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Betsy Jackes
Greg Leach
Nathalie Nagalingum
Christopher Quinn
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Grant application closing dates:

Hansjörg Eichler Research Fund:
on March 14th and September 14th each year.
Australian Conservation Taxonomy Award:
in May 2015, 2016.

Cover image: *Ternstroemia monostigma* W.R.Barker (Pentaphtylacaceae), a New Guinea endemic. Male and female flowers and parts (minus petals), fruit, seed in section. Artist Taikika Iwagu. With permission of the National Herbarium of Papua New Guinea.

Publication dates of previous issue

Australas. Syst. Bot. Soc. Newslett. 159 (June 2014):
ASBS Web site: 21st August 2014; Printed version: 28th August 2014

From the President

Embracing our New Zealand constituency

The coming Conference and Annual General Meeting at Massey University, Palmerston North, is hard upon us. It will be our second conference in New Zealand in the last few years, following the successful conference at Lincoln, near Christchurch, in 2010.

Our Society – and the Council of Heads of Austral(as)ian Herbaria – were founded in 1973 at a time when the Australian mood was for visionary change in the approach to society and environment. This mood was shared by both young and established taxonomists and heralded a long period of substantial investment in biosystematics in scientific and technical positions, research, publication and infrastructure.

As we move to consolidate and grow the Society's New Zealand participation, the mood of today is quite different, with government policy tending to be increasingly dollar-driven. I believe that Council must be vigilant to appropriately nurture our presence in New Zealand until the understanding of the benefits of involvement in our Society are as embedded in the activities of this new group of students and systematists as they have grown to be on the Australian side of the Tasman.

Reflecting on the passing of Gough Whitlam

It has been remarkable to see the passion across the political spectrum that still remains in our community, media and politicians for the change that took place in the early 1970s, brought to light in celebrating the legacy of Australian Prime Minister Gough Whitlam. After many years of post-war conservative leadership reflecting strongly held traditions, Whitlam led his federal government in a brief

and stormy time in office. Highlighted in the media has been his government's legacy in the social arena (health, education, Aboriginal rights, etc.). In those heady times governments increased investment in taxonomic science and services. At the national level the Commonwealth established the Australian Biological Resources Study, which soon became the main vehicle for funding taxonomic research and the *Flora of Australia* project. This change was also reflected in politics and action at the State and local government level.

Such change resulted from the progressive public attitudes. A new generation participated with the established in forming a rational collective vision for science and the environment, which gained a high political profile. Are we seeing signs of a similar groundswell today?

Progress with the White Paper

The White Paper project seeks to influence and join such a groundswell. I can report recent progress, with activity in developing key indicators for the evidence base of the value and health of our taxonomic and systematics knowledge and infrastructure, and in putting together our case in the overarching documentation. Key has been the appointment of an already active Katharina Schulte as the project coordinator. I look forward to a forum and informal workshop at the coming conference.

A big thanks to our Newsletter contributors

What a remarkable response to the call for contributions to address a prospect of a lean 160th issue, resulting in the suite of articles and two unsolicited book reviews.

Bill Barker

Deaths

It was sad to hear news of the death of Laurie Adams of the Australian National Herbarium on 7th November. From 1970 on, we were always greeted by a warm smile and talked widely across taxonomy each time we visited. Here is an immediate tribute from CANB Facebook site and a link to his current biography on their website (Web ref). Eds.

R.I.P. Laurie Adams. Australian National Herbarium stalwart Laurie Adams passed

away peacefully on Friday night, after being ill for a short time. Laurie started work in CSIRO in 1962 in what was to become the Australian National Herbarium. He retired in 1988, but continued to work in the herbarium as an Honorary Research Fellow, more or less full time until a few months before his death. Laurie leaves behind a rich legacy of specimens, identifications, Flora treatments, identification tools and other botanical pub-

lications. He was the herbarium's resident botanical Latin guru. He will be missed by his friends and colleagues.

