The Trinity College Dublin Botany Department Newsletter

Accomplishments

Congratulations to **Anindita Lahiri** (Ani), who successfully defended her Ph.D. thesis in her viva voce examination on December 18th with minor corrections.

The thesis was entitled *'Endophytic diversity of Fraxinus excelsior L. (European ash) and its interaction with the dieback pathogen Hymenoscyphus fraxineus'* and was supervised by **Trevor Hodkinson**, **Brian Murphy** and **Gerry Douglas** (Teagasc).

Projects and Funding

Trevor Hodkinson has been awarded a grant to work on ash dieback disease (**NEXCELSIOR**: Next steps in managing the impact of ash dieback) arising from the Department of Agriculture, Food and the Marine's (DAFM) 2019 Competitive Call for Research. It is in collaboration with the Department of Agriculture, Environment and Rural Affairs in Northern Island (DAERA) and runs for two years.

Publications

Thai Forest Bulletin: John Parnell and his Ph.D., student **Sukid Rueangruea** have just published a paper along with other authors as follows:

Suddee, S., Paton, A.J., Parnell, J.A.N., Puudjaa, P., Kiewbang, W. & Rueangruea, S. (2019). Five new species of Platostoma (Lamiaceae) from North-eastern Thailand. Thai Forest Bulletin, Botany, 47: 226-240.

The first author of the paper, **Somran Suddee**, is a Ph.D. graduate of John's from the Department, and is now a Senior Staff member working in the Royal Forest Department in Thailand. The paper also honours John by naming a species after him.

PhytoKeys: Professor **Pimwadee Pornpongrungrueng**, who is a visiting academic from Khon Kaen University working in the herbarium of the department, has published a paper with **John Parnell** & **Trevor Hodkinson** and a former student of John's also based in Khon Kaen, professor **Pranom Chantaranothai**, entitled "Two new species of Phyllanthus (Phyllanthaceae) from Thailand".

PLOS ONE: Protects Project Ph.D. students **Merissa Cullen** (Maynooth) and **Linzi Thompson** (UCD) co-led a review co-authored by **Jane Stout**. This is the first publication from the project and reviews the impacts of herbicides and fungicides on bees, see here.

International Journal of Plant Sciences: Michelle Murray, with co-authors **Wuu Kaung Soh**, **Harry Yiotis**, **Jenny McElwain,** and UK collaborators **Robert Spicer** and **Tracy Lawson**, have recently published a paper for an IJPS special issue. The article entitled "Consistent relationship between field-measured stomatal conductance and theoretical maximum stomatal conductance in C3 woody angiosperms in four major biomes**"** is the result of three summers of fieldwork across the US, Puerto Rico and Fiji and was part of her Ph.D. research on stomatal conductance in woody species.

Michelle's is the largest study of the relationship between field-measured operating stomatal conductance (g_{op}) and the theoretical maximum stomatal conductance (g_{max}, calculated from stomatal density and geometry), and provides substantial and consistent evidence for an earlier hypothesis that an ideal g_{op}: g_{max} ratio exists in woody species. This provides an important reference dataset for estimating leaf-level gas exchange from herbarium and fossil plant material.

Science Advances: Wuu Kuang Soh, **Michelle Murray**, **Jenny McElwain,** and a host of other international authors published a paper entitled "Rising CO2 drives divergence in water use efficiency of evergreen and deciduous plants" that pinpoints which of the world's trees are climate change-ready. See Trinity News item here.

International Union for Conservation of Nature: As was already shared in the previous issue of Phytobytes, the IUCN European Red List for Bryophytes was just updated, and **Maude Baudraz** was an assessor for over 30 species in it. What's new is that the separate species assessments can now be consulted online! See here for some pictures and examples:

Asterella saccata (picture Norbert Schnyder) & Flat-topped Bog-moss *Sphagnum fallax* (picture Michael Lüth)

Events and Activities

John Parnell attended the latest meeting (18th-22nd November) of the Taxonomic Working group and the governing Council of the **World Flora Online** (WFO) consortium held at the **Missouri Botanical Gardens**, see an article here. The WFO project is one of the 16 targets adopted within the Global Strategy for Plant Conservation agreed in 2002 by the UN Convention on Biological Diversity: and is the only one likely to be achieved by the target date of 2020. The WFO aims to aggregate together in one place online published floras of the World, thereby providing a core reference site. Work is very much still in progress, but progress so far can be seen at worldfloraonline.org.

~*~

Elena Villa (evilsan@upo.es) is a Ph.D. student from Spain who has conducted a three month investigation in Trinity as part of her Ph.D.. **Matthew Saunders** supervised, with **Peter Cox** and **Bruce Osborne** (UCD) participating in the research.

