PHYTOBYTES

JUNE 2023

The Trinity College Dublin Botany Department Newsletter

Accomplishments

Congratulations to **Elena Zioga** and **Irene Bottero** for having successfully passed their Viva examination! It is such a pleasure to see all the fantastic achievements that have come out from these research projects. The results of their investigations have been published on several important scientific journals and reached out also the interest of newspapers like the Irish Times and the Independent. **All the best!**

PHYTOBYTES

JUNE 2023

Accomplishments

A very warm goodbye to our fabulous friend and colleague **Richa Marwaha,** who finished her post-doc in April and sadly left an empty desk in our office! She has now moved to **UCD** where she is working as a **Data Scientist** at the Computer Dpt.

Good luck and well done for all your achievements!

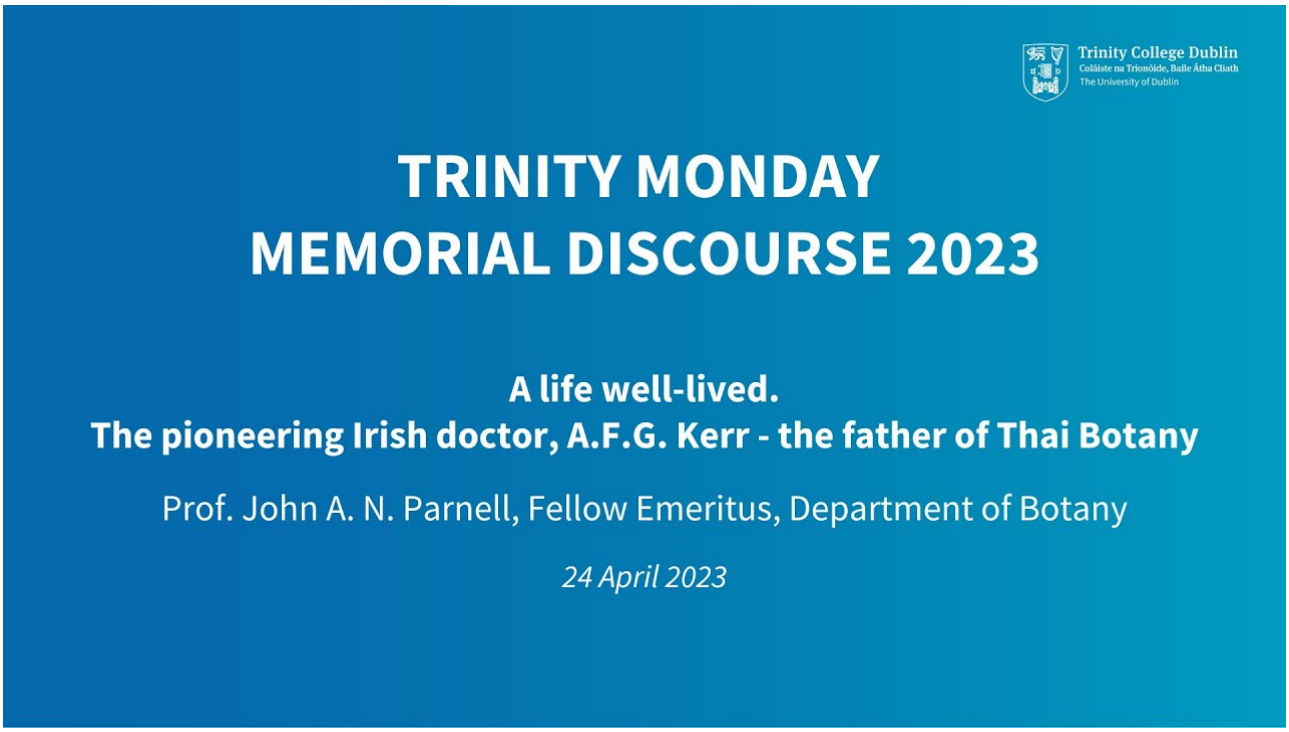
PHYTOBYTES JUNE 2023

Trinity Monday Discourse

John Parnell delivered the 'Trinity Monday Discourse' on **A.F.G. Kerr**, on 24th April. The printed version of the discourse, which contains much more documentary material than the discourse itself, has just been posted online.

