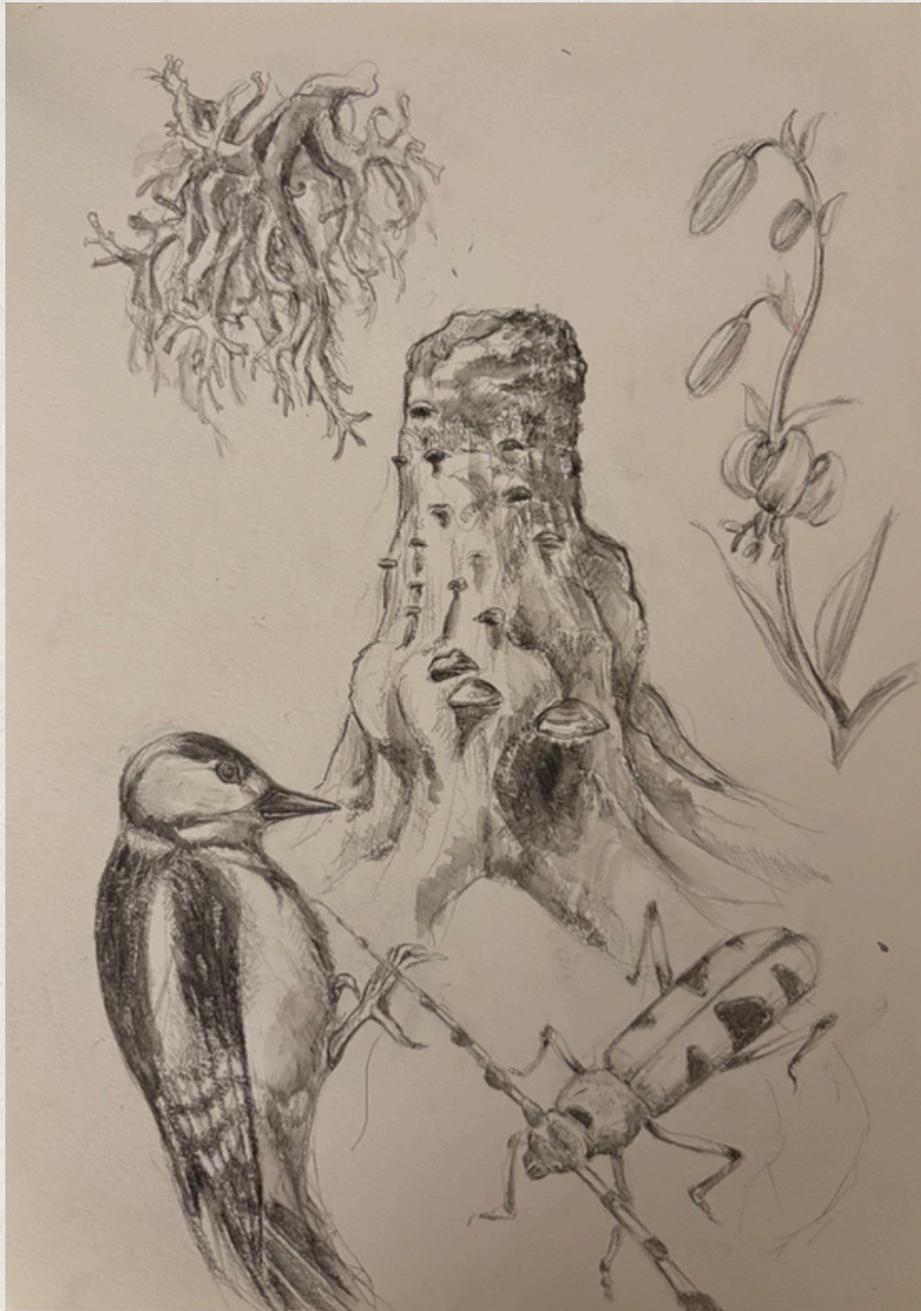


Phytobytes

Botany's newsletter, Trinity College Dublin



COVER BY
MIDORI YASJIMA

May - June 2025



Meet our new editor

Hi there, this is the new editor for Phytobytes, Owen. First, I want to say thanks to Eamon, Midori and Jie for welcoming me onto the team for Phytobytes and trusting me with such an important role so quickly. I'd also like to thank Catarina for pushing me to get in touch with Midori as soon as she found out I like to write for fun. I already had my moment in the sun with my introduction as a new employee in the last issue, so no long introduction here.

