Newsletter

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In this issue

From the President

Jennifer Tate, Massey University

I hope this finds you all well as we hit the mid-year mark already.

With this issue, we introduce a new cover image for the newsletter that I have chosen to represent my research interests as well as the Aotearoa New Zealand flora. *Hoheria sexstylosa* (Malvaceae) is an endemic tree of lowland forest of the North Island (primarily) and embodies several typical features of the native flora.

First, the species is heteroblastic with distinct juvenile and adult leaf forms, a helpful characteristic to distinguish *H. sexstylosa* from its similar congeners.

Second, the flowers are white with an open corolla, a feature of many species with a generalist pollinator syndrome.

Third, *Hoheria* species are polyploid and often hybridise with one another, making species identification a real challenge, but offering plenty of interesting evolutionary questions to pursue.

The Latin name is derived from the Māori houhere and the English common name is lacebark (or variations thereof, e.g., mountain lacebark). The species all produce a fine netlike fibre layer under the bark, and this fibre is used by Māori in many applications. For me, this group is special because having worked on weedy and high elevation Malvaceae in the Americas as part of my PhD (see, accompanying images of *Tarasa* spp.), seeing them here in New Zealand was my first introduction to species in this family as trees!

Many of you will have seen the latest State of the Worlds Plants report by Kew. The emphasis in this report is the Digital Biodiversity Revolution, to which we all contribute by making specimen and image data available to global users. I'm happy to see this positive spin on how our contributions matter, rather than emphasising the doom and gloom of species extinction (which we can't ignore of course).

Our editor, Helen Kennedy, has put together another fantastic issue with student reports supported by Hansjörg Eichler funding (and hitting all the kingdoms with projects on angiosperms, fungi, and algae!), a neat trick from the ever-resourceful John Clarkson, and a tribute to Aaron Wilton who left the Allan Herbarium earlier this year after 29 years dedicated to the herbarium and bioinformatics. Lastly, a very well-deserved congratulations to Helen for being awarded *Australian Systematic Botany* Best Student Paper Prize for her work on *Melichrus*, which was published in 2025.

--Jen

Top: *Tarasa antofagastana*, a tetraploid annual from northwestern Argentina and northern Chile at ~2400–3000 m elevation. **Bottom:** *Tarasa humilis*, a diploid perennial from central to southern Chile, 1100–2500 m elevation

Resolving the Global Diversity and Macroevolutionary Patterns of *Caulerpa*, with Insights into the Speciose Temperate Australasian Hotspot

Yuqun Du, The University of Melbourne

The species-rich *Caulerpa* J.V. Lamouroux (Bryopsidales, Ulvophyceae) is a prominent green macroalgal genus in tropical and temperate marine ecosystems with ± 100 species (Guiry & Guiry 2024). While the regional diversity of *Caulerpa* has been extensively documented in specific localities (e.g., Brayner *et al.* 2008; Belton *et al.* 2019; Lagourgue *et al.* 2024; Draisma *et al.* 2025), these records remain fragmented. The only global-scale survey, conducted by Prud'homme van Reine *et al.* (1996), pointed out three primary *Caulerpa* diversity centres—Malesia, the Caribbean, and southern Australia—but relied solely on morphological observations. Consequently, a cohesive global perspective on its distribution patterns of biodiversity remains elusive, and the underlying evolutionary mechanisms driving its macroevolutionary diversification remain poorly understood.

As a macroalgal hotspot, southern Australia harbours high species richness of *Caulerpa* and a unique suite of endemic species (Draisma *et al.* 2014; Belton *et al.* 2019). This concentrated diversity offers an unparalleled opportunity to sample a broad spectrum of lineages within a single geographic region, facilitating a more efficient and comprehensive analysis of complex intrageneric relationships. Field collections in southern Australia identified diverse green macroalgae thriving in shallow intertidal habitats (Fig. 1).

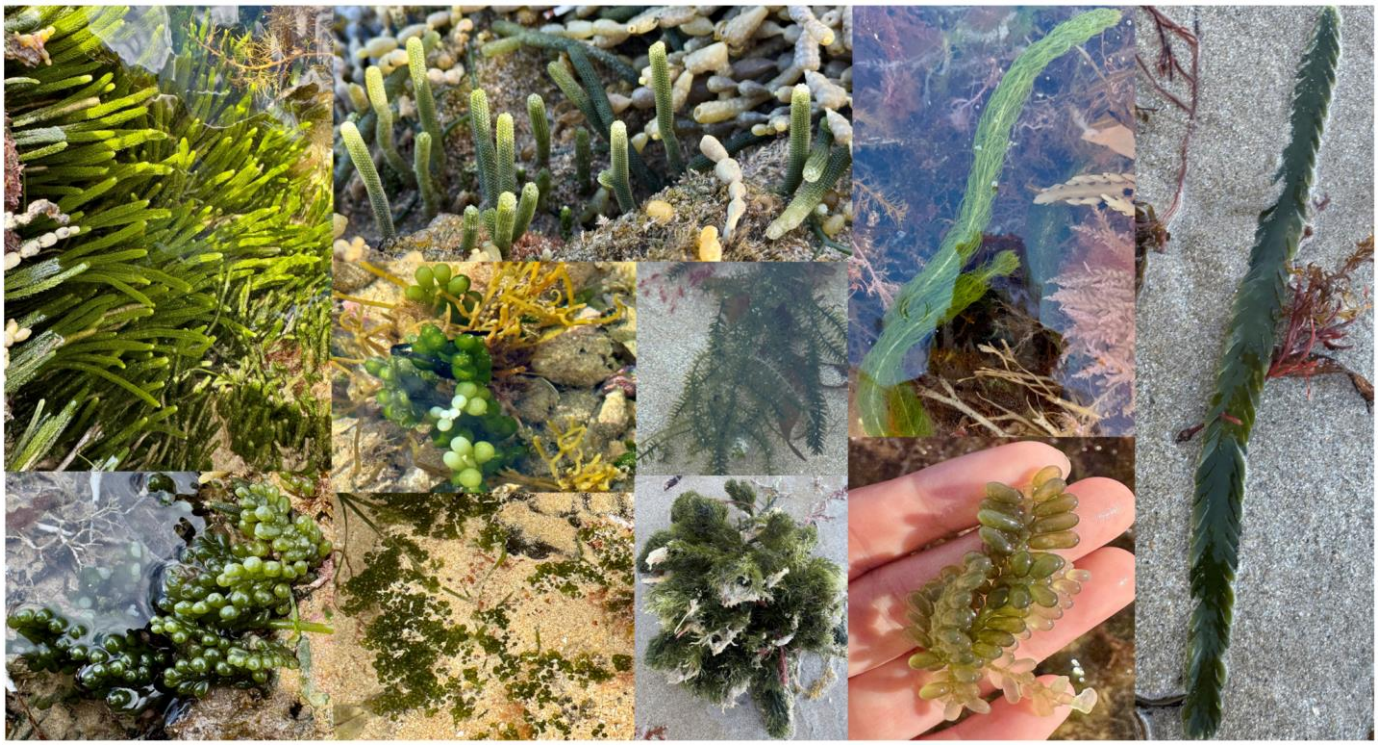

Fig. 1. *Caulerpa* species observed in Queenscliff, Victoria. Various species are thriving in the shallow intertidal reaches. Images: Yuqun Du

The recent publication of a comprehensive *tuf*A reference library for *Caulerpa* (Draisma & Sauvage 2024) has provided an invaluable framework for our molecular species delimitation. Furthermore, the increasing application of chloroplast genome sequencing across various algal lineages (Díaz-Tapia *et al.* 2017; Cremen

et al. 2019; Verbruggen *et al.* 2025) offers a robust methodological precedent for resolving complex evolutionary relationships within this genus.

This project aims to resolve the global biodiversity and macroevolutionary history of *Caulerpa*. To update the global distribution of the genus, we performed species delimitation by synthesising global *tuf*A sequence data from public databases, herbarium specimens, and field collections. To infer evolutionary scenarios, we are using Illumina sequencing to assemble complete chloroplast genomes, reconstruct robust Maximum Likelihood phylogenies, and estimate divergence times via molecular clock dating. This comprehensive approach will ultimately uncover the underlying temporal and spatial mechanisms driving the global diversification of the genus.

Supported by the Hansjörg Eichler Scientific Research Grant, the project is currently in an active phase of global data synthesis, with preliminary results successfully expanding our understanding of species richness across the Temperate Australasia realm.

Our expanded *Caulerpa* barcoding dataset now achieves comprehensive global coverage (Fig. 2), spanning major diversity centres including the Caribbean, the Indo-Malay Archipelago, and southern Australia (Zubia *et al.* 2020). Within this framework, our data highlight the unique remarkable localised richness of the Temperate Australasian coastline, exhibiting a species density comparable to major tropical marine realms (Fig. 3).

