

Phytobytes

Botany's newsletter, Trinity College Dublin



COVER BY
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January - February 2025

People



We're thrilled to welcome all the new postgraduate students and staff members joining the Botany Department! Your fresh perspectives, enthusiasm, and passion for the natural world are invaluable additions to our community. Here's a quick introduction.

Camille Abadie

Hi, my name is Camille, and I'm excited to have started my first postdoc here at Trinity in January.

Before that, I completed an engineering degree in Environmental Sciences at AgroParisTech in France, followed by an MSc in Climate, Land Use, and Ecosystem Services at Paris-Saclay University, as I wanted to get closer to the research world and specialize further in ecosystem-climate interactions and vegetation responses to climate change. I then did my PhD at the Laboratory for Sciences of Climate and Environment (LSCE) near Paris, where I studied an atmospheric trace gas, carbonyl sulfide (COS or OCS), which is absorbed by plants through the stomata alongside CO₂ during photosynthesis. I investigated how ecosystem COS flux measurements could be used to improve the simulation of plant CO₂ uptake and transpiration in the ORCHIDEE land surface model.

I am now working with Dr. Silvia Caldararu on implementing ecosystem demography and competition processes in the QUINCY land surface model to improve ecological realism. This new environment, team, and research focus are a great opportunity for me to expand my knowledge of ecosystem functioning and collaborate with researchers from diverse backgrounds to broaden my scientific perspective. Thank you all for the warm welcome, and I look forward to meeting those I haven't had the chance to connect with yet!



Renata Camargo Asprino Pereira

Hi everyone! I'm Renata, a postdoc from Brazil who joined the department in September 2024.

This is my first postdoc, and I'm excited to be here! I completed my PhD in Botany at Feira de Santana State University in 2023. My expertise lies in plant systematics, taxonomy, and phylogenetics. I've been working with

Chrysobalanaceae, a fascinating family of tropical trees, since my Master's in 2014 and my research has involved species descriptions, floristic inventories, and conservation assessments

across Brazil. During my PhD, I incorporated phylogenomic techniques to explore evolutionary relationships of the Chrysobalanaceae. I also spent a year as a visiting research scholar at Harvard University, where I was introduced to cutting-edge molecular systematics techniques. I came to Trinity after receiving a Government of Ireland Postdoctoral Fellowship to work with Dr. Peter Moonlight. My research here focuses on developing a DNA-based approach to identify tree species in tropical rainforest plots, using herbarium specimens and DNA samples from a site in the Brazilian Atlantic Forest. We are also exploring how tree diversity relates to carbon storage, aiming to provide scientific evidence to support conservation strategies in this highly threatened ecosystem. Moving to a new country has been both an exciting and challenging experience, but I feel very fortunate to have joined such a friendly and welcoming department. I have been especially impressed by the wide range of research taking place here, and the interdisciplinary nature of the work is truly inspiring. I look forward to engaging with colleagues across different areas of botany, learning from new perspectives, and building collaborations. Looking forward to meeting more of you!



Louis Schipper, visiting professor from the University of Waikato in New Zealand spent part of his sabbatical at TCD. Here is a summary of his experience:

“Kia ora (greetings)

I recently spent a wonderful 4+months in the Department of Botany with Matt Saunders while on sabbatical from the University of Waikato in New Zealand. My name is Louis Schipper, a Professor in environmental biogeochemistry, with a specific interest in greenhouse gas emissions from drained peat soils used for agriculture. These soils can be highly productive, but the emissions are very high. In New Zealand, these drained peats contribute about 7 to 11% of national emissions and Ireland has similar emissions. Research teams in New Zealand and Ireland have come together to determine the controls of emissions and work on developing a model mainly focussed on the importance of water table depth. I wanted to see how peats are being used in Ireland and learn about the research approaches being deployed.

I had a great time with visits around the country and to Iceland and Switzerland. In Iceland, I also visited research sites exploring geothermal soils with natural temperature gradients ranging from about 10 to 40 degrees. We have comparable sites in NZ and these are being explored to understand the temperature dependence of soil ecosystems.