Kerr, a Trinity College graduate, is the most famous Irish person ever to work in Thailand and is known as **the father of Thai Botany**. The herbarium here at the Botany Department houses some of his archive and many of his plant collections.

The video of John's Memorial Discourse is now live on, just click on the the picture below:



Click to see the video on Youtube.

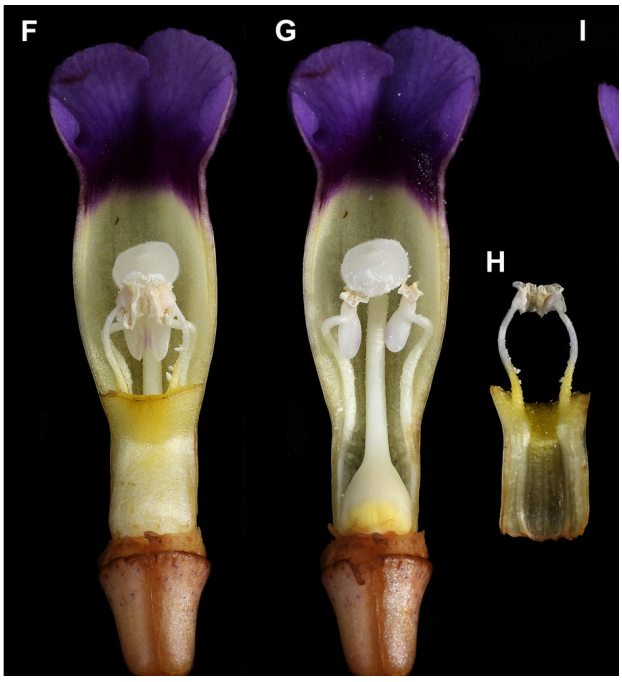
Publications

Click on the title for the link!

- **John Parnell** co-authored **Sorting out Aeginetia (Orobanchaceae) in Indochina: A. sessilis is a synonym of A. acaulis** in Phytotaxa, 597 (4): 269-279 (2023)
- **Elena Zioga** authored **Pesticide mixtures detected in crop and non-target wild plant pollen and nectar**, Science of the Total Environment, Vol 879, (2023)
- **Patricia Coughlan** authored **Genetic variation of paclitaxel biosynthesis genes in yews (taxus) and allies**, Conservación y restauración de losbosques de tejo en Europa, 341-352 (2023)
- **Thibault Durieux** and **Carla Harper** co-authored **Fossil evidence of tylosis formation in Late Devonian plants**, Nature Plants, 9, 695–698, (2023).
- **Alina Premrov, Matthew Saunders, Elena Zioga and Jane C. Stout** co-authored: **Insights into using the HAIR2014 tool to estimate soil pesticide risk in agricultural soils in Ireland,** EGU General Assembly 2023, Vienna, Austria, 24–28 Apr 2023, EGU23-7570, , 2023.
- **Irene Bottero** et al., **Impact of landscape configuration and composition on pollinator communities across different European biogeographic regions** published on Frontiers of Ecology and Evolution, Vol 11 (2023)
- **Christina Campbell**, **Daniel L. Kelly**, Noeleen Smyth, Neil Lockhart, David T. Holyoak and David Long (2023). **Investigation of the Copper Requirements of the Metallophyte Liverworts *Cephaloziella nicholsonii* Douin and *C. massalongoi* (Spruce) Müll.Frib**. *Plants* 2023, 12, 2265.

PHYTOBYTES JUNE 2023

Some pictures of floral structure and habitat of *Aeginetia acaulis*, from the publication co-authored by John Parnell



PHYTOBYTES JUNE 2023

The Copper Liverworts, the Heavy Metal Gang & TCD Botany Department

The recently published paper entitled 'Investigation of the Copper Requirements of the Metallophyte Liverworts *Cephaloziella nicholsonii* Douin and *C. massalongoi* (Spruce) Müll.Frib.' is a major outcome of **Christina Campbell**'s Ph.D. work on the **conservation of ten selected legally protected and Red Listed bryophyte species in Ireland** (supervised jointly by **Noeleen Smyth** – at the National Botanic Gardens, Dublin - and **Daniel Kelly**). This research required specialist field skills in locating and identifying the target species. This was made possible through bringing together an exceptional combination of skills. The '**Heavy Metal Team**' was composed of Christina, Noeleen and two leading **bryologists**, **David Holyoak**, who

'Bryofighters' near the Lead Mines Chimney, Kilternan, Co. Dublin. From left: David Holyoak, Daniel Kelly, Neil Lockhart and Christina Campbell. April 2009. Photo: N. Smyth.