I've loved the few months I've worked here at Trinity, and I'm very happy to have a new opportunity to learn more about all that goes on in the Botany department. I'm hoping to bring a light, cheerful and energetic tone to Phytobytes, as well as highlight all the great work people are doing.

People



As we start this issue, we want to express our gratitude and say farewell to Eamonn, our trusted content editor for the past year, as he passes on the editing torch to Owen Small. We will remember him for his dedication, eagerness to help, and million typos. He will also be remembered for hiding the ResearchGate link of a different member of the Botany community in every issue. Congratulations to Francesco Martini for finding out first.



Thank you
EAMONN!



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.

Chris Udusalu

Hi, I'm Chris, the Research Assistant for the ASPEN project – supervised by Matt Saunders. My aim is to understand the effects of peatland rewetting on N₂O emissions. My interests centre on improving ecosystem functioning, climate change mitigation, and aboveground-belowground linkages. You can find me in the Plant Ecophysiology Lab during the week or playing pool in Fibbers at the weekend.



Katie Gahan

Hi everyone! I'm Katie, and I just started as a research assistant with the RestPoll: Restoring Pollinator Habitats across European Agricultural Landscapes project. I'll be working on fieldwork and stakeholder engagement for the project and am practically buzzing about the summer ahead!

Being awarded this opportunity has already been so fascinating. I'm enjoying seeing the farms and just how much plant and pollinator diversity really can coexist with agriculture, if we try. Fingers crossed that the summer keeps providing us with plenty of warm and dry weather suitable for finding pollinators!

I just completed my BSc in Agri-Environmental Sciences at University College Dublin, with the highlight being my research project. I worked on digitising and databasing hundreds of bumblebee specimens in the scientific collections of the National Museum of Ireland – Natural History, adding to our understanding of the historical distributions of bumblebees in Ireland. Previously, I completed an internship at Proveye, a remote sensing company, and an internship with the Department of Agriculture, Food and the Marine's Crop Policy, Evaluation and Certification Division.

Unfortunately for you all, once the summer and my tenure as a research assistant are over, you'll still have to put up with me as I've been accepted into the MSc in Biodiversity and Conservation at Trinity! I'd love to find out which clubs and societies I should join, so if anyone has suggestions, let me know!



Miriam Slodownik

Miriam is a Research Fellow in the Department of Botany at Trinity College Dublin. She currently works on The Witness Trees Project in collaboration with the Trinity College Botanic Garden. This long-term monitoring project assesses a wide variety of tree species and their physiological responses to rising CO₂ levels and pollution.

Alongside her work in extant botany, Miriam specialises in using plant fossils to reconstruct climates, environments, and plant physiology in deep time. She has particular expertise in extinct South Polar forest biomes and their plants. Miriam has been awarded an EU-funded Marie Skłodowska-Curie Fellowship and will commence the POLARIS project in October 2025, where she will research the canopy structure of the past polar forests of the Southern Hemisphere and atmospheric CO₂ during the Early Eocene Climatic Optimum (EECO).



Before joining Trinity, Miriam held a research position at the Museum of Nature South Tyrol (Naturmuseum Südtirol) in Bolzano, Italy. She holds Bachelor's and Master's degrees in Geosciences from the Leibniz University of Hannover, Germany, and spent an ERASMUS+ year at Stockholm University and the Swedish Museum of Natural History (Naturhistoriska Riksmuseet). Miriam completed her PhD in 2024 at the University of Adelaide, Australia, where her research focused on plants from the EECO in Tasmania, Australia. During this time she also worked as a field manager, conducting botanical surveys on Kangaroo Island, Australia, to assess the recovery of vegetation after bushfires.