Web ref. 1. <http://www.anbg.gov.au/biography/adams-laurie.html>

ASBS Inc. business

Latest grants through the ASBS research funds

Hansjörg Eichler Research Fund, September 2014 Round

This round we had five applications. Grants were awarded to the following two students.

- Janet Gagul, James Cook University: Systematics and evolution of the genus *Elaeocarpus* L. (Elaeocarpaceae). \$2,000.
- John Thompson, Queensland University of Technology: Systematics of the *Ancistrachne* group (Panicoideae, Paniceae, Neurachninae) using morphological and molecular data. \$1,850.

Unsuccessful applicants were provided with feedback on their applications and we have encouraged them to resubmit in future rounds.

As usual, the efforts of the ASBS Research Committee in assessing these grant applications is greatly appreciated. The committee members in this grant round were Nathalie Nagalingum, Chris Quinn, Phil Garnock-Jones, Greg Leach, David Glenny.

After several years on the committee Nathalie Nagalingum has decided to step down and this current grant round will be her last. We extend our thanks to Nathalie for all her hard work. We will be on the hunt for at least one new committee member before the next grant round!

The next round of applications for Eichler grants will close on March 14th 2014.

Australian Conservation Taxonomy Award, September 2014

The Australian Conservation Award aims to support student research in systematics that contributes to biological conservation. It is supported by The Nature Conservancy and the Thomas Foundation,

The September 2014 round sought applications for separate awards in both plant and animal systematics.

In the animal category we received six applications, and these were assessed by

representatives of the Society of Australian Systematic Biologists and James Fitzsimons from The Nature Conservancy. One award of \$5000 was offered to James Shelley, The University of Melbourne, for a project on freshwater fish of the Kimberley.

In the plant category we received just one application, which was also assessed by James Fitzsimons in conjunction with the ASBS Research Committee. Our decision was to not make an award to the single applicant in this round. This was partly on a technicality to do with funding eligibility and partly because of the nature of the application. An outcome of this decision is that we will have funding to offer three awards, in total, across the next two rounds of ACT Awards (May 2015 and May 2016). These botany awards provide valuable research support, including \$5000 toward research costs and up to \$2000 toward attendance of two ASBS conferences. As such we strongly encourage supervisors to promote these awards to their research students, and we will advertise them again in the lead up to the next closing date.

Mike Bayly
Chair, ASBS Research Committee

ASBS has its own web domain name

ASBS now has its own domain name www.asbs.org.au rather than its long-standing address www.anbg.gov.au/asbs/. Our thanks to Greg Whitbread for suggesting and implementing this change. The web content is still hosted on Australian National Botanic Gardens's servers so long as that is acceptable, but this link is hidden and our full responsibility for content of the site is reflected in the web address (URL) and society contact email addresses.

Jim Croft indicates that this brings us into line with other organisations hosted on government sites. ANBG needed to move its websites to accessibility compliance, drawing clear lines between sites that it hosts and those for which it is responsible.

This ownership of our domain entails a small annual fee of currently \$13, which now will be a regular transaction by the Treasurer.

Greg advises that initially a Google search for, e.g., “ASBS Newsletter” may list old “anbg” addresses, but he has installed a redirection page when accessing the old home page. When Google’s tool that assembles addresses intersects next with the ASBS site, the redirect

page to the new address and other subordinate pages will ensure the new replaces the old.

ASBS is indebted to the Australian National Botanic Gardens for its long role as host of our site and also for its continued provision of staff members who maintain both the functionality and content of the site.

Bill Barker

The coming ASBS conference

ASBS 2014 conference update

Just a few weeks now until the 2014 conference at Massey University in Palmerston North. The final program and booklet of abstracts are available on the conference website.

We have a great week planned, kicking off on Monday evening with a Kiwiana themed BBQ at the historic Wharerata homestead on the Massey campus. Oral presentations will run Tuesday – Thursday and we have fantastic sessions scheduled, including paleobotany, taxonomy, species limits, biogeography and phylogeny, hybridization and polyploidy, and e-floras.

