

The Trinity College Dublin Botany Department Newsletter

Accomplishments



Jordan in the garden in Hampshire holding up presents from his supervisors after his viva

Congratulations to **Jordan Chetcuti** who passed his viva online with minor corrections in June 2020. Jordan was a PhD student at the **University of Leeds and UK Centre for Ecology & Hydrology**, and was supervised by **James Bullock** and **Bill Kunin**.

For his thesis, entitled "Exploring the effect of habitat fragmentation on biodiversity", he analysed ground beetle habitat associations and then programmed generic species into an individual-based model to have different associations with each of eleven land covers. Jordan then simulated different landscapes with one land cover having different levels of fragmentation. He found that overall the diversity of the fragmented land cover increased with fragmentation, but not for the species most strongly associated with that land cover. He also varied how the species moved and those more able to move between patches did better with fragmentation. If the landscape was very simplistic and only contained the fragmented land cover and a single dissimilar land cover type then biodiversity always decreased very strongly.

The first data chapter was published last year and there is an associated R package he created for the habitat association method he developed. Both can be accessed from [here](#), which lets people explore the carabid outputs and has links to the paper and the package.

Jordan also loves to paint, and agreed to share with us some of his work produced over the summer – notably inspired by the photos in the BES magazine Niche.



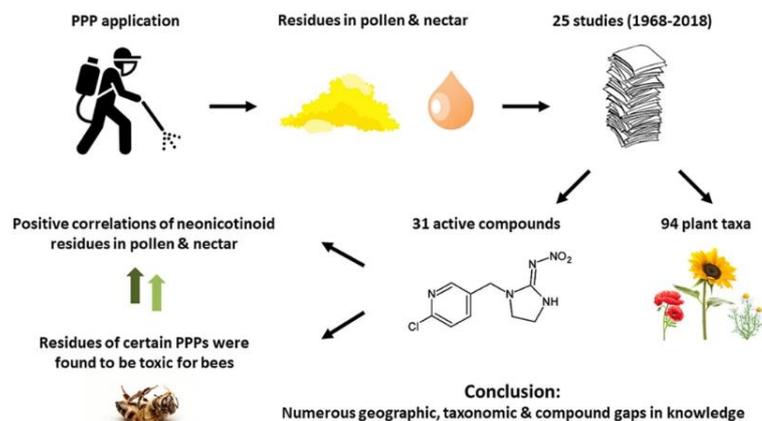
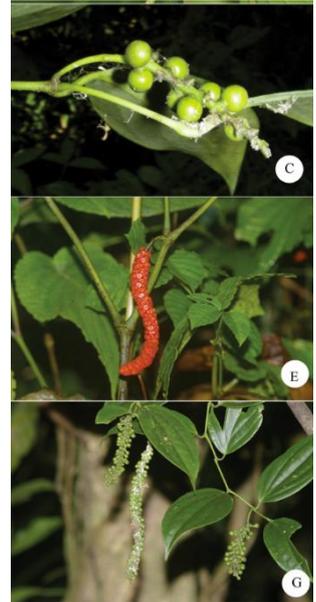
Publications

Thai Forest Bulletin: **Chalernpol Suwanphakdee** and **Trevor Hodkinson** published a [synopsis of Thai Piper \(Piperaceae\)](#).

Picture on the right by Suwanphakdee: (C) *Piper baccatum* Blume; (E) *Piper boehmeriifolium* (Miq.) C.DC. var. *boehmeriifolium*; (G) *Piper griffithii* C.DC.

Agriculture, Ecosystems, and the Environment: Former post-doc **Laura Russo** has published a paper with **Yvonne Buckley**, **Hannah Hamilton**, **Mark Kavanagh** and **Jane Stout** on [“Low concentrations of fertiliser and herbicide alter plant growth and interactions with flower-visiting insects”](#), see related blog post [here](#).

Sustainable Production and Consumption: **Sophie Saget** published her first, first author paper. Her study, supervised by **Mike Williams**, is on the environmental and health benefits of producing chickpea pasta compared with fertiliser ‘driven’ production of durum wheat pasta, read it [here](#). This is part of our EU project on sustainable production of legumes and legume food/feed items.



Environmental Research: PhD Student **Elena Zioga** has published her first paper [“Plant protection product residues in plant pollen and nectar: A review of current knowledge”](#), and wrote a blog where she reflects on her experience of conducting and publishing a systematic literature review, see [here](#).