Otherwise, Miriam is passionate about conservation and climate action. When she is not botanising, she likes to spend her time on horseback or in the water, snorkelling and surfing.

Sarah Browne

Hi! My name is Sarah and at the start of June I joined as a research assistant for the RestPoll project here in Trinity. The project takes a multidisciplinary approach to restoring pollinator habitats across agricultural landscapes. During the summer I will be helping out with fieldwork, including catching and identifying pollinators on farms. I will also be assisting with stakeholder engagement, which will include collaborating with stakeholders through workshops in order to co-design and refine pollinator restoration measures.

Before this, I completed a BSc in Sustainability with Environmental Science at UCD, during which I gained great interest in biodiversity and conservation. I also learned the importance of collaboration among different disciplines in creating sustainable and actionable solutions. For my final year project I focused on marine ecology, specifically, I investigated the effects of heavy metal pollution on crabs. During my time at UCD I took part in sustainability initiatives on campus and was a founding member of the Sustainability Society, which was officially established in 2023.

I am looking forward to contributing to such an interesting and important project, and I'm bee-yond excited to meet everyone!



News

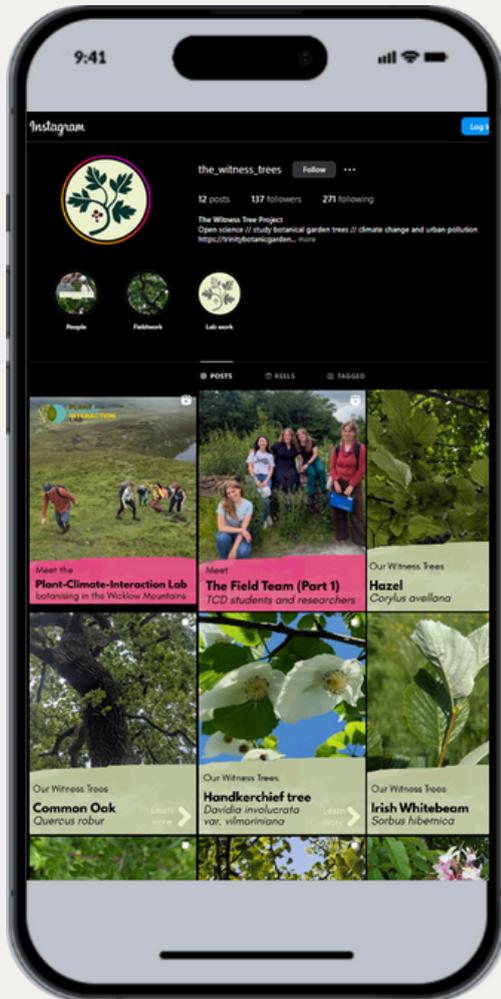
- Miriam has received the 2024 University Doctoral Research Medal for Outstanding Academic Achievements, from the University of Adelaide.



