/J. Both talks garnered interest, lots of questions, and collaboration requests. A great success all round.

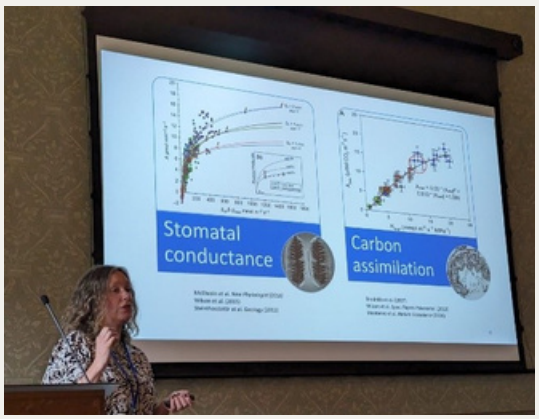


Antonietta

Catarina

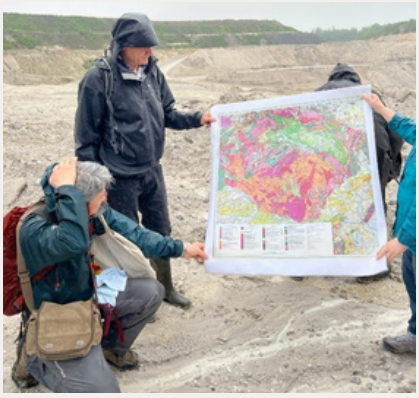
Paleo-trait workshop

The emerging field of trait-based paleoecology suffers from siloing of its practitioners along multiple dimensions including the availability of infrastructure and materials, and structure-specific focus. To promote the development of a more cohesive and collaborative 'paleo-trait' network **Will Matthaeus** and **Jenny McElwain** led a workshop on behalf of the ERC-TERRAFORM project at IPC/IOPC 2024. Twenty-eight scientists from around the world and across career stages participated in a collaborative evaluation of the potential for utilizing plant functional traits in the fossil record. A key discussion point was the recent publication of our own **Prof Jennifer McElwain** "Functional traits of fossil plants" (2024, New Phytologist).



Field trips in Prague

Members of the TERRAFORM project participated in IPC/IOPC field trips. One trip was made to the Pecínov, a quarry in the late Cretaceous Bohemian Basin, circa 50 km west of Prague. The locality offers a transgressional set of sedimentary bodies that allow clear identification of the paleo-coastal area, moving inland through a saltmarsh, swamp, and finally into a freshwater braided river. The Cenomanian flora from Pecínov has been extensively described, with an assemblage consisting of both gymnosperm and angiosperm taxa. The team was able to collect plant macrofossil material from this locality for future research whilst being able to collaborate on both a professional and social level with senior palaeobotanists in the field.



CLEANFOREST annual meeting

Richard Nair joined the second CLEANFOREST annual meeting, held in Lisbon May 7th to 10th. CLEANFOREST is a COST action aiming to assess spatio-temporal changes in global change drivers in European forests, where Richard co-leads Working Group 4 to assess next generation manipulation experiments and monitoring of atmospheric deposition. The meeting focused on assessing needs, gaps and ways ahead in forest monitoring networks.

Midori Yajima attended the first training school organised by the COST action CLEANFOREST on "Monitoring spatiotemporal changes in global change drivers and their effects on semiarid woodlands and forests" which was held in Lisbon (Portugal) May 6th to 9th. The training school explored various global change drivers and their impacts on semiarid woodlands and forests, and monitoring methods ranging from ecosystem fluxes to plant and lichen diversity, to soil properties. The trainees also presented their results at the CLEANFOREST annual meeting.

QUINCY workshop

The Plant Ecology Modelling group joined the QUINCY second annual workshop in Potsdam, Germany on May 13-16. The workshop involved discussion around plant ecology, modelling and growing as a community, with team building made easy by the location by the Templiner Lake!

International workshop on earth observation for SEEA compliant Natural Capital Accounting

In May **Cian White** and **Francesco Martini** took part in the International workshop on earth observation for SEEA compliant Natural Capital Accounting in Athens, Greece. This two-days event was organized by the PEOPLE-EA project and included presentations and discussions on the state of ecosystem accounting and on the potential and challenges in using Earth Observation data in developing accounts, predominantly in Europe.