I also worked on a paper that was published. On my white board in NZ for years has been the question: “why 37°C?” this refers to the observation that most organisms have a temperature optima for growth of less than 37°C. Last year a colleague of mine published a paper arguing that the global ocean had a mean maximum temperature of 37°C for the last 2.5 billion years. This was my light bulb moment and led to collaboration with ecologist, paleo-climate people, molecular biologists and soil scientists. It was exciting to see it published: Schipper *et al* (2024) Earth's climate history explains life's temperature optima. *Ecology and Evolution*. 14: e70701. I took great pleasure in crossing off “why 37°C”?

I was very impressed by the manaakitanga and whakawhanaungatanga of the Botany department. Some of these practices are centred around shared experiences including food and drink (cups of tea!). So, keep up with morning tea, bake off, and the Christmas party. We have our own #researchcake webpage: <https://waiber.com/research-cake/>

From <https://maoridictionary.co.nz/>

Manaakitanga: hospitality, kindness, generosity, support - the process of showing respect, generosity and care for others.

Whakawhanaungatanga: process of establishing relationships, relating well to others.

See you next time. ”

Saoirse Hetherington

The Trinity Herbarium, a treasure trove of plant specimens and botanical literature of international significance, is currently undergoing a long overdue restoration project to maintain its legacy for future generations.

The collection has grown far beyond its original facilities. Currently stored in wooden cabinets custom-built in 1906, many specimens have overflowed into the hallways, exposing the collection to risks such as fire, flooding, and pests. This initiative is funded by the National Wildlife Services in response to the urgent need for modernisation and the importance of preserving and accessing the collection for many years to come.

The project has made significant progress since the Summer, with over 450,000 plant specimens successfully removed from the herbarium and relocated to other areas within the botany building. Currently, efforts are underway to relocate the valuable herbarium library. Starting in Spring, the next phase of work will involve floor strengthening for removal of the current central storage units and installation of a mobile compactor storage unit. This will optimise space and ensure the security of the specimens. The beloved wooden units removed from the central space are to be partially refitted above the remaining existing wall units. The interior will then be modified to create ample research space for students and specimen handling.

As the herbarium restoration leader my time in this role has been an incredibly rewarding experience. Drawing on my background in forestry and expertise in logistics, I've led and collaborated with the team to advance this project while gaining skills in procurement, project planning and obtained herbarium knowledge. I look forward to continuing to grow in this position and to see the new and improved herbarium!



Madison Windsor

The Trinity College Herbarium, home to over 450,000 plant specimens, is an invaluable resource for botanical research and education. Spanning centuries, this collection has vast research applications, such as creating species distribution models, taxonomic revisions, and informing conservation efforts.

As Herbarium Digitisation Leader, my work focuses on digitising herbarium specimens, which involves developing workflows for high-quality imaging, data entry, and metadata standardization. So far, we have successfully imaged all 17,000 British and Irish specimens.

In addition to managing digitisation workflows, I oversee the coordination and training of student volunteers. The herbarium offers students a unique opportunity to gain hands-on experience in specimen handling, data recording, and imaging techniques, providing invaluable insights into the intersection of historical collections and modern scientific research.