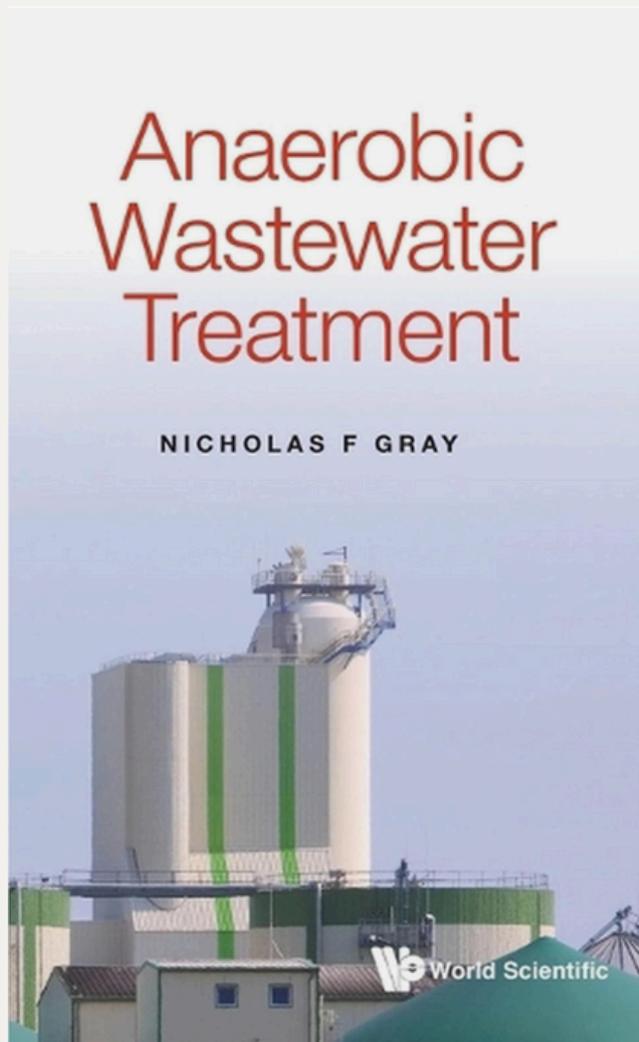
Congratulations to Miriam on this wonderful achievement!

“This was in recognition of my work for my Doctoral Thesis, An Early Eocene Near-Polar Flora from Eastern Gondwana (Tasmania, Australia) — Systematics, Adaptations and Palaeobiogeographic Implications of the Non-Flowering Plants. This is probably the highest recognition that can be obtained at the University of Adelaide.” - Miriam

- The Witness Trees project is Instagram official! You can follow them at the username @the_witness_trees or use the QR code below. The field season for The Witness Trees has just begun, so follow along with their work!



- A new book by Emeritus Fellow in Botany, Nick Gray, has been published by World Scientific. It is the fourth volume in a new series on water pollution control, which replaces his earlier work, *Biology of Wastewater Treatment*, published by Oxford University Press. *Anaerobic Wastewater Treatment* explores the exciting range of modern anaerobic processes now available for wastewater management.



To meet the challenges of population growth, global warming, and the ongoing need to protect biodiversity and public health, wastewater treatment must move away from existing energy-intensive aerobic processes towards more sustainable systems. Embracing the principles of the circular economy, wastewater treatment plants are evolving from being solely pollution control facilities into resource recovery centres. Achieving this transformation depends on the adoption of anaerobic treatment.

Among the many valuable by-products generated through fermentation are biomethane, biohydrogen, bioplastics, biodiesel and, most importantly, volatile fatty acids, which are used across the food, chemical and pharmaceutical sectors.

- Morad Mirzaei — a researcher with Dr. Mathew Saunders — has updates from his field season and second year experiment: Integrating Drone Imagery, Chamber Measurements, and Microbial Pathway Analysis to Quantify Nitrous Oxide Emissions from Urine Patches in Different Intensively Managed Grassland Swards. Learn more in the figures below.



In intensively grazed grasslands, livestock **urine patches** serve as concentrated hotspots of nitrogen (N) input, often exceeding the immediate uptake capacity of plants.



These localized areas are major contributors to nitrogen losses through leaching, volatilization, and particularly the emission of nitrous oxide (N_2O), a potent greenhouse gas that significantly contributes to global warming.



Quantifying N_2O emissions from these urine patches is essential for improving the accuracy of greenhouse gas inventories in grazed pasture systems and supporting more targeted climate mitigation practices in agriculture.

Second year experiment: Integrating Drone Imagery, Chamber Measurements, and Microbial Pathway Analysis to Quantify Nitrous Oxide Emissions from Urine Patches in Different Intensively Managed Grassland Swards.