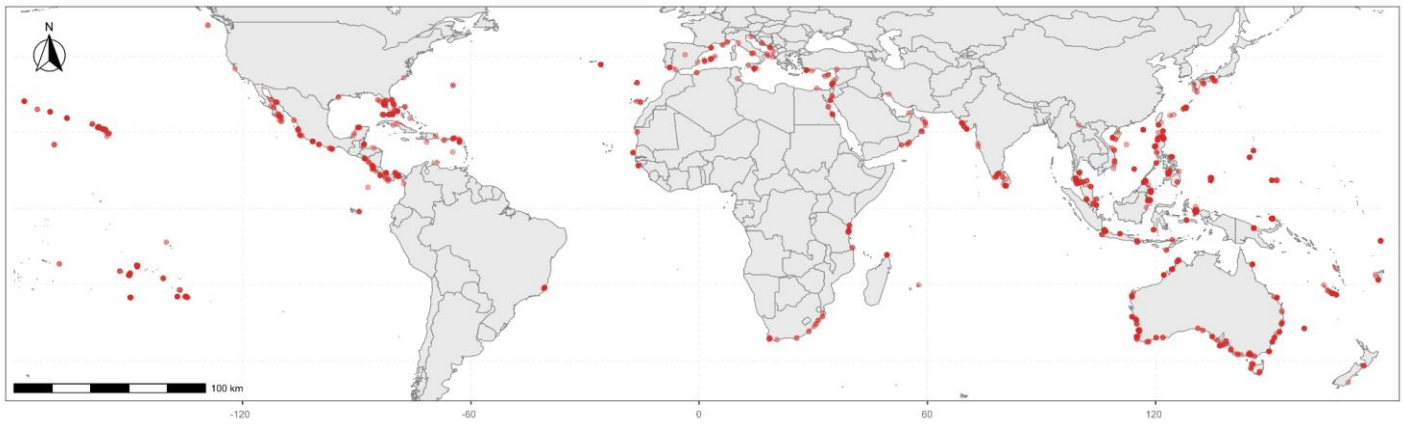

Fig. 2. Global distribution of *Caulerpa* samples based on our curated *tuf*A dataset.

Currently, our phylogenomic framework has been substantially advanced through the newly sequenced and assembled chloroplast genomes. This expanded genomic dataset significantly increases the density of phylogenetically informative characters for robust topology reconstruction compared to single-locus markers. Utilising concatenated chloroplast genes, we have obtained promising preliminary results that address major gaps in our understanding of the relationships within this group. The framework reveals highly stable and well-supported evolutionary relationships across all included taxa within this genus and validates the positions of several critical long-branched taxa.

Next, the project will scale up genomic sampling to encompass a broader representation of the genus. This comprehensive dataset will be utilised for molecular clock calibration and subsequent macroevolutionary analyses to clarify the historical biogeography of *Caulerpa*.

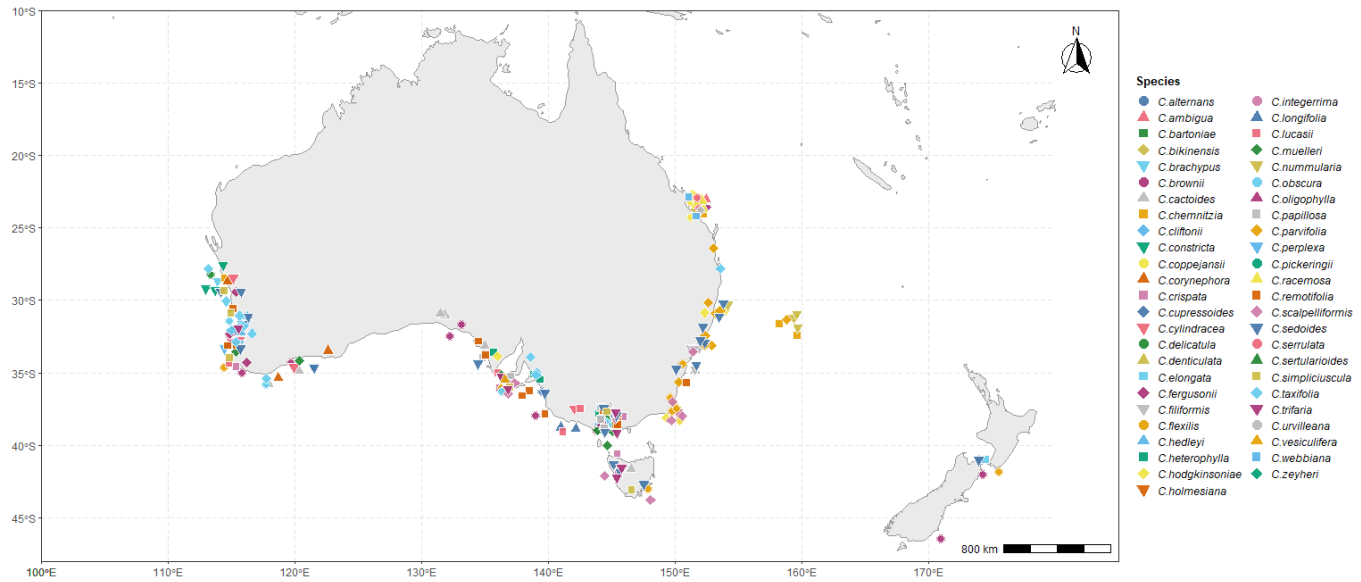

Fig.3. Map of 49 *Caulerpa* species distributed along the coastline of the Temperate Australasian realm. Marine realm boundaries are delineated according to the Marine Ecoregions of the World classification system by Spalding *et al.* (2007). For clarity and to reduce overlapping, sampling coordinates were jittered slightly, so some markers may appear to fall on land but these correspond to marine collection sites.

Acknowledgements

I am sincerely grateful to the Australasian Systematic Botany Society for the support provided by the Hansjörg Eichler Scientific Research Grant, which has been instrumental in expanding my taxonomic sampling and completing the molecular components of this study. I also wish to thank the Bayly Lab and the Melbourne Integrative Genomics group at the University of Melbourne for their generous provision of laboratory facilities and computing resources, which were essential to this research. I would like to express my sincere gratitude to the University of Melbourne Herbarium (MELU) and the Meise Botanic Garden Herbarium (BR, Belgium) for their invaluable assistance in organising, preparing, and providing the essential *Caulerpa* specimens for this project. I am deeply grateful to my supervisors Dr. Rory Craig and A/Prof. Heroen Verbruggen, and my thesis committee member Dr. Todd G.B. McLay for their invaluable assistance and guidance with my fieldwork, laboratory experiments, and data analyses.

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Exploring the diversity of Australian cup-forming ascomycete fungi formerly classified as the genus *Peziza* Dill. ex Fr. (Pezizaceae).

Luke J. Vaughan, The University of Melbourne

Despite its enormity, with an estimated 2 to 3 million species worldwide (Niskanen *et al.* 2023), fungal biodiversity is still relatively unexplored, and in Australia only about 5% of an estimated possible 250,000 species are formally described and documented (Pascoe 1990). Most taxonomic mycology in Australia has historically focused on mushrooms, while other, more inconspicuous groups are often overlooked despite their ecological significance. *Peziza* Dill. ex Fr. is a genus of Ascomycete fungi that are typically found on sandy soils and in disturbed habitats, including on charcoal after bushfires (Rifai 1968). Morphological features of *Peziza* include typically brownish, cup-shaped sporing bodies, spore-bearing asci staining blue in iodine solution, with ellipsoid-shaped ascospores that vary in size and ornamentation among species. So far, 28 *Peziza* species have been recorded in Australia (ALA.org.au, https://doi.org/10.26197/ala.2569736b-6562-4c64-a16e-24d1004a22e3, accessed 15 April 2026), but most species lack phylogenetic delimitation and have been identified solely on morphological characters. In many cases specimens have been recorded using Northern Hemisphere species names, but without phylogenetic placement it is unclear if these occurrences are true representatives of cosmopolitan species or just Australian species with similar macromorphology.

Fig. 1: L.J. Vaughan collecting PERTH 09779043 in Kings Park, Western Australia, with Neale Bougher. (Image: N. Bougher)

Molecular phylogenetic studies of Northern Hemisphere species have shown that *Peziza* is non-monophyletic (Hansen *et al.* 2001, 2005). *Peziza sensu stricto* is now restricted to the clade that includes the type species, *P. vesiculosa* Bull., and *Peziza sensu lato* species are now spread across more than ten different Pezizaceae genera (Van Vooren 2020). Some of these genera are saprotrophic decomposers, while others form ectomycorrhizal symbioses with plants, which suggests some *Peziza sensu lato* species may potentially aid plant nutrition for seedling regeneration after disturbance (Hansen *et al.* 2001, Van Vooren 2020).

The most comprehensive study of *Peziza sensu lato* in Australia to date was by Mien A. Rifai (1968), conducted at the Herbarium of the Royal Botanic Gardens Kew (K). Rifai recognised fifteen species from Australia and New Zealand, including six species with Australian types, and provided detailed morphological data from the study of fungarium specimens only. Despite significant research exploring diversity of the group in the Northern Hemisphere, only a few studies have focused on Southern Hemisphere diversity of *Peziza sensu lato* (e.g., Pfister *et al.* 2022). An increasing number of molecular studies have included sequences from Australian species, but prior to this study only five Australian species had been placed in a phylogenetic context and the placement of the other species remained unknown.

To address these knowledge gaps, we set out to construct a phylogeny of Australian *Peziza sensu lato* to place Australian species within the updated global classification since Van Vooren (2020). The aims of this study were to (1) determine which *Peziza sensu lato* species occur in Australia; (2) establish their generic placement; (3) determine whether Australian species are endemic or cosmopolitan; and (4) identify and characterise additional phylogenetic species that have been previously overlooked. We also wanted to investigate the morphology and ecology of species, especially to determine which species are associated with fire, and to use their placement in the phylogeny to infer trophic guild, based on the placement of species for which trophic guild is known.