The Copper Liverworts, the Heavy Metal Gang

& TCD Botany Department

had previously undertaken a nationwide survey of former mine sites (Holyoak, 2008; Holyoak and Lockhart, 2011), and **Neil Lockhart**, leading bryologist in the National Parks and Wildlife Service. Together they toured the bleak landscapes of **abandoned mining sites across Ireland**, from the **Lead Mines Chimney** – a familiar south Dublin landmark - to the ancient copper mines of **West Cork and South Kerry**. (…*Field work went on all weathers. The writer still shivers at the thought of a grim day at Glenmacnass in the Wicklow Mountains: the notebook says April but it felt like January*…). To take the research further required patience and skills of a different kind, in extracting and propagating material for experimental study. Specialist support in distinguishing the liverwort taxa was provided by David Holyoak. David Long, of the **Royal Botanic Gardens in Edinburgh**, provided additional insights into the taxonomy of the genus. Laboratory work was carried out mainly at the **Teagasc laboratory** facilities at **Kinsealy**, Co. Dublin. Christina's ambitious cultivation experiment, involving a range of copper concentrations and a range of different provenances of each species, was a remarkable *tour de force*.

***Cephaloziella massalongoi*.** Photo: N. Lockhart

The Copper Liverworts, the Heavy Metal Gang

& TCD Botany Department

The results are not what any of us would have expected. Firstly, at least some strains of both species were shown to perform best in cultivation with no added copper at all! Out of the six populations investigated experimentally, only in one was growth significantly enhanced by the presence of elevated copper levels. (This was the *C. nicholsonii* strain from Allihies - a site with one of the highest levels of copper in the soil.) The variation in responses among different provenances remains unexplained. Ecotypic variation? Legacy issues? Cryptic speciation? A further conclusion is that the taxonomy of this group is in urgent need of overhauling…

It is also timely to celebrate **the central role of Trinity College Botany Department in this research**. David Long as well as Christina took their PhDs in this Department; Neil is a graduate of the Department; and Daniel and Noeleen both graduated and took their PhDs in this Department.

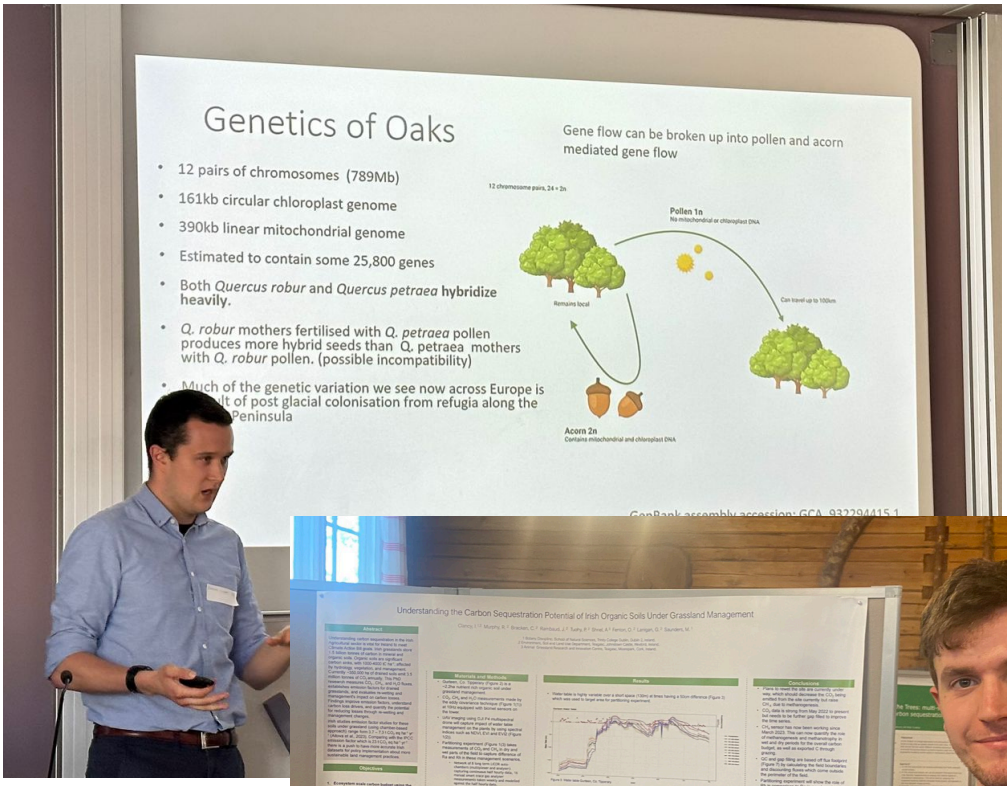
Cephaloziella nicholsonii. Photo: N. Lockhart.