Site: Teagasc Environmental Research Centre, Co. Wexford
 Research team: Morad Mirzaei, Rachael Murphy, Karl Richards, Matthew Saunders



- L.E.A.F. (League of Extremely Ambiguous Frogs)

They trained in Ecuador. They hide in plain chlorophyll.

(Catchphrase courtesy of [Sarah Larragy](#), via ChatGPT)

As part of her work, Ailis Wynne has been assisting her supervisor, Jim, in collecting data for a paper he is preparing in collaboration with researchers in South America and Canada. The aim of the study is to examine how two frog species from Ecuador differ in their detectability to predators at various stages of their life cycles.

To collect these data, they conducted a detection experiment in which participants were tasked with looking through a series of 36 images of leaf litter from Ecuadorian forests, each containing a model frog. The model frogs varied in size to simulate the developmental stages of the species, as well as in colour to replicate the markings of the two species.

The goal for each participant was to find the frog in each picture in the least amount of time possible. This task proved to be a challenge for many members of the department.

As a way of encouraging everyone to take part in the experiment (so she could obtain her dataset of 40 participants), Ailis decided to create a leaderboard to see who the best frog hunter in the department was. The results—and her commentary — are as follows:

1st place: Madison

2nd place: Macdara (zoology)

3rd place: Emily

Each podium member was able to find every frog in the series of images, a feat that was only achieved by these few people. The remaining rankings are below for anyone who is curious

- **-1 frog**

4th: Sebastian

5th: Sarah

6th: Gordon

7th: Nadja (RIP) [Editor's Note: This individual has left TCD, and is alive and well]

8th: Owen

- **-2 frog**

9th: Kes

10th: Dylan (RIP) [Editor's Note: This individual has left TCD, and is alive and well]

11th: Eamonn

12th: Cat

13th: Sarah B

- **-3 frog**

14th: Adam

15th: Robin

16th: Ailis and Jim (we worked together to complete it, built the experiment itself, and still did this bad)

17th: Fern

- **-4 frog**

18th: Phoebe

19th: Cherie

- **-5 frog**

20th: Daniel

21st: Saoirse

22nd: Inga

- **More than 5 frogs unfound**

23rd: Katie (-6)

24th: Moya (-7)

25th: Kathleen (-12)

And last, but not least (though he is the worst frog hunter) Sate, with an impressive 21 frogs unfound. Thank god he can get his food in the grocery store.

Thank you to everyone who participated in my collection of data! I hope it wasn't too awful because I will be doing another one of these at the end of the summer.

XOXOX Ailis!

- We take a break from your regularly scheduled Phytobytes to bring you a red blooded all-American update from the U.S. of A.

Botany's very own Catarina and Antonietta both presented at a conference in Freedomville Middletown, CT at the 42nd Mid-continent Palaeobotanical Colloquium, at Wesleyan University (Go Cardinals!).

Antonietta gave her talk Regional plant ecological turnover and diversity loss at the end-Triassic mass extinction at the Jameson Land Basin, East Greenland, receiving what was likely the most questions on the day! Catarina stared death in the face, locking eyes with the ever-ominous and foreboding jetlag, and stood bravely by her poster Sampling strategies and their influence on palaeoecological interpretations at the Triassic–Jurassic boundary, answering questions about counting (very hard!) and stats.

Highlights of this U.S. adventure include a bangin' seafood boil, an immersive experience in what must be Hollywood's archetypal 'Small Town USA' and rubbing shoulders with peers from across the pond. Indeed, a success all around!