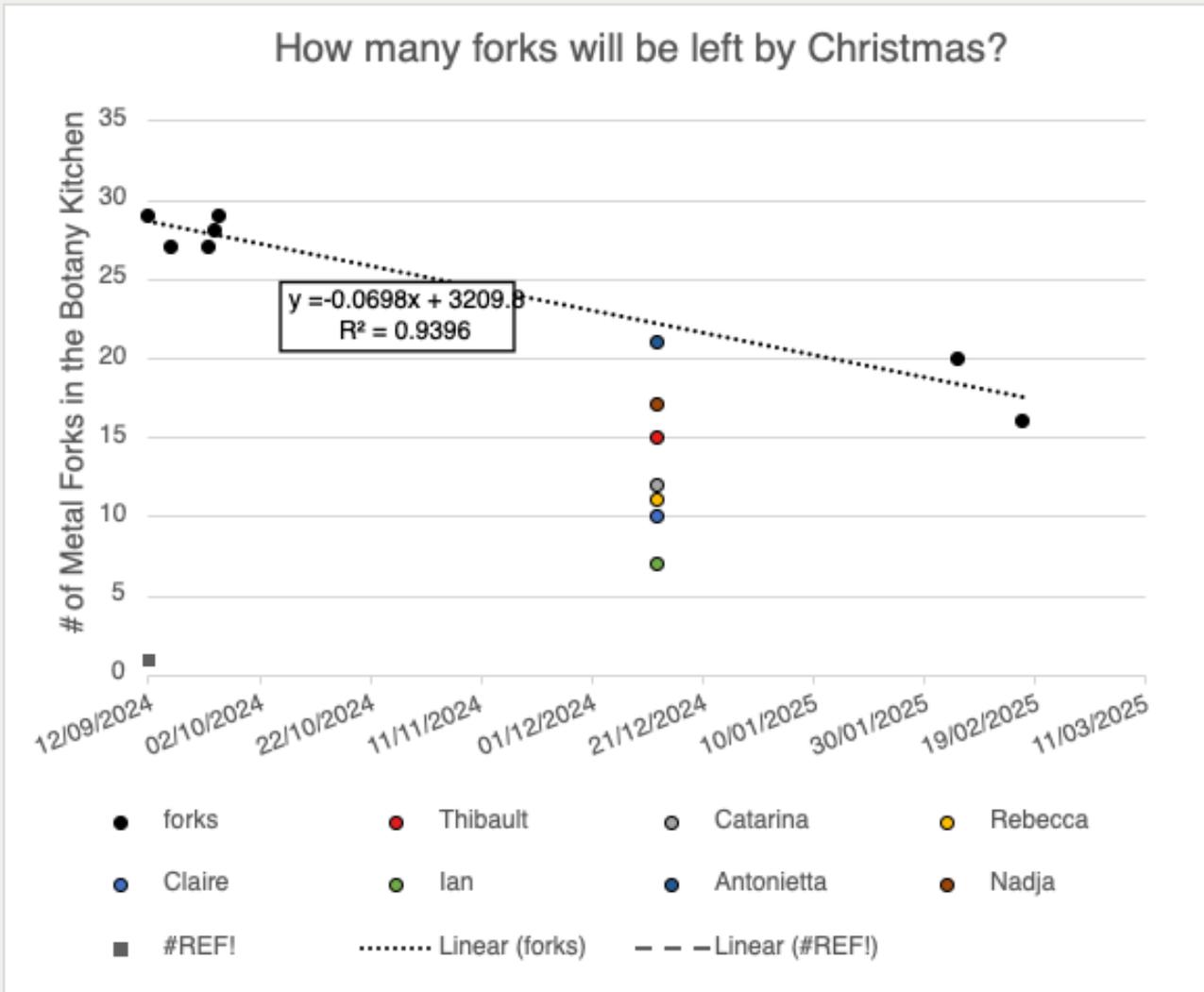
Claire Kearney

After 6 months in Botany working on the RestPoll: Restoring Pollinator habitats across European agricultural landscapes project, Claire Kearney is moving out of Botany into a new position as a Project Officer in CAP Network Ireland. Wish you all the best Clare!

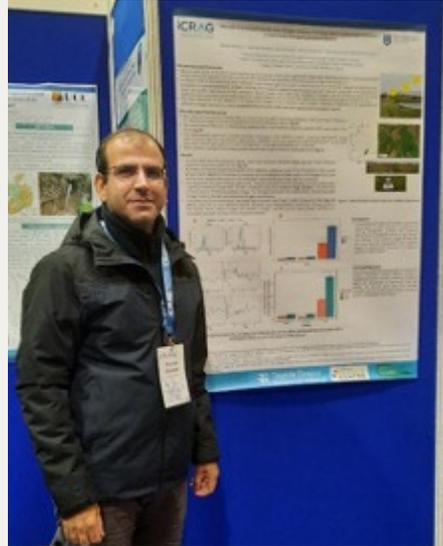


News

We are hereby announcing [Antoniotta Knetge](#) is the winner of the botany fork bet. For everyone arrived in the last months, In September [Ed Straw](#) made a generous fork donation to the Botany kitchen, after months of lacking this cutlery item, and lunchtime fights over the last metal forks. Since then, bets were open on the rate of fork disappearance, and number of forks left by Christmas. Congrats **Antoniotta!** Here is the full chart, all credits go to [Catarina Barbosa](#).