Under a recent European Directive, each EU member state's statistical organisation will have to report on the state of the country's natural capital. Useful talks were given by several National Statistical Organisations about the challenges they are facing and how they are adapting to this new reporting framework. Many European Agencies gave presentations on the data and tools they are building to support the National Statistical Offices. On the final day, we learned about how the private sector is embracing these environmental reporting standards through organisations like the Task Force on Nature-related Financial Disclosures (TNFD).

Francesco and **Cian** co-presented the ForES and Farm Zero Cprojects, and the lessons learned in creating ecosystem accounts at small spatial scales. It was a timely and productive workshop around a recent and extremely dynamic field.

Acropolis as seen from workshop rooftop

Keynote talk at the Nature of City Festival

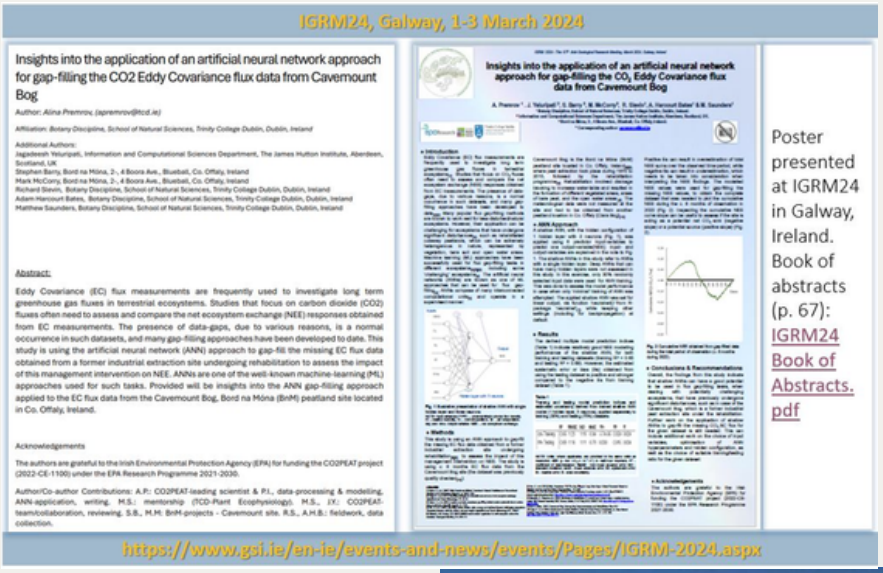
The NovelEco team joined the Nature of City Festival, a conference for global community of urban thinkers and change-makers to build cities that are better for nature and all people held in Berlin on 3rd to 7th of June where **Marcus Collier** delivered a keynote talk titled "Wild Spaces in Cities: worries, weeds, or welcome?"
The conference mixed art, science, and urban practice, and included a nature walk exploring novel ecosystems around the city of Berlin in Naturpark Südgelände and Tempelhof Airport.

Reflexive Monitoring

Members of the NovelEco Team also delivered their 5th Reflexive Monitoring meeting which took place on campus this week. Dave Kendal from University of Melbourne also attended the meeting to discuss each of the team's research projects.