In another blog post, she shared her reflection on the decision by the French government to lifting the ban on neonicotinoid insecticides used as seed treatment for the sugar beet cultivation, read more [here](#).

Weed Research: As weed management using synthetic herbicides is undergoing a global decline, **Simon Hodge** published an article on ‘Mini-ridging’ - a physical weeding method that functions by burying weeds in the intrarow with a ridge of soil. Using glasshouse trials, this research demonstrated the potential of plant burial as a simple and reliable means of non-chemical weed management. See [here](#).

Trinity Today: **Eamon Haughey** and **Jennifer McElwain** published a paper entitled [“Variability of water supply affected shoot biomass and root depth distribution of four temperate grassland species in monocultures and mixtures”](#). The study that investigated the effect of more variable water supply on shoot and root biomass production and root depth patterns in monoculture and mixture communities. Importantly only the variability of water supply was varied and over the course of the trial all treatments received the same total water. Shoot biomass of the more productive clover species were significantly reduced under the extreme variation treatment with no effect on less productive ryegrass and chicory species. Belowground, chicory was found to allocate more root biomass deeper in the soil profile under more variable conditions which may have aided its overall resistance. Further research at field scale is recommended since the impact of more variable precipitation patterns on grassland function is not well understood.



Biology and Environment – *Proceedings of the Royal Irish Academy*: Dr **Daniel L. Kelly** and former M.Sc. student in Environmental Science at Trinity **Sunniva Hanley** published a paper entitled “[Native and invader: two Sorbus \(whitebeam\) species new to the Burren, Co. Clare, Ireland](#)”. Daniel shared a few comments with us:



Sorbus rupicola tree in rough scrubby pasture over limestone pavement. Magheranraheen, Co. Clare. Sunniva gives the scale. 12 September 2019

“The Burren is one of the most heavily-botanized regions in Ireland, yet here are two additions to the tree flora, discovered in a two-day trip. The exploration of Ireland’s flora is still far from complete!

Sorbus is a difficult genus; fortunately, we were able to submit specimens to the leading specialist, Dr **Tim Rich**. (For identification, you need to collect a specimen of a ‘short shoot’ (a side-branch) with well-developed leaves and, if possible, mature fruits as well).

The Rock Whitebeam, *Sorbus rupicola*, is clearly native. It is known from a scattering of localities in the West and North. Our specimen was presumably bird-sown. We found just a single tree, which is now being actively protected by the landowner. Sunniva and I spent several hours looking for a second specimen but without success; we now pass on the challenge to others..

Mougeot’s Whitebeam, *Sorbus mougeotii*, is clearly a garden escape. As it is growing on superbly species-rich limestone pavement within the Burren National Park, we conclude that it should be removed – before it spreads further and becomes a threat to the native flora.”

Right: *Sorbus mougeotii* (1.1m high) on limestone pavement at Creehaun, Co.Clare. Mullaghmore is the hill in the distance.

Bottom left: *Sorbus mougeotii* with ripe fruits.

Bottom right: *Sorbus mougeotii* seedling in small hollow on limestone pavement, with *Sesleria caerulea* (Blue Moor-grass). Creehaun, Co. Clare, 11 September 2019



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Springer: **Mike Williams** had a chapter published in July in Springer book on legumes ([The Plant Family Fabaceae](#) – Biology and Physiological Responses to Environmental Stresses)

Trinity Today: **John Parnell** has just published an article, which deals with the choice of *Ginkgo biloba* as replacement trees for the Oregon Maples in Library Square. See [here](#) (p24-25).

Projects and Funding

Mike Williams made it to phase two of a 7 million euro H2020 grant application on underutilised crops, and he’s now putting together the final second round application with his team.

Meetings and Conferences

The **Irish Forum on Natural Capital (IFNC)** organised two policy briefings for Irish government staff and officials:

The first on July 7th was presented by Professor **Jane Stout** and **Orlaith Delargy** (Executive Co-ordinator IFNC). In the order of 115 attendees were engaged in the presentations which outlined the natural capital approach, the work of the **IFNC** and natural capital links with EU and Irish policy. Also presenting were **Micheal O'Briain** of DG Environment (Nature unit) and his colleague **Jakub Wejchert**, also from DG Environment (Biodiversity). **Stephen Kinsella** of University of Limerick, Economist on the **INCASE project**, outlined the links between natural capital and the National Accounts (GDP).