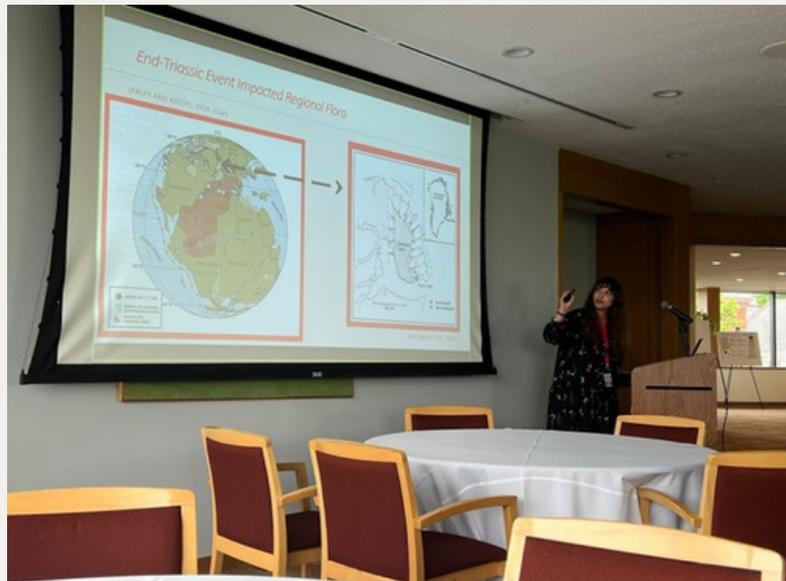
EDITOR'S NOTE

Hi there, this is the current (and American, to my chagrin) editor for Phytobytes who just felt obligated to express how he wanted preserve Caterina's exuberant and satirical wording, despite the unease of glorifying — albeit facetiously — an increasingly authoritarian state. Culturally (in some niche ways) the U.S. is wonderful, and there are still amazing people and researchers there, so take this disclaimer with an air of satire as well.



Catarina presenting in the conference

Antonietta presenting in the conference



- Jennifer McElwain and her teams in the Variable Atmosphere and Light Lab, Plant Atmosphere Interactions Lab, and Paleo-Botanical Lab in the Discipline of Botany recently underwent My Green Lab certification. The results are in: across the Certification Feedback Reports, all three labs have scored exceptionally well, with each receiving percentage scores in the 90s.

Read more at <https://www.tcd.ie/naturalscience/news-and-events/news-2025/green-labs/>.

- The inaugural School of Nature Sciences Sports Day took place on the 26th of June. Staff and students from all departments, but in actuality just Botany and Zoology, competed in various events to see which department will be crowned champions. The event was organised by Ailis Wynne, Catarina Barbosa, and Luke Quill.

Botany struck first, winning the opening egg-on-a-spoon race, but Zoology answered quickly with a win in the agility course relay. It seemed like Botany was going to once again snatch the lead with a dominating performance in rounders, but a final inning comeback with 25 runs from Zoology saw them take the lead.

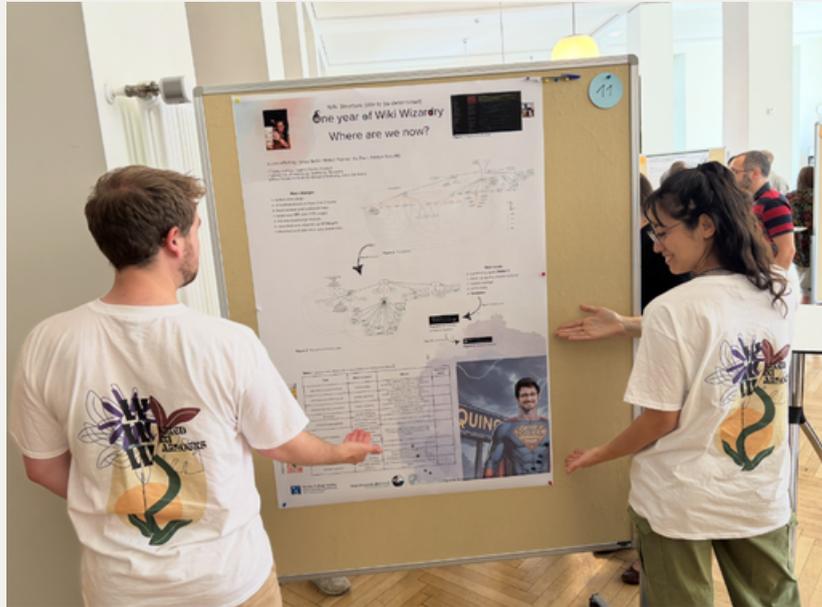
After a brief intermission of pizzas at the Pav, the action kicked off with dodgeball, followed by handball, a three leg race, and competition ended with a final game of handball. In the end, Zoology took the crown and became the first ever champions of Trinity's School of Natural Sciences Sports Day.