My Master of BioSciences research at the University of Melbourne is part of an ongoing project with my supervisors Dr Camille Truong from Royal Botanic Gardens Victoria and Dr Joanne Birch from the University of Melbourne. Our project is investigating the taxonomy of *Peziza sensu lato* (Ascomycota) in postfire Australian environments and is funded by the Australian Biological Resources Study (ABRS) with Camille as Primary Investigator (https://www.dcceew.gov.au/science-research/abrs/grants/awarded/2023-24). For this study, we sampled over 300 fungarium specimens from across temperate Australia for DNA sequencing, from the collections of AD, MEL, MELU and PERTH. We conducted preliminary phylogenetic analyses using the PCR-amplified fungal rDNA barcodes Internal Transcribed Spacer (ITS) and large subunit of domains D1 and D2 of 28S (LSU) (Hansen *et al.* 2005, Schoch *et al.* 2012). From these preliminary analyses, we identified at least 28 well-supported species among Australian specimens previously identified as *Peziza*, within seven recognised Pezizaceae genera, many of which are new records for Australia, and four additional clades that represent putatively novel genera. However, the support for deeper nodes in the phylogeny remained unresolved based on the limited molecular ITS and LSU dataset.

The Hansjörg Eichler Research Grant provided valuable funding to enable genomic sequencing of multiple representatives of each of the Australian species-level clades that we identified from the preliminary analyses. By conducting genome sequencing we sought to obtain additional molecular characters for analyses to improve the resolution of the relationships of Australian taxa in the global phylogeny. For ascomycetes, the average genome is 37 Mbp, so it is feasible to generate whole fungal genomes without implementing the target capture or complexity reduction techniques used for plants (Mohanta & Bae 2015). A limitation with sampling preserved fungarium specimens, however, is that DNA is typically more degraded than in fresh specimens, so we tested the quality and integrity of the DNA to select the best samples we had

available for each taxon, including some from fresh specimens collected for our study, to represent the diversity of Australian *Peziza sensu lato*.

Genomic DNA extracted from 61 Australian specimens was sequenced on the Illumina NovaSeqX platform by Macrogen Oceania (North Kellyville, NSW, Australia). A set of single-copy, orthologous markers including rpb1, rpb2 and tef1, were extracted from de novo genome assemblies following a protocol outlined by Pfister *et al.* (2024) using the Universal Fungal Core Genes (UFCG) pipeline (Kim *et al.* 2023), with bioinformatics conducted by Dr Benjamin Lemmond (University of Florida, USA). We assembled a six-gene multilocus alignment comprising a total of 4896 nucleotide sites. We used maximum likelihood phylogeny and Bayesian evolutionary analyses to infer the phylogeny of Pezizaceae and place Australian species within a global context.

We found 29 endemic Australian species-level clades within Pezizaceae, from a total of 46 different species-level clades that include Australian specimens. Among these are four putative novel genera and sixteen putative novel species. Overall, Australian specimens were placed in 19 recognised Pezizaceae genera, in addition to those putative novel genera. Fifteen species-level clades that include Australian specimens are recovered within *Peziza sensu stricto*, including some Northern Hemisphere species, which are now confirmed to occur in Australia from phylogenetic evidence. These early results are consistent with studies like Pfister *et al.* (2022), which revealed significant undescribed Southern Hemisphere diversity in temperate South America, but most of these novel Australian clades will require detailed taxonomic study and description.

Fig. 2: Sporing bodies of PERTH 09779043, representing a novel putative phylogenetic species *Peziza s.l.* sp. NLB1913. (Image: L.J. Vaughan)

We have already begun the taxonomic treatments for some of the Australian species using the molecular data we obtained through the funding of the Hansjörg Eichler Research Grant, including:

- Providing a new combination for *Peziza sensu lato* species *Pyropezia rifaii* (J. Moravec & Spooner) Van Vooren, Albanese, Boragine, Lezzi, L.J. Vaughan & Truong, comb. nov. (Van Vooren *et al.* 2025)
- Confirming the presence of the cosmopolitan species *Peziza echinospora* P. Karst in Australia and describing two novel Australian *Peziza sensu stricto* species, *P. austroechinospora* L.J. Vaughan, Birch & Truong and *P. meridionalis* L.J. Vaughan, P. Catcheside, Birch & Truong (Vaughan *et al.* 2026).
- Contributing to an ongoing global phylogenomic study on Pezizomycetes (Lemmond *et al.* 2025)

We are grateful to the ASBS for the Hansjörg Eichler Research Grant funding, which elevated the resolution of the phylogeny of Australian *Peziza sensu lato* and will enable further studies on this group as additional genomic data are made available. I thank my supervisors Joanne Birch and Camille Truong for their supervision, support and collaboration; Benjamin Lemmond and Rosanne Healy for making sequence data available; Neale Bougher, Pamela Catcheside and the staff and volunteers at AD, MEL, MELU and PERTH for access to fungarium material for study; and Kathy LoBuglio, Donald H. Pfister, and Matthew E. Smith for assistance with morphological data, species concepts and phylogenetic analyses. We acknowledge the Wurundjeri Woi wurrung and Bunurong Boonwurrung of the Kulin Nation, and the Whadjuk Noongar, as traditional custodians of the lands where this research took place and pay respects to elders past and present.

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A population level investigation into the genetic distinctiveness within the *Caladenia reticulata* Fitzg. species complex in South Australia.

Andrew E. McDougall, University of Adelaide

Caladenia R.Br. is a genus of orchids almost entirely confined to Australia. As currently circumscribed, it includes 303 named species with 36 subspecies and varieties (excluding autonyms), with an additional 12 phrase-named taxa[1]. Within *Caladenia*, large species complexes have arisen due to efforts to describe the array of observed variation as taxonomic entities. However, this has resulted in groups of taxa that are difficult to identify with confidence. These issues are prevalent in the eastern Australian *Caladenia patersonii/reticulata/leptochila* complex, containing at least 76 named species. Occurring in South Australia there are 31 named species from this complex, many of which have highly restricted distributions and small population sizes. Importantly, many of these taxa are listed as threatened. At the state level, 14 species are endangered, five are vulnerable, and five are rare. Nationally, one species is critically endangered, nine are endangered, and seven are vulnerable.

Many taxa named since 1986 have been circumscribed using mechanisms of differentiation based on reproductive isolation. Carr (1986) explicitly adopted an evolutionary species concept, stating that reproductive isolation was central to species delimitation, and proposed pollinator exclusivity as a mechanism maintaining that isolation. Although Jones (1991) did not explicitly identify a species concept, the preamble to his treatment also emphasised pollinator exclusivity in distinguishing taxa. However, at the time of delimitation, pollinators for many taxa related to *C. patersonii* and *C. reticulata* were not identified, and information that has surfaced since has suggested that pollinators are shared across many taxa (Swarts *et al.* 2014; Kuiter 2016) thus reducing the specificity of these relationships.

Within the 31 South Australian taxa there are three main morphological distinctions that have been used to differentiate taxa: The *C. reticulata* group feature sepals (and occasionally paired undifferentiated petals) that are mostly glabrous basally and transition suddenly to dense aggregations of osmophore cells apically, forming structures known as 'clubs' (see Fig. 1A). The *C. leptochila* group also feature clubs but have sepals that are upswept prior to pollination (see Fig. 1B). The *C. patersonii*-like species possess filiform petal and sepal tips, typically longer than those of *C. reticulata* group taxa, which exhibit a gradual apical increase in coverage of osmophore cells (see Fig. 1C). There are several taxa within the three groups that remain very difficult to differentiate, with some morphologically similar species assigned differing conservation ratings.

The uncertainty surrounding species identity and the need for clarity to inform conservation management options required an evidence-based assessment of the validity of the named taxa. In this study, I undertook to review the taxonomic status of the South Australian members of the *Caladenia patersonii/reticulata/leptochila* group. Previous phylogenetic analyses (Swarts *et al.* 2014), based on nuclear ITS and three chloroplast loci, provided limited resolution among the *C. patersonii*, *C. reticulata* and *C. leptochila* groups and did not include all South Australian species. A study by Peakall *et al.* (2021), based on extensive low-copy nuclear loci, included two South Australian members of the group and provided additional genomic-scale resolution; however, relationships among closely related taxa remained complex, supporting the need for further assessment.

[1] Australian Plant Census [APC] 2026, accessed 27 August 2025, available at biodiversity.org.au

My PhD research included phylogenomic analyses of the South Australian *Caladenia patersonii–reticulata–leptochila* group, incorporating multiple samples for each of the 31 named species (3 or more in most cases). I used a hybridisation-capture approach incorporating around 450 low copy number target loci (351 used after paralogue and quality filtering). The results of this phylogenomic analysis did not fully resolve relationships within the study group, suggesting limited divergence, very recent divergence (rapid radiation) or incomplete lineage sorting. My results found no evidence which could support recognising multiple independently evolving lineages within this group.