On July 14th, Dr **Catherine Farrell** presented with **Orlaith** in a similar vein to staff and officials from the Department of Agriculture, Forestry and the Marine (DAFM). Up to 50 DAFM staff were present and heard in more detail about the EPA supported **INCASE project**. Questions and comments related to forestry targets, climate action targets and linking natural capital with animal health.

Excellent sessions and two great interactions with government staff to highlight how important it is to take nature into account!

Events and Activities

Teagasc Sustainability Serie: **Jane Stout** gave a webinar on Natural Capital on Irish Farmland, which will be made available [here](#) on the Teagasc website along with the rest of the talks.

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ReNature Training Course: **Marcus Collier** and **Jane Stout** took part in the training course on “Nature-based solutions and the science-policy interface” – You can access the webinar [here](#).

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The **INCASE project Feasibility report** was published and is available [here](#)!

Dr **Catherine Farrell** of the **INCASE project**, took part in a pre-budget webinar organised by **Irish Rural Link** on September 17th. She highlighted the gap in funding for nature nationally, the need for a national land-use review and the benefits of community led restoration particularly around peatlands. She was joined by **Sean Healy**, CEO of Social Justice, **John Bryan** of EESC Diversity Group and **Seamus Boland**, CEO of Irish Rural Link – You can access the webinar [here](#).



Catherine was also talking about bogs on **Brainstorming:** “[The inside story of the Irish bog](#)”

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On July 2nd, **Andrew Neill** and **Catherine Farrell** gave a presentation to the **M.Sc. Business and Bioeconomy** (joint program between UCD and IT Tralee) class over Zoom as part of a module titled “Policy and Social Aspects of the Bioeconomy”. This was organised by Dr. **Maeve Henichon** who is also involved in the **BiOrbic Bioeconomy** research centre and asked us to talk about some of the environmental dimensions for the sustainability of the bioeconomy. **Andrew** talked about the conceptual overlap between bioeconomy and the natural capital approach and then **Catherine** presented the practicalities of natural capital accounting and the ongoing experience of the **INCASE project** in Ireland.

Andrew and **Catherine** also wrote a blog for the IFNC about the problems of GDP and an exciting new ecological alternative that was just published – read more [here](#).

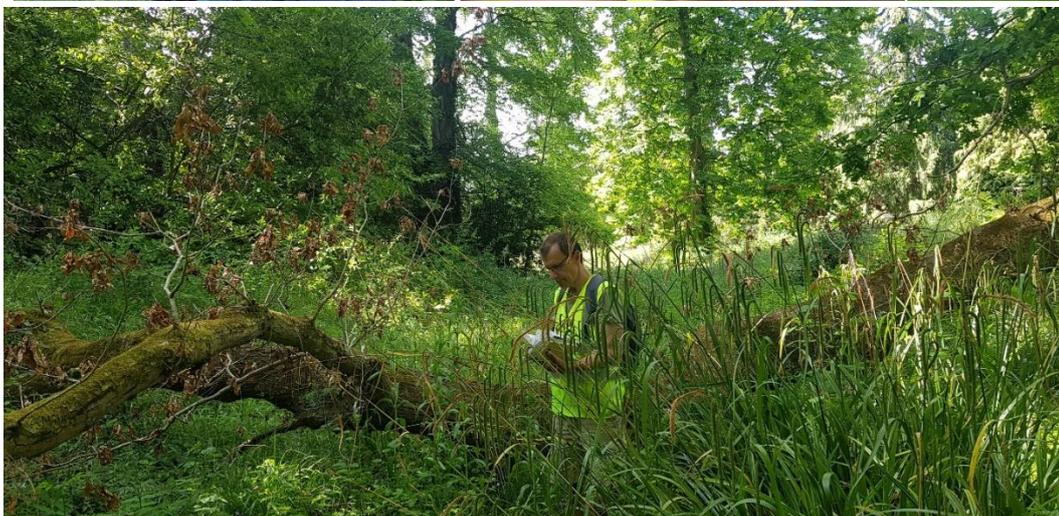
Áras an Uachtaráin Biodiversity Audit

Since Covid-19 restrictions on outdoor work were lifted on 18th May, a team of ecologists from the Zoology and Botany departments have been furiously recording all the birds, mammals, invertebrates, grasses, herbs, ferns and as many other lifeforms as they could possibly identify in Áras an Uachtaráin. Teaching and research fellow **Aoibheann Gaughran**, project manager of the audit, shared some comments and great pictures with us:



Lady's bedstraw (Galium verum) growing in "The Arboretum" grasslands on the left and on the right, the Pond at Áras an Uachtaráin, looking towards the Large Paddock - Photo: Aoibheann Gaughran.