This result led to much controversy, as allegations were made against the Zoology squad for various forms of gamesmanship, that some insist questions the validity of their title. The main allegation being that the Zoology team was comprised almost entirely of Botanists. Regardless, a win's a win as they say. Congratulations Zoology!

- The Plant Ecology Modelling Group had its first retreat in May in Wicklow. It was a blast! The group dynamics came out stronger thanks to stuffed bunnies, ghost chickens, bomb defusals, and traffic violations (of which Midori takes full responsibility). Until the next one!



- Silvia Caldararu, Josua Seitz, Luke Daly and Midori from the PEM group also attended the third QUINCY workshop from the 16th to the 19th June in Berlin, Germany. It was a great chance to present each one's work, attend organizational and science meetings, and getting involved more in the QUINCY community. Josua's and Midori's matching t-shirts did not get enough appreciation, but they will try again next year.



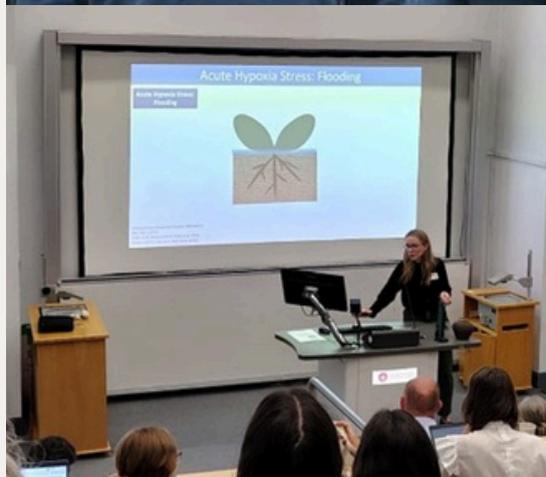
- Midori Also attended the first eLTER conference in Tampere, Finland, from the 23rd to the 27th June, titled "Towards a whole-system approach for ecosystem science". The conference welcomed over 340 participants from 32 countries to take part in nearly 30 sessions and 15 workshops. It was also a fantastic opportunity to visit the astonishing research site in the Hyytiälä forest. Midori presented a poster about her current work on estimating phenology in temperate forests as part of the session on Long-term ecosystem observations and manipulations to understand the effects of global change on forest ecosystems, chaired by members of the COST action CLEANFOREST.



- IPSAM Conference in Galway, June 2025

The University of Galways hosted the Irish Plant Scientists' Association meeting (IPSAM) on 16th and 17th of June. Eight members of the Botany department gave talks at the conferences, and four presented posters in the afternoon sessions. In addition to regular attendees, Trinity was represented in total by 15 botanists at IPSAM!

Beyond the excellent talks and posters, the conference was quite eventful. There was a lovely dinner, train snafus, cycling acrobatics, creating of trivia questions, and contentious debate on the role of smugglers and miners in the natural history of two of Ireland's Lusitanian flora. All in all, it was wonderful networking and educational experience, as well as a fun time for all who attended. Congrats to all the presenters!