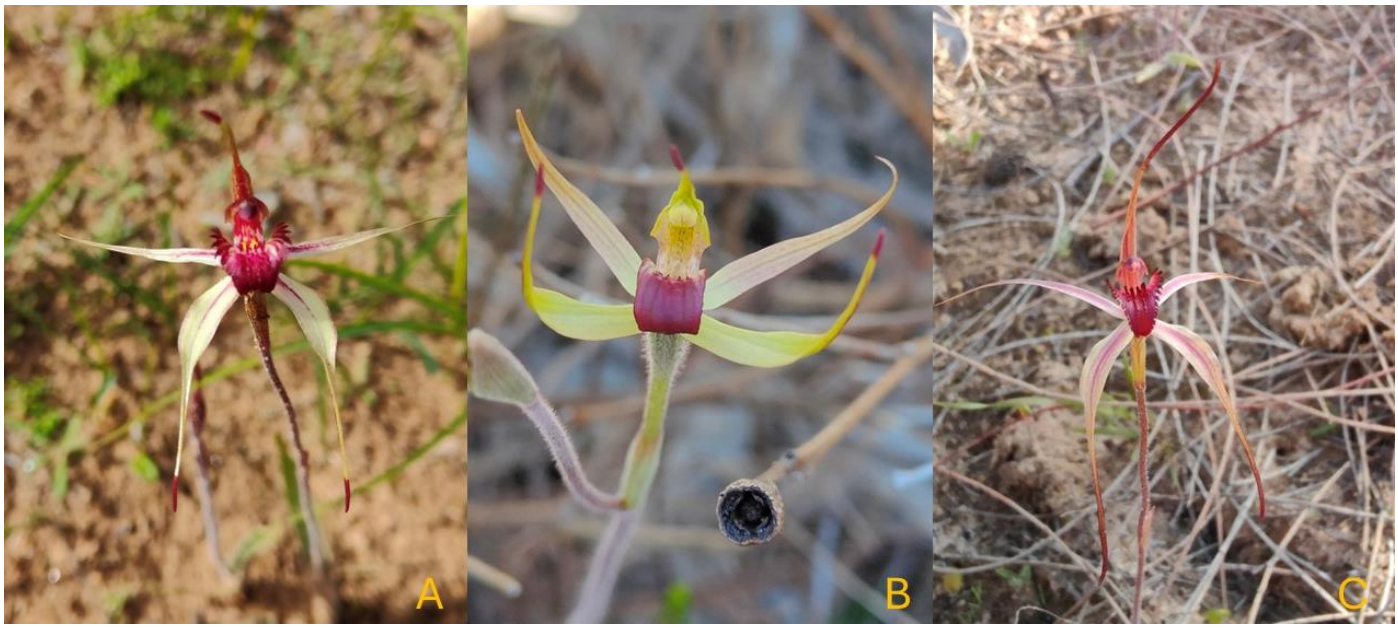

Fig. 1. The sepals of *C. reticulata* (A) feature an absence or paucity of osmophore cells basally which transition suddenly to a dense, usually contiguous coating of cells ('clubs'). Within the *C. reticulata* clubbed group are three named species which feature upswept sepals prior to pollination, as seen in *C. leptochila* subsp. *leptochila* (B). The gradual increase of osmophore cell coating apically has sometimes been termed 'tails', seen in the *C. patersonii* related species, such as *C. colorata* D.L.Jones (C).

Population level genetic analyses were therefore needed to evaluate whether morphological groupings correspond to genetically differentiated clusters undergoing incipient speciation. Such clusters may represent independently evolving lineages; however, population genetic structure alone does not demonstrate lineage independence and is best interpreted alongside phylogenetic, geographic, and morphological evidence.

Through my ASBS Hansjörg Eichler grant I was supported to undertake population scale genotyping to investigate genetic distinctiveness within the *Caladenia reticulata* species complex in South Australia (the *C. reticulata* group forms part of the broader *C. patersonii/reticulata/leptochila* species complex). I undertook population genetic analyses to provide the finer scale data needed for evaluating whether the major morphological groupings correspond to independently evolving genetic clusters or at the very least differentiating sub-populations of a widespread species.

I generated a population genomic dataset for 380 individuals representing eight populations and two outgroup taxa suspected of occasional introgression through hybridisation. Single nucleotide polymorphism (SNP) markers were identified from the target-capture sequencing component of the phylogenomic study and screened using a high-throughput MassARRAY (Ellis & Ong 2017) genotyping approach. After quality filtering, 92 high-quality SNP loci were retained for population genetic analyses. The dataset was analysed using STRUCTURE, principal component analysis (PCA), and standard population genetic metrics including genetic differentiation (FST), gene flow (Nm), and observed and expected heterozygosity (Ho and He).

Preliminary analyses have identified patterns of genetic structure within the study group and highlighted several areas requiring further investigation. Ongoing analyses are examining how these patterns relate to geographic distribution, environmental variation, and morphological diversity. The genetic results will be integrated with morphological data as part of a broader species delimitation framework. Interpretation of these findings is continuing and will be presented in detail in a future publication.

I'd like to take this opportunity to thank the ASBS community for the Hansjorg Eichler grant which has facilitated this work and the ongoing support of the ASBS community to early-career researchers.

Acknowledgements

I would like to thank my PhD supervisors Prof. Michelle Waycott, Dr Ed Biffin, and Dr Tim Hammer for their support and also the institutional support from the University of Adelaide (now Adelaide University), which provided facilities for the lab work, and support from the Adelaide Botanic Gardens Foundation Biodiversity and Conservation Scholarship (2025). Thank you to my collaborators Anna Murphy, Dr Lalita Simpson, Dr Katharina Nargar, and Dr Heidi Zimmer for the exchange of DNA samples that facilitated geographic contextualization of this study. Thank you to Dr Kor-jent van Dijk for guidance and support in the lab. I also acknowledge the support from Australian herbaria that allowed for access to their collections (AD, NSW, PERTH, CANB).

I gratefully acknowledge the funding of other parts of the population genetics study through a Biological Society of South Australia (Vonow) grant (*C. patersonii* related spp.), a Field Naturalists of South Australia (Lirabenda) grant (*C. leptochila* related spp.) and a grant from the Botanic Gardens and State Herbarium of South Australia (Science program). I also acknowledge that the phylogenetic component of my project was funded by an ABRS grant (4-H3JJX0F). This research was supported by the Commonwealth through an Australian Government Research Training Program Scholarship [DOI: https://doi.org/10.82133/C42F-K220].

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Celebrating the ASBS community

Pat Hannah, Journal Manager, CSIRO Publishing (pat.hannah@csiro.au)

2025 Best Student Paper award

Each year, *Australian Systematic Botany* (Australian Systematic Botany | ConnectSci) recognises outstanding student research through our Best Student Paper award. The prize is awarded to a published paper that demonstrates exceptional scientific rigour, originality, and contribution to the field.

This year we are delighted to congratulate Dr. Helen Kennedy for her *paper "Morphological and molecular evidence for major re-circumscriptions in and eight new species of* Melichrus *R.Br. (Ericaceae subfam. Epacridoideae) in eastern Australia*". Helen's work grew out of her PhD research, reassessing species boundaries in the genus *Melichrus* using both morphological and molecular analyses.

In her own words,

> *"I love working on the systematics of native plants because the closer I look, the more fascinating they become.*
>
> *When I examine a species across its distribution and from multiple perspectives - morphology, molecular phylogenetics, anatomy - I cannot help but be amazed by the diversity and uniqueness of each population, and even of each individual plant. I never tire of observing nature."*
>
> — Dr Helen Kennedy

On behalf of the team at CSIRO Publishing and the *Australian Systematic Botany* editorial board, I wanted to congratulate Helen and her co-authors on this well-deserved recognition.

You can read Helen's work here: https://doi.org/10.1071/SB24031

We are happy to announce a new Special Collection for *Australian Systematic Botany*: Green history of a red continent — uncovering the fossil plant record of the Australian region.

Australia's flora, its diversity and high endemicity, is the product of a geological story unlike any other: tectonic movement, volcanism, continental drift northward from Antarctica, and millennia of drying and climate shift. The palaeobotanical record is our only direct window into that past. Fossil plants offer tangible evidence of extinct biota, direct calibration points for evolutionary timelines, and vital clues about biogeography, range shifts, and the origins of the fire-adapted communities we see today.

This collection, which celebrates the recent and very welcome inclusion of palaeobotany and palynology within the Society, invites fossil-based papers that shed new light on the history of plant groups across austral regions. Papers with a taxonomic or biogeographic focus are particularly encouraged.

You can read more about this collection here: Call for papers | Australian Systematic Botany | ConnectSci

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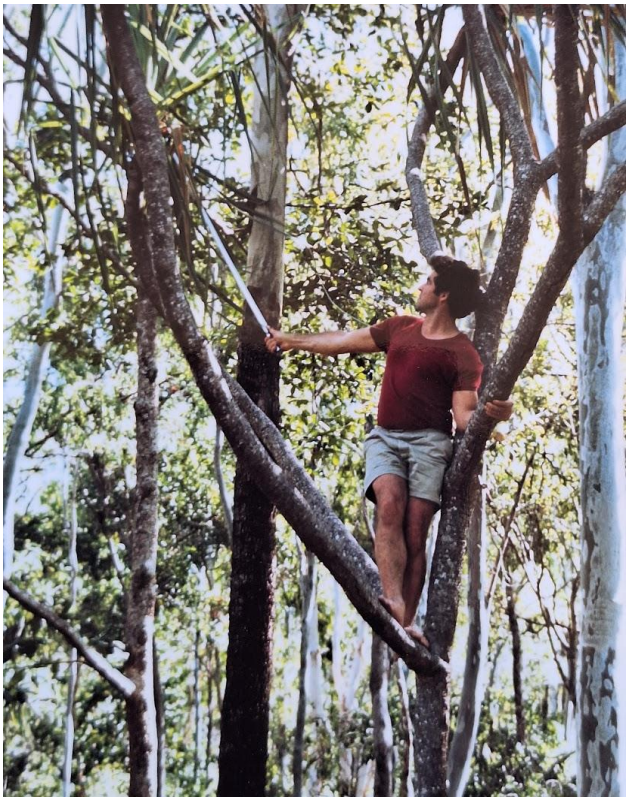
Plants and people: Reflections of two botanists

Jeremy J. Bruhl & Ian R.H. Telford, N. C. W. Beadle Herbarium

Systematics is often at its best when it brings people together. So it has been in both of our careers, with collaborative research particularly important when working on large and difficult groups such as Cyperaceae, Cucurbitaceae, Phyllanthaceae and Asteraceae. Our collaboration has had a long history. And we do go back a bit, at least to our early 1990s participation in the 'Coopers & Cladistics' discussion group meeting at University House at ANU in Canberra. In 1991 JJB was an ABRS-funded researcher at the Australian National Herbarium and Australian National University, and IRT was at the Canberra Botanic Gardens (now Australian National Botanic Gardens). The Gardens ran a field trip to north Queensland to collect seeds, cuttings and transplants together with the all-important voucher specimens. Jeremy was keen to collect material for his ABRS-study of Phyllanthaceae (and of course, some Cyperaceae). Thus began the first of our long history of joint field excursions.



