Dr Colin Kelleher
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Colin received a PhD from Trinity College Dublin in 2002, an MSc in Ecology from University of North Wales in 1997 and a BSc from University College Dublin in 1995. For his PhD he researched the phylogeography and genetic diversity of oak in Ireland. This was the first comprehensive molecular study of genetic diversity in plant populations in Ireland. Following from his work in Ireland, Colin worked as a Research Associate in the University of British Columbia, Vancouver, Canada. There he worked on the project to sequence and assemble the first tree genome – the poplar genome. On returning to Ireland he joined the NBG and established the DBN Plant Molecular Laboratory. His work focuses on development and application of molecular markers in natural populations of plants to establish phylogeographic patterns and to assess genetic diversity. He also has considerable experience as an independent researcher and an Environmental Consultant.

Research Interests

- Population genetics and genomics of woody species
- Phylogeography and Arctic-alpine species
- Phylogeography of Arbutus unedo
- Aquatic macrophytes
- DNA barcoding
- Arctic Willows
- Conservation genetics of rare plants
- Species of interest include: oak, poplar, willows, water crowfoots.

Qualifications

2002 PhD Trinity College Dublin, Dublin, Ireland.
1997 MSc (Ecology), University of North Wales, Bangor, Wales.
1995 BSc (Botany) University College Dublin, Dublin, Ireland.

Selected Publications

Ewa Wielogorska, Olivier Chevallier, Connor Black, Pamela Galvin-King, Marc Delêtre, Colin T. Kelleher, Simon A. Haughey, Christopher T. Elliott (2018) Development of a comprehensive analytical platform for the detection and quantitation of food fraud using a biomarker approach. The oregano adulteration case study. *Food Chemistry* **239**: 32-39.

Jarkko Salojärvi et al (2017) Genome Sequencing and Population Genomic Analyses Provide Insights into the Adaptive Landscape of Silver Birch. *Nature Genetics* (online 8 May 2017).

Colin T. Kelleher and Aidan Diskin (2017) Assessing botanical gardens specimens as a genetic resource for the future conservation – a pilot study using Magnolia delavayi in the gardens of Ireland *Hortus Botanicus International Journal of Botanic Gardens* 12.

Bruno Fady, Filippos A Aravanopoulos, Paraskevi Alizoti, Csaba Mátyás, Georg von Wühlisch, Marjana Westergren, Piero Belletti, Branislav Cvjetkovic; Fulvio Ducci, Gerhard Huber, **Colin T Kelleher**; Abdelhamid Khaldi, Magda Bou Dagher Kharrat, Hojka Kraigher, Koen Kramer, Urs Mühlethaler, Sanja Peric, Annika Perry, Matti Rousi, Hassan Sbay, Srdjan Stojnic, Martina Tijardovic, Ivaylo Tsvetkov, Maria Carolina Varela, Giovanni G Vendramin, Tzvetan Zlatanov (2016) Evolution-based approach needed for the conservation and silviculture of peripheral forest tree populations. *Forest Ecology and Management* 375: 66-75.

Kelleher, C. T., de Vries, S.M.G., Baliuckas, V., Bozzano, M., Frýdl , J., Gonzalez Goicoechea, P., Ivankovic, M., Kandemir, G., Koskela, J., Kozioł, C., Liesebach, M., Rudow, A., Vietto, L., and Zhelev Stoyanov P. 2015. Approaches to the Conservation of Forest Genetic Resources in Europe in the Context of Climate Change. European Forest Genetic Resources Programme (EUFORGEN), Bioversity International, Rome, Italy. xiv+46 pp.

de Vries, S.M.G., Alan, M., Bozzano, M., Burianek, V., Collin, E., Cottrell, J., Ivankovic, M., **Kelleher, C.T.**, Koskela, J., Rotach, P., Vietto, L. and Yrjänä, L. 2015. Pan-European strategy

for genetic conservation of forest trees and establishment of a core network of dynamic conservation units. Bioversity International, Rome, Italy. xii + 41 p.