"The objective of this project was to identify and map the different habitat types that are present in the Áras, to generate comprehensive species lists, and make recommendations for future management actions to improve biodiversity on site. The project is in its final stages, with report writing nearing completion, and we hope to be able to present our findings and recommendations to **President Higgins** in the very near future."



*Top: **Nicola Marples** and **Fionn Ó Marcaig** mist netting and ringing birds under licence*

*Bottom: **Trevor Hodkinson** surveying the wet grasslands around Nut Island.*

Photos: Maxwell Photography and Aoibheann Gaughran

Wildflowers Hairy St. John's Wort (*Hypericum hirsutum*), Pyramidal Orchid (*Anacamptis pyramidalis*) and Broad-leaved Helleborine (*Epipactis helleborine*), growing in the grounds of Áras an Uachtaráin.

Photo: Aoibheann Gaughran.



"The 130-acre site comprises a mosaic of habitats including mixed woodlands and parkland, semi-natural grasslands, paddocks, ornamental gardens and an organic kitchen garden. Project findings will follow at a later date. However, among some of the most notable species recorded (and I'm trying not to be biased!) were Hairy St. John's Wort (*Hypericum hirsutum*) which has extremely limited distribution in Ireland and is subject to a Flora Protection Order, some lovely arachnids including the cave spider (*Meta menardi*) and badger "day-bed" (Ahhh, there's my bias!)."



Pseudoscorpions (*Chthonius ischnocheles* and *Neobisium carcinoides*), flower crab spider (*Misumena vatia*) and the cave spider (*Meta menardi*)
Photos: Simon Hodge and Aoibheann Gaughran.

"I think we all appreciated being part of this project, particularly during Covid times, since it gave us an opportunity to get on with our work over the summer, something many of us in TCD have been denied. It also allowed us to spend time immersed nature and quiet green spaces which, personally speaking, has been fantastic for looking after my mental health in what are really trying times."

Mammals observed on trail camera in the Áras.

Top left to bottom right: adult fox, fox cub, fox and badger together, brown rat, rabbit, adult badger, pygmy shrew, woodmouse and juvenile badgers



“5 in Five” video series: Over the summer, Academics from our School of Botany talked us through the discovery of 5 plant species in 5 minutes: After **Jennifer McElwain** video at Newcastle beach on [shingle beaches](#), **Jane Stout** visited Bray Head to tell us about the flora living in [coastal meadows](#) and **Marcus Collier** spoke about wildflower growing in [urban space](#). **Fraser Mitchell** then went to Liffey Head Bog in the Wicklow Mountains to look at plant species that live in [peatland](#) habitat and finally, **Stephen Waldren** explored five fern species adapted to live in [woodlands](#), at Devil's Glen in Co. Wicklow.

EcoEvo Blog Posts

Want to learn more? Check out the [EcoEvo Blog](#), where Trinity’s Botany and Zoology departments discuss their work and reflections in research. The latest posts include ...



[Boating in Ankobohobo, or The Importance of Bird Areas](#)

by Fionn Ó Marcaigh



[The remarkable bird life of the Wakatobi Islands, SE Sulawesi: hidden endemism and threatened populations](#)

by Darren O'Connell



The Bird Life of Wawonii and Muna Islands

[Part I: biodiversity recording in understudied corners of the Wallacea region](#)

by Darren O'Connell

[Part II: mining the literature, mining the hills](#)

by Fionn Ó Marcaigh



[Sustainable redevelopment: visions of a post-lockdown world](#)

by Sam Ross

PHYTOBYTES needs your input! Whether you are student or staff, please send any news you have, big or small, to Marine Valmier (valmiern@tcd.ie) with the subject heading “Phytobytes”. Let’s share the latest news and always be aware of what is happening at Botany!