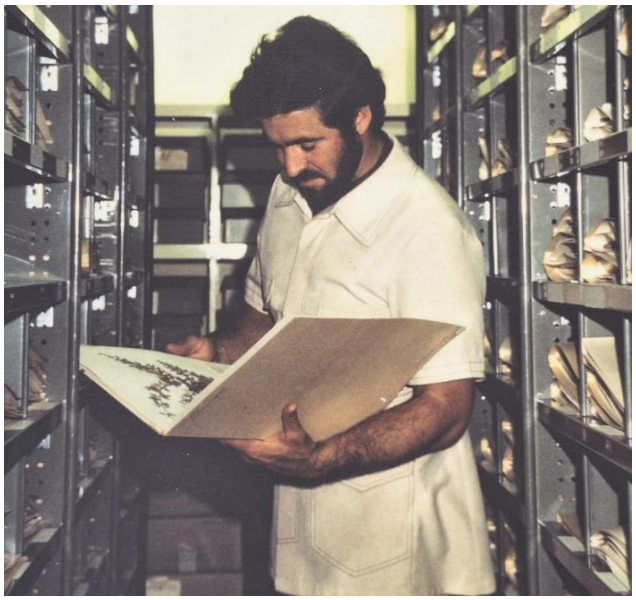
Collecting at the Daintree and Cape York Peninsula, 1972. Images: top Ian Telford, bottom John Wrigley.

A brief history of the botanical career of IRT

My tertiary education began towards a Forestry degree which involved two years at the University of Queensland (UQ), followed by two years at the Australian Forestry School in Canberra. At UQ, the course included botany, mycology, ecology, geology and soil science. Prof. Des Herbert lectured in ecology and Dr Alan Cribb in forest botany, inspirational subjects that convinced me I had chosen the wrong course. I did not want to manage pine plantations or administer logging operations; I wanted to be a botanist.

Forestry and I parted company and I began work at the then Canberra Botanic Gardens in 1966, then part of Parks and Gardens of the Department of the Interior. In the herbarium, apart from the two botanist positions, additional staff were all classified as gardeners. So I began as a 'gardener', a dream of a job with several field trips a year collecting for the living collection. Over the years, I have collected from the Cocos (Keeling) Islands eastwards to the Coral Sea, and from the Kimberley and Cape York Peninsula southwards to Tasmania.

Chief Botanist at the Gardens from 1960 to 1973 was Dr M.E. (Betty) Phillips, who believed botanical gardens should have a professional botanist as director. Dr Phillips insisted that a voucher specimen should be collected for propagation material, which set up the invaluable asset for botanical research of herbarium specimens linked to living plants through a meticulous system of registration and garden mapping. With the appointment of John Wrigley, an industrial chemist, as Gardens Director, a rift occurred between the Herbarium and Gardens management, with severe consequences on Dr Phillips' health (Beer 2020).



Dr Phillips (top) teaching Ian Telford (bottom) how to handle herbarium specimens at the Canberra Botanic Gardens Herbarium (CBG; now part of CANB). Images courtesy of the ANBG image collections.

Following the retirement of Dr Phillips, Dr Michael Crisp was appointed as Chief Botanist. Mike became my supervisor and mentor. It was Mike, later as academic in Botany at the Australian National University, who suggested that I do a research project on *Sicyos* (Cucurbitaceae) towards a Graduate Diploma of Science, thus setting me up for future post-graduate enrolments.

Mike Crisp as Australian Botanical Liaison Officer, Kew, 1982. Image: collection of Michael Crisp.

The rainforest gully at the Australian National Botanic Gardens. Image: Murray Fagg.

I became involved in the design of the Rainforest Gully, begun by Dr Phillips in the 1960s and now a jewel of the Gardens, undertaking many collecting trips for suitable plants. In 1967 near Dorrigo I collected a *Nothofagus moorei* seedling, now a large tree supporting festoons of Beech Orchids, *Dendrobium falcorostrum*.

As my knowledge in taxonomy grew, I accepted invitations from Executive Editor Alex George to write generic and family treatments for the *Flora of Australia* project. Several years of experience in flora-writing led to later secondment to the Australian Biological Resources Study as assistant editor in 1986–1987.

The publication of the *Flora of Australia* treatment of Cucurbitaceae (Telford 1982) has opened doors to collaborations that have impacted my career. I was asked by the Bishop Museum, Hawai'i, to contribute a family treatment for their new flora, "Manual of the Flowering Plants of Hawai'i" (Telford 1990) and "A Tropical Garden Flora" (Telford 2005). I spent three months in Honolulu in the Bishop Museum Herbarium and doing field work, as well as a round-the-world tour of herbaria with major Hawaiian Cucurbit holdings.

Ian with Peter Bridgewater, Director of National Parks and Wildlife Service at the launch of *Flora of Australia* volume 50 in 1993. Image: R. Hotchkiss. ©ANBG, 1993

Susanne Renner delivering her plenary address on Cucurbitaceae at IBC, China, 2017. Images of Ian Telford and Hanno Schaffer on screen. Image: Jeremy Bruhl.

In 2005, I was contacted by Susanne Renner, Professor in Biology at Ludwig Maximilian University of Munich requesting leaf material of *Nothoalsomitra suberosa* (F.M.Bailey) I.Telford, the only member of a monotypic genus from wet forests of south-eastern Queensland. Prof. Renner had a group of post-grads investigating the family, including a densely sampled phylogenetic analysis. But more of Cucurbitaceae collaborations later.

With the formation of the Centre for Plant Biodiversity Research in 1993, herbaria CANB and CBG were amalgamated, with the Gardens' collection being moved to the new building on the CSIRO site. I found the next six years a little difficult, and finally I retired in 1999.

Relocating to Invergowrie, 15 km east of Armidale, I had proposed spending much of my retirement tending my restored homestead garden. Before my final move to Armidale, I had visited the University of New England Herbarium several times, including the opening of the new N.C.W. Beadle Herbarium in June 1997, and even attaching a few determinavit slips. Herbarium curation became a full-time job, and in 2000 I was appointed Honorary Curator.

Collaboration continued with Susanne Renner and her PhD students. Hanno Schaffer and I collaborated on the unexpected endemic Australian genus *Austrobryonia* H.Schaffer (Schaffer *et al.* 2008). I began a Master of Science project on Australian *Cucumis* in 2010 with Jeremy Bruhl as supervisor. Concurrently, PhD student Patrizia Sebastian was revising *Cucumis* and *Sicyos* under Professor Renner, and Munich's phylogenetic and my morphological contributions resulted in the naming of new Australian species of *Cucumis* (Sebastian *et al.* 2010; Telford *et al.* 2011a; 2011b) and *Sicyos* (Sebastian *et al.* 2012; Telford *et al.* 2012).

I continued as a very mature age PhD student with a revision of *Synostemon* (Phyllanthaceae), again with Jeremy as principal supervisor and Prof. Peter van Welzen as co-supervisor. Concurrently Prof. van Welzen was supervising PhD student Kanchana Pruesapan on a phylogenetic study of generic boundaries in *Breynia, Sauropus* and *Synostemon*. Roderic Bouman joined the team providing a densely sampled molecular phylogeny of tribe Phyllantheae. Collaboration led to a major reclassification of generic limits (Bouman *et al.* 2020; 2022; Pruesapan *et al* 2008, 2012; van Welzen *et al.* 2014) and the naming of new species (Telford *et al.* 2014, 2016 & 2019).

My collaboration on research in *Cucumis* continues with Dr Abdel Bendahmane, Director of the Institute of Plant Science, University of Paris-Saclay, on the genomics of the rockmelon, *C. melo*, and its relatives. I also continue to be the curator of the N.C.W. Beadle Herbarium; Honorary Curator, that is. For further information see Herbarium and my bio: Telford, Ian R.H. - biography

Top: New Zealand endemic *Sicyos mawhai* I.Telford & P.Sebastian. Bottom: Transverse section of fruit of *Cucumis melo* relatives, *C. picrocarpus* F.Muell. and *C.* sp. Kirramingly. Images: Jeremy Bruhl.

Top: *Synostemon elachophyllus* (F.Muell. ex Benth.) I.Telford & Pruesapan. Bottom: *Lysiandra subcrenulata* (F.Muell.) R.W.Bouman. Images: Jeremy Bruhl.

A brief history of the botanical career of JJB

Come to think of it, I owe my love of plants to a childhood allergy of hair and feathers, pretty much ruling out studying agriculture, which was on the cards. From an early childhood in Taree, NSW we moved to Sydney, and after 5th form (year 11) I headed to Burnley Horticultural College, then part of the Department of Agriculture.

To the consternation of many students, there was 'too much botany' in the program of study, but for me it started a fascination that continues today. Besides formal classes there was considerable practical experience each week, plus a 'fieldtrip' each fortnight and an extended sojourn each year, which included visits to national parks. In second year, I won the prize for the best herbarium collection. The die was set.