About half of the talks will be from students or postdocs, so it will be great to hear from the next generation of systematists.

Each day will start with our outstanding lineup of plenary speakers:

- Dr Heidi Meudt (The Museum of New Zealand, Te Papa Tongarewa), “Next generation, integrative, collaborative systematics”,
- Dr Peter Weston (Royal Botanic Gardens Sydney, Nancy Burbidge Medal recipient): “Problems and progress in plant systematics since Nancy Burbidge”, and
- Dr Phil Novis (Landcare Research), “Next-generation systematics and the algae: the importance of character evolution”.

We have just a few posters. They are to be presented during the lunch break on Wednesday – a good opportunity for lots of dialogue with the presenters during this time.

The conference dinner will be held at Halikarnas, a Turkish restaurant in town, which has great atmosphere and fantastic food ... should be a fun evening!

For those staying on for the field trip on Friday, we’ve arranged a bus to take us up to the volcanic plateau with a few stops along the way. Lunch will be provided – please bring clothing and footwear appropriate for unpredictable montane weather conditions! There are still seats available on the bus, so if you would like to come along just let me know. Thanks to Leon Perrie for being our guide for the day!

If you arrive in Palmerston North early and are looking for some entertainment, there is plenty to be had. Downtown you will find numerous cafes and shops, you can visit the New Zealand Rugby Museum (Web ref. 1) and Te Manawa Museum of Art, Science, and History (Web ref. 2). Local walks through Bledisloe Park on the Massey campus or through the Victoria Esplanade will give you a taste of local flora as well as exotics from around the world. Just out of town is the Kahuterawa reserve where you might like to partake of the Sledge Track walk (Web ref. 3). Further afield, you can visit the Tui Brewery (Web ref. 4) or the Turitea Wind Farm (Web ref. 5). You’ll find other entertainment listed at the Palmerston North city website (Web ref. 6).

Look forward to seeing many of you in Palmy very soon and the rest of you next year in Canberra!

Jen Tate

On behalf of the ASBS2014 organizing committee

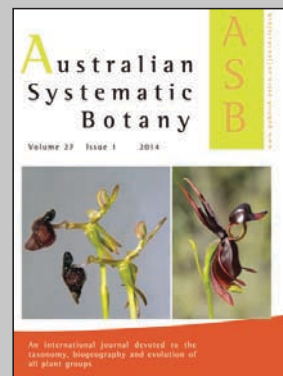
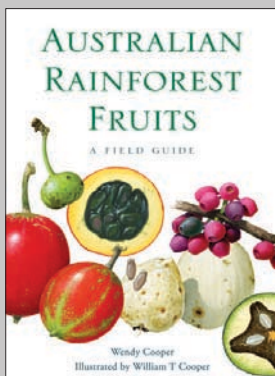
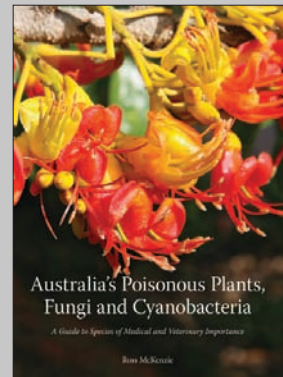
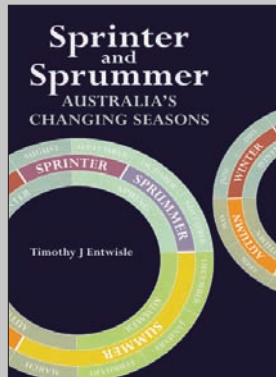
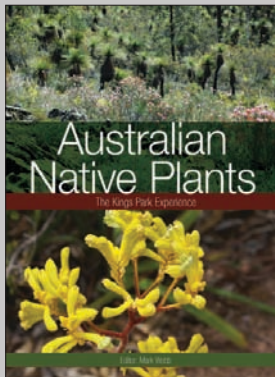
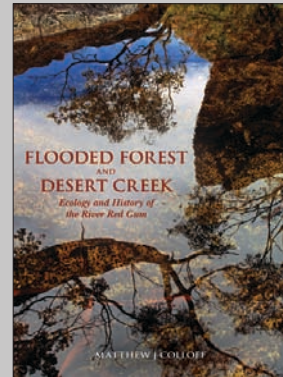
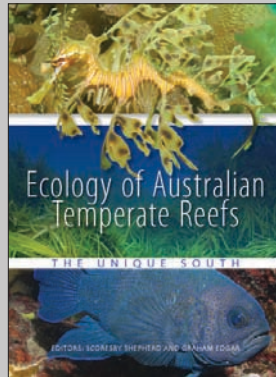
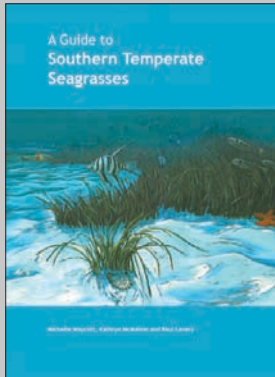
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Articles