Philippe Cubry, Evelyn Gallagher, Ellen O'Connor, **Colin T. Kelleher** (2015). Phylogeography and population genetics of Black Alder (*Alnus glutinosa* (L.) Gaertn.) in Ireland: putting it in a European context. *Tree Genetics and Genomes* 11:99. (doi:10.1007/s11295-015-0924-4). Online 17 Sept 2015.

Pletsers A, Caffarra A, **Kelleher CT**, Donnelly A (2015). Temperature and photoperiod influence the timing of bud burst in juvenile *Betula pubescens* Ehrh. and *Populus tremula* L. trees. *Annals of Forest Science* **72**(7): 941–953. DOI 10.1007/s13595-015-0491-8. Online 25 Jun 2015.

Gemma Beatty, Laura Barker, Pei Pei Chen, **Colin T. Kelleher**, and Jim Provan (2014). Cryptic introgression into the Kidney saxifrage (*Saxifraga hirsuta*) from its more abundant sympatric congener *Saxifraga spathularis*, and the potential risk of genetic assimilation. *Annals of Botany* **115** (2): 179-186. (published online 2 December 2014). doi:10.1093/aob/mcu226.

Aude C Perdereau, **Colin T Kelleher**, Gerry C Douglas, Trevor R Hodkinson (2014). High levels of gene flow and genetic diversity in Irish populations of *Salix caprea* L. inferred from chloroplast and nuclear SSR markers. *BMC Plant Biology* **14**:202.

O. Kenny, T.J. Smyth, D. Walsh, **C.T. Kelleher**, C.M. Hewage, N.P. Brunton (2014). Investigating the potential of under-utilised plants from the Asteraceae family as a source of natural antimicrobial and antioxidant extracts. *Food Chemistry* **161**: 79-86.

Gallagher E., Douglas G.A., Kelly D.K., Barth S.., **Kelleher, C.T**.& Hodkinson T.R. (2013). Old age sex: a parentage study of a native veteran oak woodland using nuclear SSR markers. *Biology and the Environment*, vol 113B(2): 1-13.

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Dang, Xiao-Dong, **Kelleher, Colin T**., Howard-Williams, Emma, Meade, Conor V. (2012) Rapid identification of chloroplast haplotypes using High-Resolution Melting analysis. *Molecular Ecology Resources* 12(5): 894–908.

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Colin T. Kelleher, Jennifer Wilkin, Jun Zhuang, Andrés Javier Cortés, Álvaro Luis Pérez Quintero, Jörg Bohlmann, Carl J. Douglas, Brian E. Ellis, Kermit Ritland (2012) SNP discovery, gene

diversity and linkage disequilibrium in wild populations of *Populus tremuloides*. *Tree Genetics & Genomes* **8**(4): 821-829.

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Colin T. Kelleher, Trevor R. Hodkinson, Daniel L. Kelly, Gerry C. Douglas (2010). Irish oak – genetic diversity and the Iberian connection. COFORD Connects Reproductive Material No. 18.

Yin T-M, DiFazio SP, Gunter LE, Zhang X, Sewell MM, Woolbright S, Allan GJ, **Kelleher CT**, Douglas CJ, Wang M-X, Tuskan GA (2008). Genome structure and emerging evidence of an incipient sex chromosome in *Populus*. *Genome Research* **18**:422–430.

Kelleher CT, R Chiu, MI Krzywinski, H Shin**,** J Wilkin, J Bohlmann, CJ Douglas, B E Ellis, K Ritland, JE Schein (2007) A physical map of the highly heterozygous *Populus* genome: integration with the genome sequence and genetic map and analysis of haplotype variation. *The Plant Journal* 50 (6): 1063-1078.

Hodkinson TR, Waldren S, Parnell JAN, **Kelleher CT**, Salamin K, Salamin N (2007). DNA banking for plant breeding, biotechnology and biodiversity evaluation. *Journal of Plant Research* 120 (1): 17-29.

Tuskan GA, DiFazio S, Jansson J, Bohlman J, Grigoriev I, …….**Kelleher C**……, C. Douglas, M. Marra, G. Sandberg, Y. Van de Peer, and D. Rokhsar (2006) The Genome of Black Cottonwood, *Populus trichocarpa* (Torr. & Gray) *Science* **313**: 1596-1604. (Multi-author paper, total of 110 authors).