Upon finishing the three-year Diploma of Horticultural Science I heeded the advice of Dr Churchill, Director of the Royal Botanic Gardens Melbourne, who during his graduation address warned us "not to think we were above any job". I had made a quiet vow that after so many exams I would not be a student again and applied for a job as a gardener at the RBG Melbourne only to be rejected as being overqualified. Incensed, I left Victoria and returned home to Sydney.

Soon after, I started with NSW Department of Agriculture as a Plant Diseases Inspector, to be seconded shortly afterwards as a Commonwealth Plant Quarantine Officer. This was a fascinating time when the waterfront was transitioning from conventional shipping to roll-on-roll-off ships and container shipping. During that time, I was asked to fill in at the NSW Department of Agriculture's Home Gardens Service, a job to which I subsequently moved. Yes, "What is wrong with my lemon tree?" was one of the most common questions! I guess I wanted more and I started studying Botany with Zoology at the University of New South Wales (UNSW) part time, which then meant days as a Gardens Advisory Officer and nights travelling out (first by bicycle and then by motorbike) to UNSW for classes. Halfway through my BSc, I resigned from the public service and moved to full-time study living off my savings. Before and after Honours I worked for Alex Wood on his *Amanita* project, in the field and the lab.

Honours with Chris Quinn testing the 'Cotuleae' of Bentham was great. Writing my first paper with Anne Ashford, published in *Stain Technology* amassed three citations (Bruhl and Ashford 1986), still it was neat showing such structure in tiny, c. 100-year-old cypselae. Oh, yes, the 'Cotuleae' did not stand up to scrutiny, but the Honours thesis did.

Jeremy Bruhl collecting Cyperaceae & Juncaceae, Tierra del Fuego, Argentina, 2005. Image: Jeremy Bruhl.

Deciding on a PhD project was a choice between doing more on daisies with Chris Quinn, something with macrofungi with Alex Wood, a focus on pollen with Bruce Knox at The University of Melbourne or taking on the world of Cyperaceae with Les Watson at ANU. All exciting possibilities and a sliding door moment, I guess. ANU it was.

It was wonderful studying at the Research School of Biological Sciences. Les had a stream of visitors to the Taxonomy Lab, and there were many terrific seminars. Often, I would see Graham Farquhar who seemed to sleep through talks only to open his eyes at question time and ask the most erudite questions. My second base during my PhD was the Australian National Herbarium.

During the last year of my PhD study, I received notification of a postdoctoral position at Missouri Botanical Garden for the Flora of North America (FNA) project. It read something like this: we want someone who knows Cyperaceae, who can put together an automated character list…It might as well have said, 'have we got a job for you, Jeremy'! I applied and was offered the position with one hitch; they would not wait for me to finish my PhD. I had to arrive before the end of October 1989. Someone should have warned me about Halloween in America!

There was much to love about Missouri Botanical Garden; 24-hour access to the gardens and work! Peter Raven was inspirational, the team and herbarium collection was fantastic, and I loved those motorised compactus. The gardens themselves were wonderfully in-your-face, balanced by MOBOT's native woodlands and prairies (Shaw Nature Reserve). The FNA team, led by Nancy Morin, was very supportive and hardworking. I visited botanists and herbaria across USA and Canada discussing monocots and using collections. Halfway through 1990 I returned to Canberra to attend two conferences, and to polish and submit my PhD thesis. Back at MOBOT, and at a suggestion from Lyn Craven I applied for and received an ABRS grant to work on Phyllanthaceae for the *Flora of Australia* (reminds me of Danny Kaye and "The pellet with the poison…"). I returned to ANU and CANB to take up the grant.

I applied for several academic positions within Australia that ended up being dress rehearsals for an interview at UNE. The main attractions there were the herbarium, which had already databased its collection, and a botany group that was keen and teaching a program of organismal botany and ecology. The physical distance from a state or the national herbarium was an advantage outweighing any advantage of being in a capital city.

Jeremy Bruhl collecting *Gahnia* (Cyperaceae) with Kuo-Fang Chung in Taiwan, 25 July 2012. Image: Kuo-Fang Chung

I have been fortunate to have many other collegial and productive research and supervision relationships, particularly with Karen Wilson AM and Russell Barrett. More broadly, we three are involved with various circles of the international sedge systematics community. We are contributors along with most of the sedge community, in an iSedge project led by Pedro Jimenez-Mejias (The Global Cyperaceae Database; , https://www.cyperaceae.org/); and Karen and I are

working with a neat team led by Tamara Villaverde Hidalgo on the evolution of photosynthetic pathways in Cyperaceae.

An academic's life in botany in Australia is fully immersive, or at least it was for me; teaching, research (research supervision), outreach and 'service' to the university swallow you up. You come up for breath and find that you are retired and standing on the podium accepting a Nancy Burbidge Medal. How did that happen?

For more see Bruhl (2023) and https://www.anbg.gov.au/biography/bruhl-jeremy-james.html.

A team together

The long-term, close working relationship that Ian and I have is rightly highlighted here. We were (and are) a synergistic force for the N.C.W. Beadle Herbarium.

Our joint research student supervision, mostly with Rose Andrew, has contributed to the successful graduation of many research students. Participants of our joint fieldtrips have benefited from our smooth operation.

We are both fortunate to work within the generally highly supportive and extremely well-connected network that is Australasian systematic botany. What a great place to work and study: fantastic biodiversity (so much to still unravel), great structures (CHAH, MAHC, APC) and amazing platforms that have led the world (AVH, ALA).

Left to right: Ian Telford, Trevor Vollbon, Russell Barrett, Karen Wilson, Brigitte Stievermann, Adele Gibbs, Jeremy Bruhl. Image: Jeremy Bruhl.

A few thoughts for the future

Axiomatic as it is to members of ASBS, systematics is an integrative organismal science. This is captured in the phrase of 'multiple lines of evidence' to sum up the integration of molecular and non-molecular sources of data. Morphology and anatomy are critical skills that must be part of the training and practice of plant systematics.

The Australian Plant Census (APC) is great and we appreciate that it is 'extra' work for many in the Australian plant systematics community. We acknowledge that changes to plant names, especially above the category of species, have practical implications for curators of herbaria. So, with care and consideration, let's fast track the adoption of name changes for APC where groups of world authorities adopt new classifications, such as the classification of ferns by the Pteridophyte Phylogeny Group and where there is a new classification proposed based on strongly supported, integrated evidence-based monograph, as in the case of Phyllanthaceae (see Bouman *et al.* 2020, 2022).

CHAH in the 1990s did an excellent job of keeping us connected and aware of who was working on what through the publication of 'Plant systematic research in Australasia' (Cowley *et al.* 1993). Despite all the online resources today, there is still a vacant niche. An online version of who is studying what, hosted by ASBS or CHAH, would allow those starting off on new projects to 'wave a flag'. The resource might encourage early networking and aid allocation of replicate specimens.

AVH and ALA are amazing resources and we use them almost daily. We are proud that NE was the first university herbarium to contribute records, and the first herbarium to start uploading images of specimen sheets. We have one request that would reduce confusion for users, particularly novice users, and that is to not display cultivated records as default.

The permitting systems in Australia are mostly not fit for purpose unless the purpose is to make it difficult for bone fide Government, University and CSIRO plant systematists to do their job, which is primarily to discover and understand plant diversity and communicate their findings. Jeremy has organised collecting permits for 40 years starting with individual permits and then for permits to cover core people at UNE and the N.C.W. Beadle Herbarium. He acknowledges that the staff of the agencies issuing permits are keen and committed to the protection of service areas and biodiversity. However, it often seems that we are considered as 'foe' rather than 'friend'. We have had some success in gaining permits that are fit for purpose and include the collection of living material to allow more thorough studies, but this is almost always a long and arduous process. We cannot help but think that we can have our permits and sound protection of biodiversity without the pain, if we can as a plant systematics community open broader dialogue with the relevant agencies in each state and territory. Dealing with the issues of First Nations approval does add further complexity to the issue, understandably so. Perhaps ASBS, CHAH and ABRS might sponsor and endorse a workshop(s) to bring the stakeholders together. Maybe this must be done jurisdiction by jurisdiction, given the differences in approach. Though we cannot help but think we need to cross state boundaries too; the pipe dream would be to have a unified approach across the country. We see considerable benefit to conservation agencies and the plant systematics community to streamline the process for permits for the common goals of discovery, documentation, conservation and management of biodiversity in Australia.

With fondness and admiration, we acknowledge Nancy Burbidge AM; a wonderful role model and mentor for all of us who follow in her footsteps. Our journeys to rewarding and productive careers in plant systematics are via routes with twists, turns and plenty of surprises. We appreciate and value our colleagues, students, and collaborators past and present. We see much hope for plant systematics in Australasia given the calibre of the current generation of practitioners and we hope that they have as satisfying a time as we have had. 'Why do we study plants?' One primary school student visitor to the N.C.W. Beadle Herbarium gave us the answer with great enthusiasm: 'because it's FUN'.

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Aaron Wilton leaves the Allan Herbarium, Lincoln, New Zealand

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On 23 April 2026 we farewelled Aaron Wilton from the Bioeconomy Science Institute (BSI). Aaron decided on a radical career change and is working now as Group IT Business Enablement Manager for the large Australasian infrastructure company Fulton Hogan.