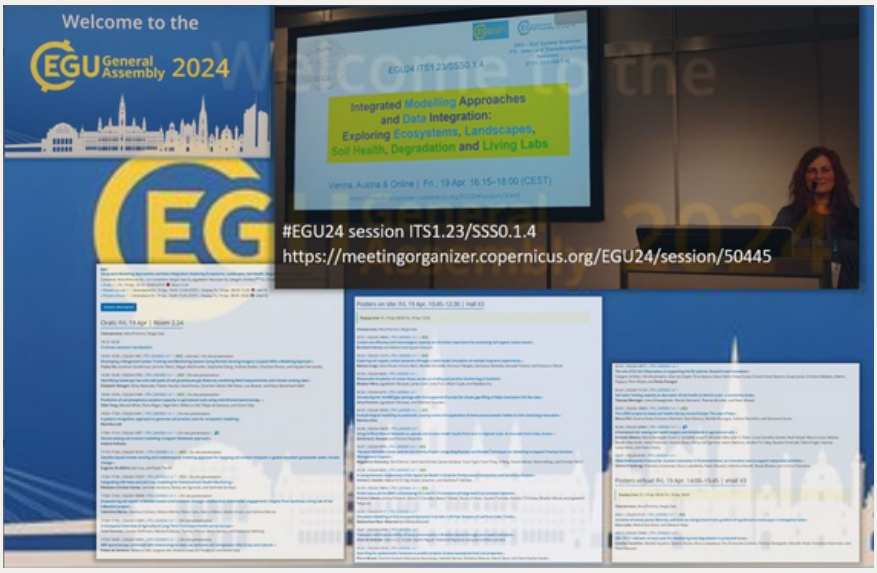
(from left) Anne English, Dave Kendal, Marcus Collier, Haider Khalid, Mairéad O'Donnell, Natalia Rodriguez Castañeda, and Melissa Pineda Pinto

An update on last month's edition **Dr Alina Premrov** summarises some of her contribution to the EGU conference in detail in the slides below including the two sessions in which she chaired titled "ntegrated Modelling Approaches and Data Integration: Exploring Ecosystems, Landscapes, Soil Health, Degradation and Living Labs" and "Soil Carbon and nutrient dynamics, interplay and flows in agroecosystems, forests and pastures: mechanisms, measurements and modelling strategies ".



Premrov, A., Yeluripati, J., Barry S., McCorry, M., Slevin, R., Harcourt Bates, A. and Saunders, M.2024. "Insights into the application of an artificial neural network approach for gap-filling the CO2 Eddy Covariance flux data from Cavemount Bog". IGRM 2024, 01-03 March 2024. University of Galway, Galway, Ireland. IGRM24 Book of Abstracts – p. 67. This work is performed under the Irish EPA funded CO2PEAT research project.

Premrov, A., Yeluripati, J., and Saunders, M. 2024. "Introducing the 'miniRECgap' package with GUI-supported R-scripts for simple gap-filling of Eddy Covariance CO2 flux data", EGU General Assembly 2024, Vienna, Austria, 14–19 Apr 2024, EGU24-6475. DOI: https://doi.org/10.5194/egusphere-egu24-6475. [Acknowledgements: This work is performed under the Irish EPA funded CO2PEAT research project].



People and Nature Research Group Writing Retreat

In the last week of April the **People and Nature Research Group** (Jane Stout's group) spent five wonderful sunny days in the Beara peninsula in West Cork. Immersed in a gorgeous and quite remote forest with a direct trail to the beach, **Cian, Ed, Kate, Francesco, Kathleen, Sophia**, and **Sarah** had a productive writing time.

In addition to the extensive writing, they had the opportunity to visit a (maybe?) ancient woodland area that had been the subject of a rewilding project in the last 15 years. Guided by the owner, and author of the popular book "An Irish Atlantic Rainforest" Eoghan Daltun, it was a time of interesting discussions on several topics related to the state and future of forests in Ireland, the conservation of nature, and the management of the land. They also visited the Uragh Wood, a small remnant of ancient oakwood with some ongoing reforestation.

The mornings were spent observing the moths trapped overnight and trying to identify them, with mixed successes. The evenings were usually inaugurated by a refreshing jump in the freezing waters of the Atlantic followed by some great home-cooked food and board games.

It was a great week in a great location, highly recommended to any other group thinking about a writing retreat!

The group after a walk in the Uragh Woods

Working on moths' identification in the morning

Co-Centre Launch

New Co-Centre for Climate + Biodiversity + Water had its launch event in May, gathering over 100 stakeholders to shape a more sustainable future. The €41.3 million Co-Centre, initially funded for six years by the Government of Ireland (Science Foundation Ireland and Shared Island Fund); the Northern Ireland Department of Agriculture, Environment & Rural Affairs; and UK Research & Innovation. In addition, the project will also receive more than 30% co-funding from over 30 industry partners.