How will the changing uses of herbarium collections affect their future?

Ailsa Holland
Queensland Herbarium

The number of uses and general accessibility of herbarium collections and the associated data has increased considerably over the last 25 years since the Kew Handbook defined those uses as “reference, identification, nomenclature control and provision of data” (Foreman & Bridson 1989). Traditionally, collections have been used primarily for taxonomic research, species discovery and the development of identification tools (keys and floras) and this work continues to be a high priority (Bebber *et al.* 2010). However, researchers and other users continue to find novel ways to use this tremendous resource to answer new questions, and herbaria have responded by increasing the accessibility and quality of their collections and data, and promoting their uses and value to the community through outreach activities. These activities may or may not be sufficient to sustain or even grow the collections through the next 25 years, but how will we know?

Specimen collections and the associated data are increasingly used as a source of samples for DNA analysis, spatial analysis, conservation assessment, and climate adaptation studies, and as a repository for research vouchers. Funk (2004) lists 72 uses of herbarium collections, and additional economically important uses are highlighted in the report on the Interagency Working Group on Scientific Collections (2009).

Some new and interesting uses of herbaria that are worth highlighting:

- Basis for conservation legislation and policy, confirmation of species, species concept and as verified spatial occurrences of species for conservation status assessment (Lowry & Smith 2003; Willis *et al.* 2003; Samper 2004; Roberts *et al.* 2005).
- Basis for modelling changes in species distributions over time (Feeley & Silman 2011), especially threatened species (Laidlaw & Forster 2012) and invasive weeds (Wu *et al.* 2005; Crawford & Hoagland 2009).
- Repository of expert verified vouchers for

large scale “barcoding” programs aimed at identification of samples and fragments. It is important to note here that barcoding has actually increased the need for reference collections and species experts (Daly *et al.* 2001; Hajibabaei *et al.* 2005; Whitfield 2007; Applequist 2014).

- In the determination of phenological changes associated with increased ambient temperatures (Primack & Miller-Rushing 2009; Gallagher *et al.* 2009).
- In the determination of plant anatomical changes associated with increased CO₂ levels through time by examining historical and recent specimens from the same locality (Woodward 1987; Beerling & Chaloner 1993; Kouwenberg 2003; Scarr 2011).
- Repository of verified vouchers specifically for *ex situ* conservation (Millennium Seed Bank (MSB): Web ref. 1; Dierig, Blackburn & Ellis 2014).
- In recording, preserving and restoring traditional ethnobotanical knowledge (Standley & Hill 2011; Nesbit 2014).