IPSAM Talks and Posters, in order:

Talks

- Ailbhe Braze: Understanding the role of histone methylation in plant hypoxia responses
- Renata Camargo Asprino: Extraordinary tree species richness and carbon storage in the Brazilian Atlantic Forest
- Owen Small: ForES: Site-level Natural Capital Accounting and Ecosystem Service Modelling for Forests
- Miriam Slodownik: The Witness Tree Project: Long-term plant monitoring for a changing climate and urban pollution
- Christos Chondrogiannis: Evidence of CAM activity in the ancient lineage of cycads
- Emma Blanka Kovács: Mercury analyses of modern and fossil plant substrates as indicators of atmospheric Hg loading.
- Sate Ahmad: On Weather, Water, and Willows: Drought Avoidance Strategy in *Salix viminalis* and Its Implications for Ecosystem Water Balance
- Peter Moonlight: On the geography of big plant genera

Posters

- Emily Symington: Future-proofing chocolate: the environmental resilience of cacao wild relatives
- Sate Ahmad: The Role of Landscape Ecology in Ecosystem Restoration: The Case of Woodland–Wetland Ecotones
- Wenxin Wang: Semi-Deceit Buzz Pollination: A Novel Pollination type in *Begonia*
- Muhammad Siddiq: Three decades of atmospheric change: reshaping the elemental composition of woody plants across global biomes

Publications

Dr. Richard Nair co-authored *Below the Leaves: Integrating Above- and Below-Ground Phenology for Earth-System Predictability*. His paper questions whether current plant phenology is over-reliant on above-ground traits – such as leaves – for predictive global modelling on cycles for water or carbon. Are these dynamic systems misrepresented due to underrepresentation of below-ground processes like root growth or soil microbial activity? Read for yourself: <https://doi.org/10.1111/1365-2435.70057>

Dr. William Matthaeus is on the multi-institutional team that published *Revisiting k: Time-varying stream litter breakdown rates*. Analysing time series data on litter decomposition in streams, the study demonstrates that simpler models allowing for variable decay – as opposed to widely used, more common negative exponential models that use constant decay rate k – often fit data better and yield less biased estimates. See more about their methods and recommendations here: <https://doi.org/10.1002/lol2.70029>

In a slight change of pace, Dr. Sate Ahmad, Dr. Jennifer McElwain, and Dr. Nair – along with Professor Laurence Gill of the Environmental Engineering Department at TCD – published *Comment on “On the Use of the Term ‘Evapotranspiration’”* by Miralles et al. Their paper focused on the 2020 commentary, by Miralles et al., that makes the case for the return to use of “evaporation” over the term “evapotranspiration.” The Trinity team provides a clear, well-supported rebuttal illustrating why “evapotranspiration” remains a critical and distinct term. Read it here: <https://doi.org/10.1029/2024WR038835>

Phytoart

This issue's Phytoart phocus is Japanese botanical sculptor and flower artis, Azuma Makoto, as well as botanical photographer Shiinoki Shunsuke. Their studio, [AMKK](#), highlights the beauty, mystery and existential value of flowers through Makoto's creative and experimental floral designs, captured permanently by Shiinoki's photography.

Two quite simply astonishing works they're currently highlighting are [In Bloom](#) and [Frozen Flowers](#).

The first, [In Bloom](#), shows images capturing the journey of an exquisite bouquet, cultivated at the Los Angeles Flower District, as it climbs from Black Rock Desert (Nevada, USA) into the stratosphere on a high-altitude balloon. The backdrop of what's essentially outer space against these beautiful and vibrant flowers is truly awe-inspiring.

The second, [Frozen Flowers](#), shows an intricate botanical sculpture covered in ice in Hokkaido, Japan. After some internet sleuthing, it appears to be specifically on the Notsuke Peninsula, an area known for its flat, winter landscapes. The third year he's done this, Makoto designs an amazing piece with bright, colorful flowers before spraying it with water to freeze over. The finished product strikes an incredible balance between otherworldly and unnatural, and harmonious with the surrounding landscape.





Thanks for reading!

Midori Yajima
News editor
myajima@tcd.ie

Owen Small
Content editor
SMALLO@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!