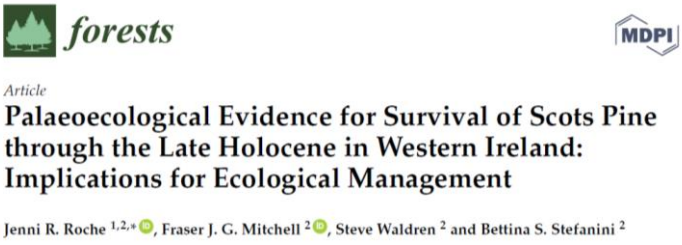
The study assessed the medium-term impact of warming (after six years) on soil emission of greenhouse gases (carbon dioxide and nitrous oxide) in a temperate forest located in Dooary (Co. Laois). Infra-red heaters, running since 2013, simulated the effect of climate warming by increasing soil temperature by around 2°C.

Greenhouse gases fluxes were measured weekly for three months from replicated control and warming plots using a 1412 Photoacoustic Field Gas Monitor (PAS, INNOVA Air Tech Instruments, Ballerup, Denmark). Soil samples were also collected to evaluate the effect of warming on nutrient availability in the forest soil. The results of this study will be published in the near future.

~*~

A (Christmas) Tree Story

A few years ago Ph.D. palaeoecological research by **Jenni Roche** followed by another Ph.D., **Alwynne McGeever,** showed that a stand of **Scots pine** (*Pinus sylvestris* L.) in the Burren has continuity with prehistoric populations thus demonstrating that the trees are native; the only native stand of pine found in Ireland thus far.


forests

Article

Palaeoecological Evidence for Survival of Scots Pine through the Late Holocene in Western Ireland: Implications for Ecological Management

Jenni R. Roche [1,2,*], Fraser J. G. Mitchell [2], Steve Waldren [2] and Bettina S. Stefanini [2]


Journal of Biogeography (J. Biogeogr.) (2016) 43, 2199–2208

ORIGINAL ARTICLE

Re-defining the natural range of Scots Pine (*Pinus sylvestris* L.): a newly discovered microrefugium in western Ireland

Alwynne H. McGeever[1]* and Fraser J. G. Mitchell[2]

The stand has now been certified by the Forest Service as a **native pine seed source,** and saplings are being produced by Bernard Carey of Mountshannon for the Native Woodland Planting Scheme.

Earlier in December, **Fraser Mitchell** was invited by BurrenBeo to present a seminar to the locals in Tubber Village Hall to outline the scientific research behind the national interest in their pine trees. After the seminar, he was presented with one of the offspring trees, which is now thriving in his garden.

Scots pines at Rockforest, Co Clare (Photo: Jenni Roche)

Meetings and Conferences

The **British Ecological Society** annual meeting was held in **Belfast**, the first time it's been held on the island of Ireland and featured fantastic presentations from several Ph.D. students from Trinity.

Cian White from Botany presented his work on redefining nature-based solutions.

~*~

In December, **Eamon Haughey** attended the **UN Climate Change Conference COP 25** in Madrid, Spain. As part of the IPPC's outreach, it held several sessions on both the Special Report on Climate Change and Land and the Special Report on the Oceans and Cryosphere, both of which were finalised this year. Eamon presented an overview of Chapters 3 and 4 of the Land Report, which focus on desertification and land degradation.

COP25 CHILE MADRID 2019 UN CLIMATE CHANGE CONFERENCE TIEMPO DE ACTUAR

While there was limited progress by governments on negotiating the implementation of the Paris Agreement, there was a lot of engagement with the IPCC and its authors. Following this, there was an agreement for formal dialogues regarding climate change and land as well as oceans in future meetings under the UNCCC.

~*~

Catherine Farrell presented the INCASE (Irish Natural Capital Accounting for Sustainable Environments) research project to two midlands groups in November.

The first was a workshop on the future of Lough Boora Discovery Park, Co Offaly, and the second was at a community workshop in Rathangan, Co Kildare. Both of the events were focused on the future of rehabilitated peatlands, and how decisions can be made to ensure sustainable rural communities and sustainable land-use, particularly in the light of Just Transition.

One of the INCASE project catchments - the Figile River - covers an area of industrial cutaways in East Offaly / West Kildare. Natural capital accounts will be developed for this catchment, which can inform on how integrated land use planning and ecological restoration can improve water quality.

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…

Home and Away: Australian expats
by Jacinta Kong

Comparing the biodiversity and network ecology of restored and natural mangrove forests in the Wallacea Region
by Darren O'Connell

Fulbright to the Frozen Zoo
by Andrew Mooney

The Galapagos Islands: paradise lost?
by Floriane O'Keeffe

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