Custodianship of voucher materials is an increasingly important role of herbarium collections, as a way of ensuring the longevity of research results, as summarized by Funk (2005) and Culley (2013). The process of specimen collection has also changed to reflect these new uses, with more subsidiary collections, such as samples for DNA analysis and digital photographs attached to collections (Applequist 2014; Funk 2014). The increasing requirement for researchers to lodge vouchers, the storage of new types of specimens, and the management of linked digital items has indeed challenged herbarium collection managers. Digitization and online data delivery mean that increasing numbers of people have access to herbaria globally via portals such as Australia’s Virtual Herbarium (Web ref. 2), allowing them to plan field work and access regional collections as never before. This is occurring

in an increasingly difficult legal and ethical framework for plant collecting e.g. the Nagoya protocol (Web ref. 3), biodiscovery legislation and local permit requirements, and quarantine restrictions. Herbaria and the users of herbaria need to understand and comply with these requirements before materials are collected, transferred or utilised (Appelquist 2014).

While herbaria have engaged the community as a means of increasing the collections and discovering new species, there has never been a higher level of volunteer input in specimen processing and curation, at a time when the number of permanent paid positions are trending down (Funk 2014). This volunteer workforce has recently expanded with more remote volunteers contributing digital data through, for example, the Atlas of Living Australia Volunteer Portal (Web ref. 4).

Media interest has also increased in Australia, with herbarium collections and the associated botanical expertise highlighted in recent reports. Some examples are: species discovery through the BushBlitz program (Web ref. 5), the early detection of red witchweed (*Striga asiatica*) in Mackay (Web ref. 6), the discovery of a new cancer medicine from the native blushwood tree (*Fontainea picrosperma*) (Web ref. 7) and the Baden-Clay forensic case (Web ref. 8).

In conclusion, herbarium collections and data currently have a good level of public accessibility and volunteer support, and an increasing variety and number of uses. The warnings and dire predictions of imminent decline (Clifford, Rogers & Dettman 1990; Walters 1993; Dalton 2003; Prather *et al.* 2004) have been partially realized (Funk 2014) but the current level of public interest is encouraging. However more support is needed, especially as the uses of the specimens expand, along with the need to improve specimen and data quality for the many and varied uses. Researchers are asked to actively support herbaria through consultation during project planning, contribution to the real costs of vouchering and acknowledgement of the services provided. Herbaria need to do more to promote their collections and clearly communicate their value to the community. As Peter Crane points out “it is simply wishful thinking to expect public support if they don’t know what we are doing or why it is important” (Crane 1996).

We also need to transform the way we do business (Wheeler 2010), working together with universities, community, business and government towards clearly defined common goals.

Will it be enough to ensure the future of herbarium collections and the many unique services and data they provide? Funk (2014) investigates some specific cases of decline, but we will only know how we are going in individual herbaria if we can benchmark and monitor collections health, data standards, user experience and public awareness levels through comprehensive audits. The initiative of the Council of Heads of Australasia Herbaria (CHAH; Web ref. 9) to develop a set of standard guidelines for managing herbarium collections in Australasia, similar to the National Standards for Australian Museums and Galleries (Web ref. 10) is one step in the right direction.

Acknowledgements

I would like to thank Pina Milne, John Thompson, Tony Bean and Gordon Guymer for their comments and suggestions.

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4. www.ala.org.au/get-involved/
5. www.bushblitz.org.au/
6. Red witchweed: <http://www.abc.net.au/news/2013-08-07/mcveigh-witchweed/4871006> (also item in our weed spotter newsletter <http://www.qld.gov.au/environment/assets/documents/plants-animals/herbarium/weeds/weed-bulletin-aug2013.pdf>)
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8. Baden-Clay: <http://www.couriermail.com.au/news/queensland/day-9-gerard-badenclay-on-trial-accused-of-murdering-wife-allison/story-fnihsrf2-1226964239691>
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Extracting DNA from herbarium specimens

Leon Perrie & Lara Shepherd

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We recently published a note in *Taxon* suggesting more care when extracting DNA from herbarium specimens (Shepherd & Perrie 2014). We've no issue with destroying part of a herbarium specimen for DNA analysis per se, even from a type or historical specimen if circumstances warrant it (e.g., resolving application of the name). However, if it is going to be done, it should be in a way that provides confidence in any results. This article describes the problem, and how to resolve it.

