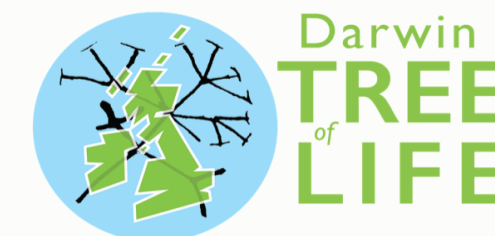


These are a few of our favourite things....



Royal
Botanic Garden
Edinburgh

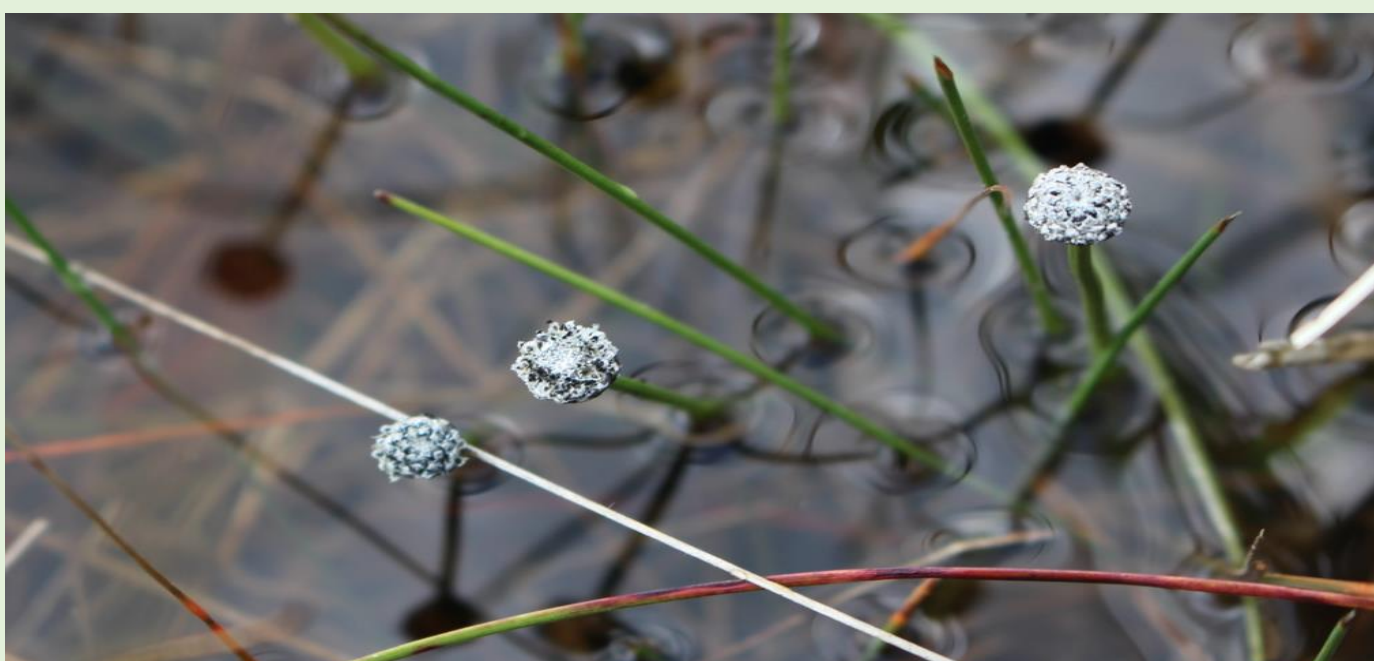
Highlights of the 2021 RBGE collections for The Darwin Tree of Life



The Darwin Tree of Life project aims to sequence the genomes of all 70,000 species of eukaryotic organisms of Britain and Ireland. The Royal Botanic Garden Edinburgh (RBGE) is one of six Genome Acquisition Labs (GALs), tasked with the collection, identification and curation of samples for the project.