- **Morad Mitzei** presented a Poster presentation at CRAG@10, UCD, February 13th, 2025 titled: **Morad Mirzaei, Rachael Murphy, Karl Richards, James Rambaud, Kate Devereux, Matthew Saunders** “The role of grassland swards and nitrogen sources in driving nitrous oxide (N₂O) emissions in intensively managed grassland systems” .



- **Morad** has also been busy with chamber trials and greenhouse gas sampling across different grasslands swards at Teagasc Environmental Research Centre, Co. Wexford. Here are some postcards from the field!

Chamber trials and greenhouse gas sampling campaigns across different grassland swards at Teagasc Environmental Research Centre, Co. Wexford



- **Mairead O'Donnell** participated in a volunteer day with Fulbright, working in the Food Bank warehouse to help distribute food to people throughout NYC. She also conducted a series of co-design workshops along the North Brooklyn Waterfront as part of her research and wrote a post here: <https://urbansystemslab.com/blogs/2024/10/17/urban-wildind-and-co-design>

Upcoming

Botany seminar series

Every alternate Tuesday (roughly), we hold a department seminar at 1pm in the Botany Lecture Theatre. The aim of the seminar is to showcase all of the exciting research going on in Botany at TCD.

The seminar is open to all and it's a great way to see what other people are working on, get inspiration, find new collaborations, or just discover something new. Attendance is very much encouraged - its very friendly! Its also brown bag style, so you can eat your lunch in the BLT.

Please drop a line to **Richard Nair** (richard.nair@tcd.ie) if you would like to do a seminar in future.

Remote viewing will be available at the following link:

<https://teams.microsoft.com/l/meetup-join/19:bZkJx2PDaSxPvu9FIPDj83P6Yd26IFWehoVmqcwYlqE1@thread.tacv2/1726843789321?context=%7B%22Tid%22:%22d595be8d-b306-45f4-8064-9e5b82fbe52b%22,%22Oid%22:%22b7fa34a0-9704-43b3-b659-29d3fe67faa0%22%7D>

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

These are held on Thursdays at 13:00 in the Lloyd Building 8 (LB08)

Date	Speaker and Title (research area)	Host
Feb 27th	Dr Kevin Mganga, Utrecht University Title: TBA (research area: Grassland ecology and soil science)	Silvia Caldararu
March 13th	Prof Samraat Pawar, Imperial College London Title: Predicting (and controlling) the assembly and functioning of microbial communities in thermally fluctuating environm ent	Andrew Jackson
March 20th	Prof Catherine Kidner, Prof of Plant Genomics, Edinburgh University. speciation) Title: TBA (Research area: Plant molecular genetics and	Peter Moonlight

EcoEvo blog is looking for editors. The EcoEvo Blog is written by members of the Botany and Zoology Departments of the School of Natural Sciences, Trinity College Dublin, and it is a great way to feature your research to the public and get some outreach experience in your CV. Check their work at <https://www.ecoevoblog.com/> reach out to Josua or Niamh if it sounds like something you would like to be part of.



Publications

Mairéad O'Donnell, Marcus Collier, Melissa Pineda-Pinto, Clair Cooper, Fiona Nulty, Natalia Rodriguez Castañeda. "Redefining co-design for social-ecological research and practice: A systematic literature review." *Environmental Science & Policy* 164 (2025): 103998. <https://doi.org/10.1016/j.envsci.2025.103998>

Midori Yajima, Michelle Murray, Christos Chondrogiannis, Stephen Waldren, Jennifer McElwain. "A framework for long-term environmental monitoring using living plant collections in botanic gardens: A global review and case study from Trinity College Botanic Garden." *Plants, People, Planet* (2025). <https://doi.org/10.1002/ppp3.10628>

Jamie M. Waterman, Tristan M. Cofer, Ophélie M. Von Laue, Pierre Mateo, Lei Wang, Matthias Erb. "Leaf Size Determines Damage-and Herbivore-Induced Volatile Emissions in Maize." *Plant, Cell & Environment* (2025). <https://doi.org/10.1111/pce.15355>

Morad Mirzaei, Matthew Saunders, Rachael Murphy, Karl Richards, Seyed Mohammad Nasir Mousavi, Fateme Aghamir, Ján Horák, Roberto Mancinelli, Yuan Li & Emanuele Radicetti . "Integrating organic fertilizers in maize-mung bean intercropping: implications for soil carbon dynamics and greenhouse gas reduction." *Nutrient Cycling in Agroecosystems* (2024): 1-15. <https://doi.org/10.1007/s10705-024-10394-1>