Getting DNA from the dead

It is possible to extract useable DNA from even long-dead specimens. However, when an organism dies, its DNA begins to degrade, decreasing in quality (as it breaks up into smaller and smaller pieces) and quantity (Hebsgaard et al. 2005). The speed of this decay depends on prevailing conditions. Heat and moisture hasten it; cold and desiccation can largely arrest it. This is why tissue set aside for DNA analysis is stored in the freezer and/or in silica gel for plants and high-concentration alcohol for animals. Freezing slows chemical processes, and the silica gel and alcohol remove water preventing the 'rotting' processes that degrade DNA.

There have been spectacular successes in obtaining DNA from degraded sources. But there are also high profile instances when 'success' has actually been illusionary, with subsequent work showing that the initial results were not derived from the target sample but from modern-day 'contamination' (Hebsgaard et al. 2005; Binladen et al. 2006; Rosselló 2014).

The power of PCR

The biggest source of 'contamination' appears to be from PCR products (although workers

analysing degraded human specimens have to be very careful about contaminating the specimens with their own shed skin and other secretions). PCR – Polymerase Chain Reaction – underpinned the genetic revolution of the last few decades. It uses an enzyme and cycles of heating to copy targeted pieces of DNA. It is very powerful. In just a few hours it allows a DNA sample to be synthetically amplified a billion-fold (or thereabouts). This increased quantity of DNA – the PCR products – in turn provides the necessary raw material for traditional DNA sequencing.

The power of PCR means, however, that there is a lot of synthetic DNA literally floating around a laboratory in which PCR is conducted. Opening a tube containing PCR products releases aerosols containing these synthetic DNA copies, coating the researcher, equipment, and everything else in the lab (Hebsgaard et al. 2005). Usually this poses little problem. For instance, there is usually so much DNA in fresh or specifically-preserved samples, that their endogenous DNA content outweighs any contamination from pre-existing PCR products.

But there can be problems with degraded samples, such as those from herbarium specimens. They may contain useable amounts of endogenous DNA, but it may be in such low quantity/quality that it can be swamped by pre-existing PCR products in the laboratory environment. Subsequent attempts at PCR then actually amplify the contamination rather than the endogenous DNA. This then produces an erroneous result, with the degraded sample appearing to have the same DNA sequence as something that has been previously analysed in the lab.

Such errors may be identifiable; for instance, the result is so unexpected that it must be an error (e.g., wrong family). Or it may not be clear – is the intriguing result from the degraded sample real or due to contamination? Problematically, once a DNA sample is contaminated by foreign PCR products, it is difficult to counter.

As noted above, contamination by PCR products gives sequence results identical to something previously analysed in the lab. Consequently, a novel result provides some confidence that it is a real result. Furthermore, herbarium specimens, particularly when they are recent and have been dried quickly without being crisped, can contain good quantities of DNA that are unlikely to be susceptible to PCR contamination. However, the condition of the specimen's DNA and/or the novelty of the sequence result can only be determined after part of the specimen has been destroyed (as part of the DNA extraction). If it turns out that the DNA quantity/quality was low and the sequence was not novel, was the result spurious and the destructive-sampling a waste?

The solution

PCR contamination of degraded samples can be mitigated by physically separating (1) the extraction of DNA and the setting-up of polymerase chain reactions from (2) the generation, analysis, and subsequent processing of PCR products. This means two isolated rooms, with their own equipment and reagents. It also entails a one-way flow of traffic, only from the first laboratory to the second, with researchers who have been in the second lab showering and changing their clothes before returning to the first lab. This ensures that the first lab is free of PCR products, preventing even samples with extremely low amounts of endogenous DNA from being contaminated by PCR products of non-endogenous DNA. (For the same reason, laboratories generating PCR products should be physically isolated from herbarium collections and other specimen repositories which might be used as sources of DNA; Shepherd & Perrie 2012.)