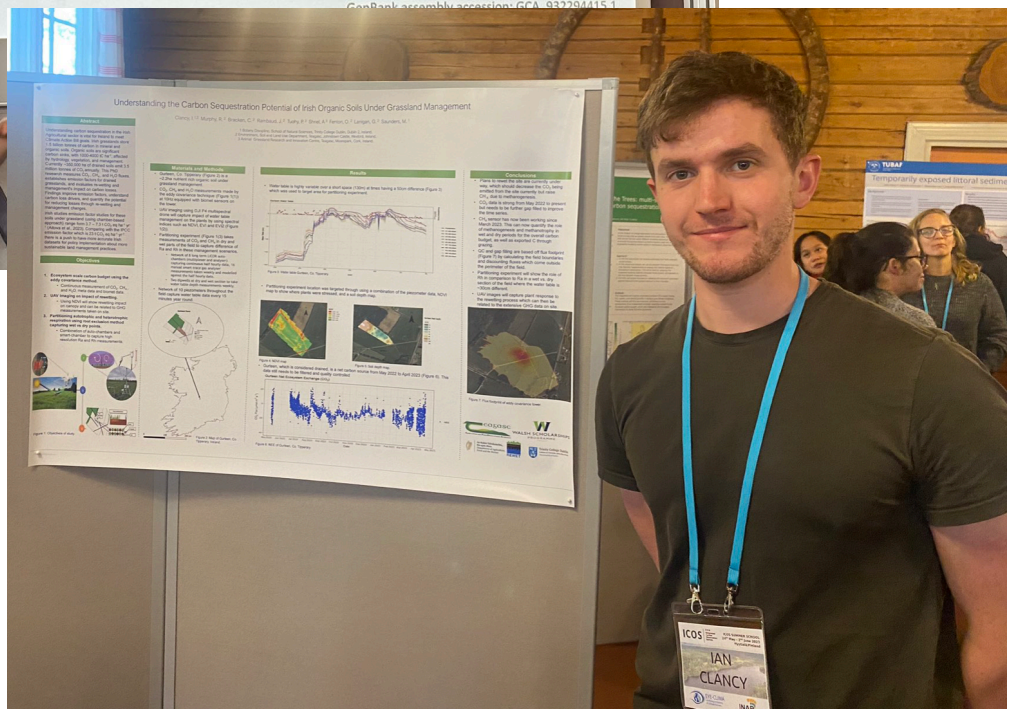
PHYTOBYTES JUNE 2023

Cephaloziella massalongoi **at old copper mine, Bunmahon, Co. Waterford. Photo: C. Campbell.**

Dissemination events

Finally, the Botany Department want to express his gratitude to **Eamonn Cooper** and **Ian Clancy** for bringing further the precious mission of disseminating our internal research projects. Below, Eamonn presented his preliminary results on Plus tree Oaks genetics to the Action Oak partner event, in Birmingham (England), while Ian presented his data at the ICOS Summer School at Hyytiala (Finland).





PHYTOBYTES

JUNE 2023

! WE ARE ALL PHYTOBYTES !

🍂🌿🌷🌾🌳🌻🐝🌸

Thank you for your contributions!

If you think that you have any news that should be posted in our newsletter,

please send an email to the **editor**

Diego Dylan Bianchi - *dbianchi@tcd.ie*