In my speech at Aaron's farewell celebration, I was thinking back to 1996. We plant systematists at the Allan Herbarium were full of optimism. We had won a new 5-year plant systematics programme from the Foundation for Research, Science and Technology and had the rare opportunity to employ in the second year a monocot systematist. Aaron was in the final phase of completing his PhD thesis on research in everlasting daisies with Jo Ward at University of Canterbury. He applied for our position, was interested in working on monocots, and we offered him the job under the condition that he would need to submit his thesis before the starting date of this position.

Aaron made it and enjoyed getting his head into the taxonomy of *Luzula*. We did field trips together from the north of the South Island atop the Garibaldi Ridge and Mt Stokes to Stewart Island where we botanised on Mt Anglem.

But it didn't take long before we had a restructure of the plant systematics area. Aaron showed his interest in managing the Allan Herbarium database. This meant a complete change of direction for him. From 2000 he was Manager of the Allan Herbarium including its associated databases and he undertook research in biodiversity informatics. He quickly developed into one of the leading biodiversity informatics researchers in Australasia. I have notes from a Council of Heads of Australasian Herbaria meeting from 2009 that the Australasian herbarium directors regarded Aaron as the driving force in information system developments and that they regarded his unique skills highly.

During the 10 years from 2000 to 2010 Aaron demonstrated that he is not only an excellent biodiversity informatics scientist, but also an ideas person, an exceptional strategic thinker, a great leader, and able to think laterally towards achieving his goals. His preferred way of working is in a team. His enthusiasm is contagious and his big thinking

sometimes overwhelming for those who work with him. I spent many hours with him in his office, often hardly understanding his biodiversity informatics, but he explained, and I learned enough from him so that I could understand and make informed decisions.

For example, around the year 2000, Aaron and I developed the vision of creating a dynamic, continually updated, electronically-based Flora for New Zealand. We wanted it to be based on new research and bring together information from our network of databases and online resources. We had no funding for it. However, through various funded projects, Aaron soon delivered an explosion of tools, from integration of Allan Herbarium databases, Global Compositae checklist, New Zealand Virtual Herbarium, New Zealand Organism Register (Figure), Digitisation of the New Zealand Flora and Fauna series, Collections module for the Characterising Land Biota portfolio collections, factsheets, traits database, and many more. One day in 2009 Aaron told me that he now had all the tools together to start the eFlora for New Zealand. These tools were developed in all these different projects, and Aaron pulled them together for the eFlora.

Allan Herbarium staff worried about losing Aaron because so much depended on him. Within Manaaki Whenua – Landcare Research (now integrated into the BSI) the demands for fixing and developing tools and systems increased and sometimes tensions developed because not everything staff wanted could be done and particularly not instantly. But it also showed that the tools were adopted quickly and soon taken for granted.

Aaron continued to expand his leadership skills. At various times he was programme leader for Biodiversity Informatics, Research Priority Area Leader for Characterising Plants, Research Priority Area Leader for Information Systems, Director of the Allan Herbarium, Chief Editor of the Flora of New Zealand, and acting leader of the Characterising Land Biota portfolio. He also had various national and international roles from Allan Herbarium representative on Species Aotearoa to representative for Oceania on the Taxonomic Database Working Group (TDWG), GBIF Node Manager and GBIF Nodes Chair for Oceania.

Signing the MOU of the New Zealand Organism Register with Department by Conservation, Ministry of Primary Industries, Environmental Protection Authority, and Manaaki Whenua – Landcare Research on 26 February 2016. Aaron Wilton standing between Ilse Breitwieser and Veronica Herrera. Photo: provided by Allan Herbarium (BSI).

More recently, Aaron moved within the BSI further away from the Allan Herbarium by taking on the role

of Product Technical Owner for the BSI, and at the end of April he made the big change, leaving BSI and accepting the role of Group IT Business Enablement Manager for Fulton Hogan. Aaron has planned and prepared himself for this change in his strategic way for many years.

However, Allan Herbarium staff are of course worried what will happen to all these wonderful tools Aaron has built. The Systematics Collections Database (SCD) gets daily use by many throughout New Zealand. The checklists that get produced regularly from the Allan Herbarium Names Database are regarded by many in New Zealand and overseas as the most important tool the Allan Herbarium is making available. We have published almost 100 eFlora fascicles, including a complete Fern Flora, and more fascicles are in progress. When I spoke with Aaron a couple of weeks before he left, he tried to calm me down and said that the BSI informatics group can now do it without him as long as there is someone at the Allan Herbarium driving it from the systematics side. So, in his strategic way he even prepared Allan Herbarium staff over time for independence from him.

Aaron leaving is a huge loss, but Allan Herbarium staff are grateful for Aaron's 29 years of service. We are happy for him that he is successful in developing his career in a direction that is exciting for him and wish him all the very best for it.

A Neat Trick for Sectioning Drupes

John Clarkson, Topaz, Queensland

Producing a good cross section of a drupe with a knife is difficult. The effort required to cut through the hard, lignified endocarp usually results in crushing the fleshy mesocarp. Think of trying to cut a clean transverse section of a peach— even with a very sharp knife. I would have faced this problem in my study of *Erythroxylum* had it not been for a simple technique shown to me by friend and colleague, Norm Byrnes (1922–1998), while I was based at the Queensland Herbarium in the 1970s. Norm had faced the same problem when studying the family Combretaceae for his MSc (Byrnes 1977). Having recognised that the occurrence and distribution of a variety of tissues visible in median cross sections of the mature, drupe-like fruits of *Terminalia* species had diagnostic value (Figure 1), he used the technique to quickly produce good quality sections without using a microtome. However, he did not explain how he obtained the sections in his published paper.

The technique involves gently grinding the fruit with wet and dry sandpaper, sometimes referred to as automotive sandpaper or waterproof paper, for example 3M™ Wetordry™ Abrasive Sheets (https://www.3m.com.au/3M/en_AU/p/d/b40071151/). Wet and dry sandpaper, which can be bought at any hardware store, consists of a waterproof backing paper coated with abrasive grains such as aluminium oxide or silicon carbide in various grit sizes. The waterproof backing allows the grinding to be done by hand, on a hard surface under running water (Fig. 2) which will flush away the material removed and prevent the paper becoming clogged. It's a simple technique that produces excellent sections of drupes. What more could you ask for?

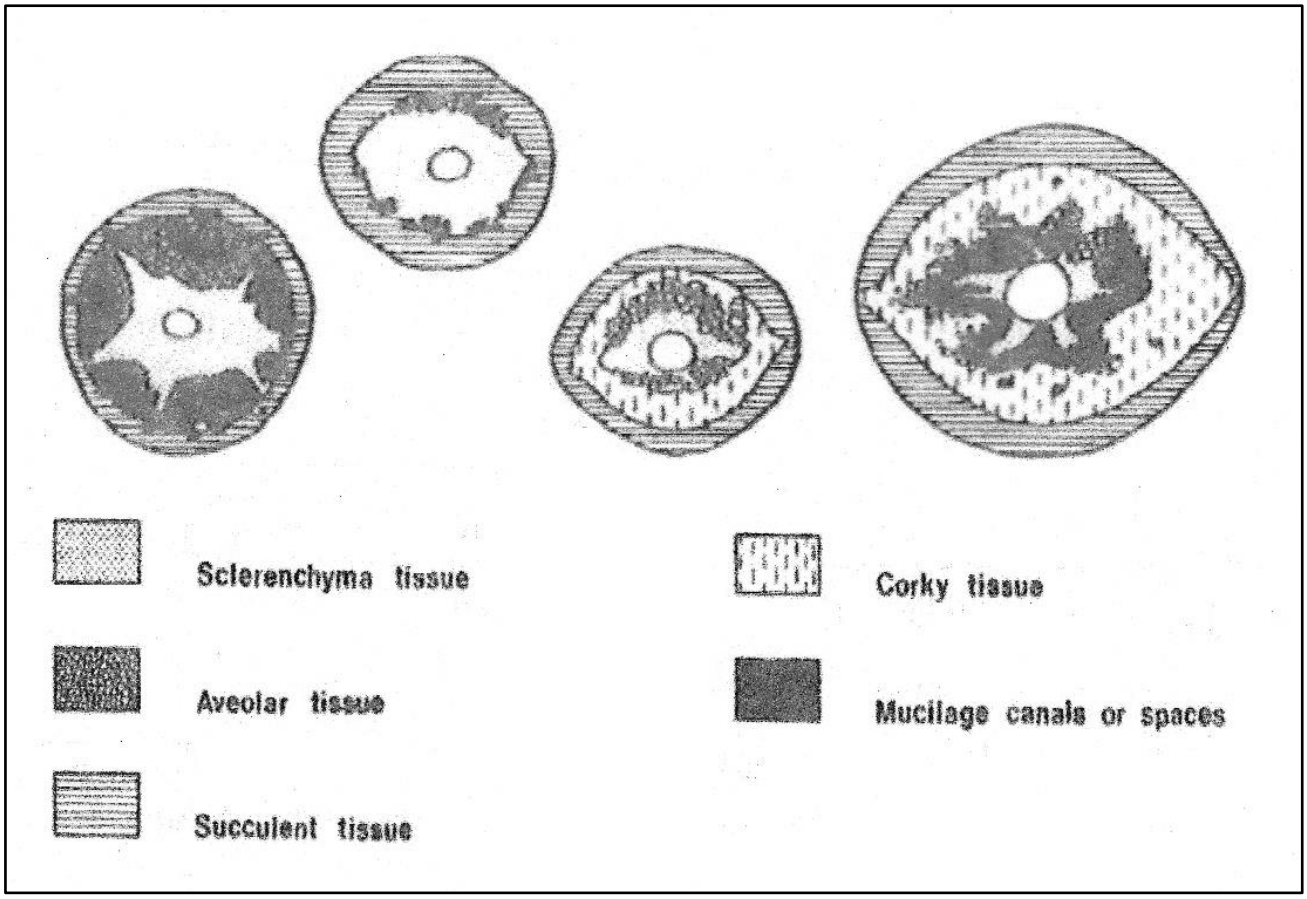

Fig. 1. Median cross sections of mature fruits of four *Terminalia* species from Byrnes (1977).