The project aims to collect approx. 1/3 of the listed plant and fungal species by the end of 2021, including representatives from each family, those that are a conservation priority or of scientific interest. To date the RBGE GAL has sampled 154 species of vascular plants, 166 bryophyte species and 17 lichen species.

Family representatives



Eriocaulon aquaticum is the only representative of Eriocaulaceae in the UK and restricted to a few sites on the Scottish Isles (mainly Skye and Mull.) Collected from Sligachan, Skye. Thanks to the Macleod Estate for permission to collect.

Diapensia lapponica - the pincushion plant - only occurs on one mountain top in the UK and was discovered there in 1951. It is in its own family, Diapensiaceae (Ericales), and the only representative of this family in the UK. Collected from Fraoch Bheinn, Glenfinnan. Thanks to the Glenfinnan Estate for permission to collect.



Scheuchzeria palustris only occurs on or close to Rannoch Moor in the UK, and is aptly called the Rannoch Rush. It is also in its own family, Scheuchzeriaceae (Alismatales), and the only representative of that family in the UK. Collected from Rannoch Moor, Argyllshire. Thanks to Blackmount Estates for permission to collect.



Lobaria pulmonaria is an iconic old-woodland indicator across many areas of Europe. In the temperate rainforest zone of Scotland, the climatic optimum of this species, it is much less picky about where it grows, and can reach reproductive maturity in fewer than 10 years, compared with more than 30 years in mainland Europe. This species was collected for DTOL from Glen Creran NNR, a property managed for nature, with thanks to NatureScot for permission to sample.

The ecosystem warriors

Sphagnum medium is one of two species in Britain and Ireland recently segregated from *S. magellanicum* (itself now known to be restricted to Tierra del Fuego). *S. medium* is an ecologically important species in peat formation, and has been used as a model to study processes of growth, carbon sequestration and peat decomposition. Sampled from Talla & Gameshope Reserve, with thanks to Borders Forest Trust for permission to collect.



Polytrichastrum sexangulare, although often abundant in the habitat it is restricted to, is one of our rarest British mosses due to the tiny extent of this habitat. A snowbed species, it is only ever found near the summits of our highest mountains where small patches of snow persist nearly all year round in sheltered hollows and as cornices. As our climate warms these habitats are acutely threatened. The DTOL sample was collected from the lip of a vertiginous corrie at the northern edge of the Ben Nevis summit plateau.



Stereocaulon vesuvianum is a widespread and abundant species in uplands across Britain, and functions to add nitrogen to what were once nitrogen-limited systems via optional symbiotic associations with cyanobacteria. In the current era, in many areas of the UK, this nitrogen-fixing component of the symbiosis has been disappearing, due to high nitrogen inputs from atmospheric deposition. Collected from the North Face of Ben Nevis on a scree slope where it was abundant.

Thanks to Jonathan Hart of the Jahama Estate, Alison Austen from the John Muir Trust and Lorraine Servant from NatureScot for valuable discussions and the Jahama Estate for permission to collect from Ben Nevis.

The endemic



Herbertus borealis is a robust species of leafy liverwort that grows on the summit plateau of Beinn Eighe NNR, where it is locally abundant. Now recognised as a Scottish endemic, research carried out at RBGE demonstrated that Norwegian populations previously ascribed to this species represent a distinct species new to science. Sampled from Beinn Eighe NNR, with thanks to NatureScot for permission to collect.

And the special ones

The Scottish Rare Plant Programme is a collaborative project between the Science and Horticulture divisions at RBGE. Our aim is to identify the ways that we as a botanic garden, with the unique mix of resources and skills that we have, can work towards the conservation of Scottish biodiversity. Species sampled for DTOL from our ex-situ collections include *Salix lapponum*, *Primula scotica*, *Cicerbita alpina* and *Melampyrum sylvaticum*.



Do you have a favourite? Please suggest a species you would like us to sequence through the Darwin Tree of Life Project

<https://www.darwintreeoflife.org/suggest-a-species/>

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