The Co-Centre will deliver solutions to the most pressing challenges posed by climate change, biodiversity decline and water degradation across Ireland, Northern Ireland and Great Britain. Climate+ researchers will also work with industry partners to identify and validate the innovations needed to thrive in a climate, nature and water-positive world. Specifically, they will collaborate with industry partners in sustainable agri-food transitions, sustainable communities & livelihoods, assessing risks & opportunities, and investing in carbon & nature, in forestry, peatlands, grasslands and coastal habitats.

The Co-Centre is a collaboration between Trinity College Dublin, Maynooth University, University of Galway, University College Cork, Dublin City University, University College Dublin, Atlantic Technological University, University of Limerick, Queen's University Belfast, Ulster University, Agri-Food and Biosciences Institute, University of Reading, Newcastle University, UK Centre for Ecology & Hydrology.

Co-led by Yvonne Buckely, the Co-Centre has two funded investigators from Botany: **Silvia Caldararu** and **Matt Saunders**. Congratulations!

Co-Directors Prof. Yvonne Buckley and Mark Emmerson, with Deputy Director Ed Hawkins at the launch

Achievements

Marcella Campbell and **Siobhán McNamee** received Trinity College Master in Arts (jure officii) degrees, on Saturday 8th June, in recognition of their long and outstanding contributions to College as Botany Herbarium Assistant and Botany Chief Technician, respectively. Congratulations to our latest graduates!

Congratulations to **Silvia Caldararu**, on securing funding from the Science Foundation Ireland (SFI) Frontiers for the Future program for Trait-Tweaks: a project which aims to increase ecological realism in land models and change the way we use and predict plant trait data.

Mairéad O'Donnell was awarded the Fulbright-EPA Award to go to New York City to conduct research on co-designing urban wild spaces. She will be collaborating with the Urban Systems Lab located in The New School and also with the North Brooklyn Park Alliance.

Publications

Jessica Knapp wrote a piece about "How do we reduce pesticide use while empowering farmers? A more nuanced approach could help" in "The Conversation"

Undaharta, N.K.E., **Martini, F.** & Wee, A.K.S. Comparable biodiversity and demographic structure between sacred groves and protected forests with Dipterocarpus hasseltii reveal conservation value of customary forests in Bali, Indonesia. Biodivers Conserv (2024). https://doi.org/10.1007/s10531-024-02885-y

Lam, W.N., **Huang, J.**, Tay, A.H.T., Sim, H.J., Chan, P.J., Lim, K.E., Lei, M., Aritsara, A.N.A., Chong, R., Ting, Y.Y., Rahman, N.E.B., Sloey, T.M., Van Breugel, M., Cao, K.-F., Wee, A.K.S. and Chong, K.Y. (2024), Leaf and twig traits predict habitat adaptation and demographic strategies in tropical freshwater swamp forest trees. New Phytol. https://doi.org/10.1111/nph.19876

Phytoart

The Dandelion Fox

Carly Gee began The Dandelion Fox in 2016 after falling in love with the art of pressing flowers. Ranging from home decor, to jewellery to creating prints from wedding bouquets, Carly Gee grows and collect all the plants used in her art, making sure of using her handmade wooden flower presses, and occasional thick book to press the plants to create and preserving memories from her garden. Her work raised the attention of a range of media outlets, from Magazines to podcasts.

Upcoming event

Teagasc Forestry Open Day on July 4

The forest open Day is being hosted by Teagasc Forestry Development Department at Oak Park Carlow this July 4th. This event offers an opportunity to appreciate the vital role that Forest Research plays in addressing the various challenges and opportunities in forestry and forest management in Ireland. Attendees will be guided through many collaborative forestry research themes in the beautiful woodlands in the Teagasc Oak Park Research Centre. A vast array of topics relating to the ongoing forest research in Ireland will be discussed. More information can be found here.

Need help?

TCD has a dedicated space for student and staff health and wellbeing, from physical to mental. Find all the resources here: https://www.tcd.ie/healthytrinity/

All staff, students and visitors have a role to play in making Trinity an inclusive and egalitarian community. The university has also developed dedicated offices who specialize in equality-related matters. The EDI representatives for the Discipline of Botany are **Silvia Caldararu (caldaras@tcd.ie)** and **Rebecca Riveira (riverar@tcd.ie)**

Thanks for reading!

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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!