Fig. 2. (Left to right) wet and dry sandpaper is available in several grit sizes, 80015–100 grit works well. Grinding under running water prevents the paper becoming clogged. Transverse cross section of a very ripe plum.

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Not just another *Eucalyptus*

Book review by Robb Eastman-Densem, The University of Melbourne

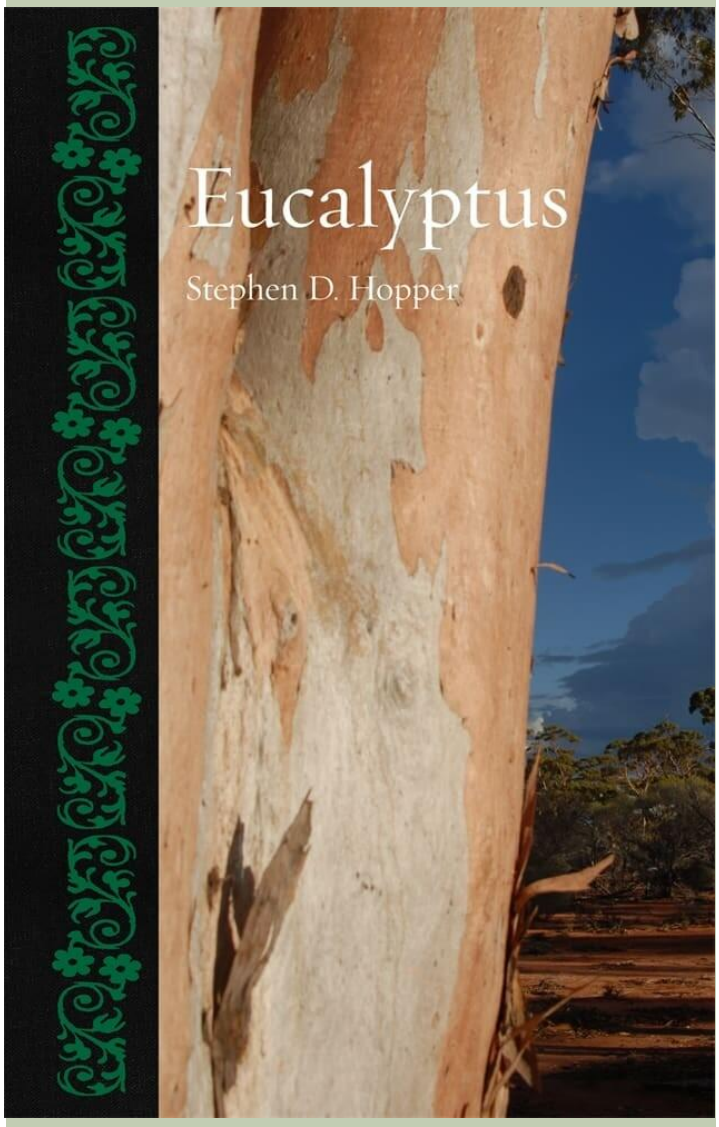
Eucalyptus

Steven D. Hopper

ISBN: 9781836391111 (hardcover), 138 x 216mm

London: Reaktion Books, 2025, 256 pp.

RRP AU $39.99



To the uninformed but inquisitive botanical novice, typing the search "Eucalyptus book" into Google may have resulted in disappointment once upon a time due to the 1998 novel by author Murray Bail. Since the publication of Steven Hopper's *Eucalyptus,* however, those wanting to learn more about this iconic Australian plant group need not fear misdirection any longer.

Eucalyptus is the 34th addition to the *Botanical* series published by Reaktion Books. These are a group of books written to provide a broad account of the cultural and social impacts of various plants in a scientific, but accessible way. Within this common framework, Hopper's objective for *Eucalyptus* is to synthesise information on eucalypts in a way that is respectful of Aboriginal priority and insights, as well as to advance understanding around how we might conserve eucalypts into the future.

Organised around three main themes, *Eucalyptus* begins with several chapters exploring Aboriginal perspectives and the discovery of eucalypts by Europeans. Through the recount of several Dreaming stories from regions across Australia, Hopper works to build a broader picture of how eucalypts are positioned within Aboriginal knowledge systems, highlighting the richness and diversity in Aboriginal relationships to eucalypts. Hopper provides interesting contrast here with the early European accounts of eucalypts, weaving this alongside the significance of eucalypts to Tasmanian Aboriginal peoples. For readers (such as the reviewer) who are less familiar with the early European botanical history of Australia, the timeline in the back of the book is helpful here in orienting oneself and is a nice touch.

Following these chapters Hopper provides a more western scientific perspective on eucalypts, giving an overview of topics relating to their taxonomy, biology, and evolutionary history. Here, readers are introduced to things such as hybridisation, the eucalypt life cycle, as well as basic species concepts and their relevance to eucalypts. Biogeographic and ecological regions are also discussed, with particular attention paid to the significance of very Old, Climatically Buffered, Infertile Landscapes (OCBILs). Hopper has published extensively on the significance of these (e.g., Hopper 2009, 2018; Hopper *et al.*, 2016), and many of the key ideas from these papers appear in this chapter. The

concept of OCBILs is also touched on again in the final chapter of *Eucalyptus,* where Hopper considers the conservation of eucalypts, and highlights key patterns in their threat status, vulnerability, and prospects.

Providing both a satisfying western scientific overview, as well as an account of Aboriginal knowledge, Hopper shows a deep understanding and appreciation for both, navigating and managing their nuances well. While discussion around some of the topics like species concepts, evolutionary origins of eucalypts, and the role of DNA sequencing technologies felt a bit reductive at times for example, I don't feel there is enough research to definitively conclude "overall data point towards an OCBIL origin for eucalypts" (p. 164) - this is perhaps more reflective of the reviewer's current state of obsessive eucalypt literature consumption than anything else (thanks, PhD project). Further, as the purpose of *Eucalyptus* is to explore aspects of both western scientific and Aboriginal knowledge systems, the brevity of certain topics in relation to the former is understandable given these represent a small part of a much larger whole. Indeed, the integration of both perspectives, for me, also highlighted how people, plants, and landscape cannot be divorced from one another within contemporary conservation frameworks. This made the final section on conservation especially compelling and serves Hopper's aim to foster the desire to learn more and to better understand how to care for eucalypts.

Although written with more of a general audience in mind, I can see *Eucalyptus* appealing to a broad range of people. While I cannot comment on the other publications in the *Botanical* series, as *Eucalyptus* is the only one in my possession, I have no doubt it makes a nice addition to the series as it is certainly welcome on my bookshelf.

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News and Events

The BHL who lived.

The Future of BHL – About BHL

When the Biodiversity Heritage Library announced in April 2025 that the Smithsonian would no longer host the initiative—thanks to *you know who*—many of us were understandably perturbed. One year on, BHL has successfully forged a new independent path forward, securing renewed partnerships and support to continue as a treasure trove of biodiversity literature.

BHL
Biodiversity Heritage Library

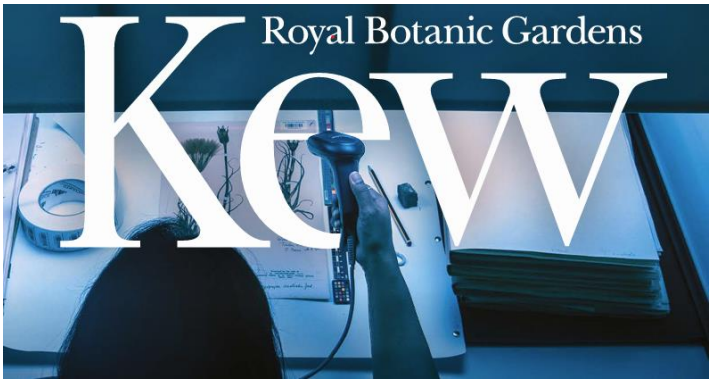
Happy taxonomists day!

A pump-up piece from CSIRO for our annual dose of validation. It is nice to feel appreciated.

What's in a name? Taxonomist Appreciation Day! - CSIRO

Digitisation for conservation

Kew calls for the digitisation of smaller and less consistently funded herbaria in the latest State of the World's Plants and Fungi.



Taking a hard look at extinction risk across the flowering plant tree of life

High risk of extinction across the flowering plant tree of life | Science

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The ASBS Newsletter keeps members informed of Society events and news, and provides a platform for debate and discussion. The newsletter is published three times a year on the ASBS website. ASBS members are encouraged to submit original articles, notes and letters.

Have an article or an idea for the Newsletter?

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The Australasian Systematic Botany Society is an incorporated association of over 300 people with professional or amateur interest in botany. The aim of the society is to promote the study of plant systematics.

Membership is open to all interested in plant systematics. Members are entitled to attend general and chapter meetings, and to receive the ASBS Newsletter. Any person may apply for membership at any time by filling in a membership application form available at http://www.asbs.org.au/membership/. Subscriptions become due on 1 January each year.

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Cover Image: *Hoheria sexstylosa*
(Photo credit: Jennifer Tate)