Lowe A., Unsworth C., Gerber S., Davies S., Munro R., **Kelleher C**., King A., Brewer S., White A. & Cottrell J. (2005) Route, speed and mode of Oak Postglacial colonisation across the British Isles: Integrating molecular ecology, palaeoecology and modelling approaches. *Botanical Journal of Scotland*, **57**, 59-81.

Kelleher, CT, Hodkinson, TR, Douglas, GC, Kelly, DL (2005). Species Distinction in Irish Populations of *Quercus petraea* and *Q. robur*: Morphological versus Molecular Analyses. *Annals of Botany* **96**(7):1237-1246.

Kelleher CT, Kelly DL**,** Hodkinson TR (2004) Species status, hybridisation and geographic distribution of Irish populations of *Quercus petraea* (Matt.) Liebl. and *Q. robur* L. *Watsonia* **25***:* 83-97.

Kelleher, CT, Hodkinson, TR, Kelly DL & Douglas, GC (2004) Characterisation of chloroplast DNA haplotypes to reveal the provenance and genetic structure of oaks in Ireland. *Forest Ecology and Management*, **189**: 123-131.

Kelleher CT, Martin JR, Hodkinson TR, Kelly DL & Douglas GC, (2003) *Investigating genetic variation of Irish oak populations using chloroplast DNA analysis.* Horticulture and Farm Forestry Series No. 31. End of Project Report Project 4450.

Kelleher CT, Walsh, D, Kelly, DL, Hodkinson TR, & Douglas GC, (2002) *Irish oaks: Characterising their biodiversity through molecular, morphological and ecological analysis*. Final Report to COFORD (National Council for Forest Research and Development).

Martin J, Douglas G, Hodkinson TR, **Kelleher CT** & Kelly DL (2000) Investigating Irish oaks by chloroplast DNA analysis. In: *Proceedings of Application of Biotechnology to Forest Genetics. Biofor-99, 22-25 September, Vitoria-Gasteiz, Spain* (eds S. Espinel & E. Rilter), pp. 71-76.

Reports

Kelleher, C. T., de Vries, S.M.G., Baliuckas, V., Bozzano, M., Frýdl , J., Gonzalez Goicoechea, P., Ivankovic, M., Kandemir, G., Koskela, J., Kozioł, C., Liesebach, M., Rudow, A., Vietto, L., and Zhelev Stoyanov P. 2015. Developing Approaches to the Conservation of Forest Genetic Resources in Europe in the Context of Climate Change. Bioversity International, Rome, Italy. 57 p.

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Non Peer-reviewed publications

Colin Kelleher (2015) The rise and fall of Irish alder. *Woodland – Magazine of the Native Woodland Trust*, Autumn 2015, p. 10 – 13.

Colin Kelleher (2015) Research into the origins of the woody plant flora of Ireland. *Sherkin Comment* Issue 59, p. 4.

Colin Kelleher (2015) *A Tangled Thicket of Irish Woodlands*. Irish Literary Supplement Fall 2015. Vol 35 (1): 9. ISSN: 0733-3390. Review of Nigel Everett (2014) THE WOODS OF IRELAND: A HISTORY, 700-1800. Four Courts Press, Dublin.

Kelleher, Colin T. (2013). In Search of the Origins of Ireland's Arctic and Mediterranean Plants. In "Secrets of the Irish Landscape" Editors, Matthew Jebb and Colm Crowley, Cork University Press, pp. 38-45.

Career

2007- Botanist, National Botanic Gardens, Glasnevin, Dublin 9.
2006-2007 Independent Researcher and Environmental Consultant.
2003–2005 Research Associate, Michael Smith Laboratories, University of British Columbia, Vancouver, Canada.
2002-2003 Postdoctoral Research Fellow, Department of Botany, Trinity College Dublin.
1998-2001 PhD Candidate, Department of Botany, Trinity College Dublin.