Anthony Gibbons, **Francesco Martini, Cian White,** Emma King, **Jane C. Stout,** Ian Donohue, Andrew Parnell. "ExActR: A Shiny app for creating ecosystem extent accounts." *Ecological Informatics* (2025). <https://doi.org/10.1016/j.ecoinf.2025.103072>

Phytoart

Our very own **Diego Dylan Bianchi** is the protagonist of this issue's Phytoart, with his project '**Fungal Galaxies: a mysterious, visual journey into the most intimate phenotypes of invisible fungal biodiversity**'. This is a fusion of science and art designed to open eyes and minds to the wonderful world of fungi, which is largely invisible to the naked eye. The project also celebrates the diversity of life on Earth and underlines how little we know about Mother Nature and how valuable some of her mysterious creations may be.

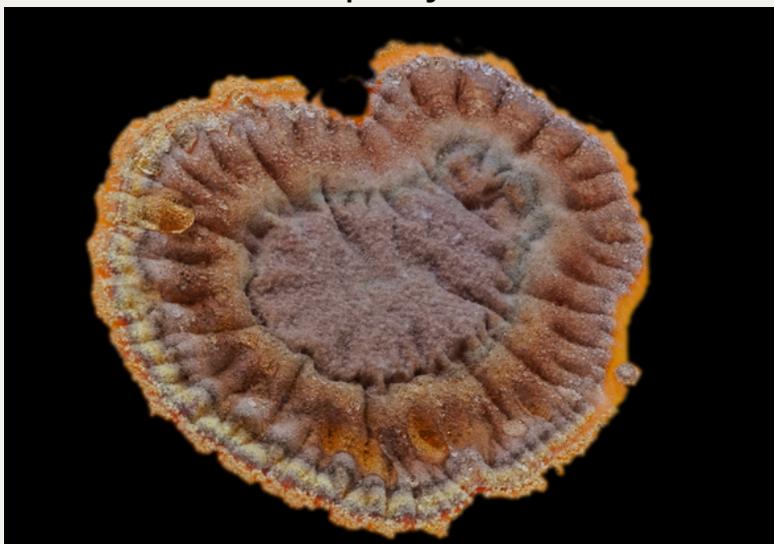


In his work, which took him from Killiney to Balbriggan with special permission during the COVID-19 pandemic, Diego isolated many different species of filamentous fungi from wild relatives of cereal crops to explore their symbiotic properties and enhance plant growth and resilience against pathogens in commercial crops (with a current focus on barley).



Diego screens the fungi for symbiotic properties in the lab and in glasshouse trials, assessing their impacts on barley growing in optimal and stressed conditions (limited water and nutrients) deficit.

Having successfully isolated hundreds of fungal species with extremely diverse traits, Diego's passion for fungi evolved from their scientific applications to an artistic appreciation of their natural beauty as well. This shift inspired him to create Fungal Galaxies to also showcase the purely aesthetic value of filamentous fungi.



Specific fungi in the collection include:

1. *Ophiocordyceps sinensis* (“caterpillar fungus”), famous in traditional Chinese medicine, and known for parasitizing ghost moth larvae
2. *Beauveria bassiana*, commercially used on crops, as it infects pests such as thrips, whitefly, spider mites, and aphids that can develop resistance to insecticides
3. *Sarocladium* species, which can produce toxic, insecticidal and antibacterial compounds
4. *Chaetomium* species, which protect against and even cure plant disease as well as promoting plant growth, protecting plants against things like durian and black pepper rot
5. *Epicoccum nigrum*, which put the brakes on various plant pathogens and pests, as well as helping to mobilise nutrients and increase tolerance to external abiotic stresses

Read Diego's interview [here](#).

His work will be also presented at the Dublin Zoo Native Species Festival 17-19 May 2025, and at FEMS MICRO - Conference/Exhibition, Milan 14-17 2025 - with an interactive session for <https://www.femsmicro.org> Congress & Exhibition programme, more specifically as part of Engagement & Growth track.

Check his work out, and find more at <https://www.fungalgalaxies.com>

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!