This approach is at the heart of so-called 'ancient DNA' methodology (Cooper & Poiner 2000; Gilbert et al. 2005; Hebsgaard et al. 2005; Knapp et al. 2012), which is a slight misnomer since it is really about protecting the integrity of any sample with low quantity/quality DNA.

It is standard practice, if not a requirement for publication, in the genetic analysis of degraded vertebrate samples. It should be more routinely applied with botanical specimens where the DNA has not been specifically preserved, at least for homoiohydric lineages such as vascular plants. (Being poikilohydric, lichens and bryophytes might preserve their own DNA even when dried as specimens.)

As noted above, it is possible to not use 'ancient DNA' methodology and still get results from herbarium specimens in which there can be confidence (i.e., if the sequence obtained is different, and especially if it is very different, from anything previously analysed). However, this destroy-and-hope approach is only really acceptable when source material is abundant. In cases where herbarium material is finite and/or precious (e.g., type and/or historical specimens), and/or when little sequence difference from previously analysed samples is expected, ancient DNA methodology should be employed. This will give the researcher and their peers confidence in the veracity of the results. It should also assuage collection custodians that, though parts of their specimens are being destroyed, all is being done to ensure an authentic result.

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The University of Melbourne Herbarium: now accessible on-line via Australia's Virtual Herbarium

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In October, the University of Melbourne Herbarium (MELU) started contributing specimen data to Australia's Virtual Herbarium (AVH). Home to approximately 100,000 specimens, MELU is the largest university herbarium in Australia. About 10 per cent of the collection has been databased to date, adding over 9,000 records to AVH so far (Web ref. 1).

The MELU herbarium was established in the School of Botany in 1926 with a donation of plant specimens from the Rev. Herman Montague Rucker Rupp, a former student of Trinity College at the University. The collection grew throughout the 20th century thanks to donations from state and private herbaria, and through the efforts of staff and students in the School of Botany.

Although small in size compared to the state and territory herbaria, it is the largest and most botanically diverse university herbarium, and makes a valuable contribution to our combined knowledge of the Australian flora. All major botanical groups are housed in the collection, but it is particularly rich in algae and non-vascular plants. Significant collections include:

- An algae collection of approximately 30,000 specimens, which was established by the renowned phycologist, Dr Sophie Ducker. MELU volunteers have recently databased some of Ducker's collections from Madagascar and the Mascarene Islands recently returned from loan (Web ref. 2).
- 4,500 mosses and liverworts collected by Dr George Scott, the foremost authority on temperate mosses and liverworts. Scott is credited with rekindling interest in the study of bryophytes in southern Australia and was the teacher of at least three of today's leading Australian bryologists. MELU have recently begun databasing the Scott collection, which is available in AVH alongside records of Scott specimens held in other herbaria (Web ref. 3).
- A collection of leaf-inhabiting microfungi specimens (Web ref. 4), slides and illustrations from Dr Harry Swart, a

mycologist, plant pathologist, and artist of architectural and humorous drawings. Swart joined the School of Botany in 1966 as a Senior Lecturer. Leaf-inhabiting fungi are a highly diverse but relatively unexplored group of fungi that are prevalent on many of the iconic Australian plant genera such as *Eucalyptus* and *Banksia*.

More MELU specimen records will be added to AVH as the collection continues to be databased by a team of volunteers – who are mostly undergraduate students – and herbarium staff. Volunteering at the herbarium gives students great insights into botanical diversity as well as an understanding of how natural history collections are managed. Students get to see a range of different plants, which gives them a good idea of morphological variation and spotting characteristics, while helping us curate the collection.

Although all herbaria are important research collections, university herbaria, in particular, have an important role in teaching the next generation of botanists. The herbarium is a valuable teaching resource with specimens used in practical classes to demonstrate the diagnostic features of different plant groups, especially out of season, and some subjects require students to prepare their own specimens, which in turn are incorporated into the collection.

One of the most important teaching and research collections is a collection of approximately 7,000 *Eucalyptus* specimens collected by staff (including Professors David Ashton and Pauline Ladiges) and students over the years. The most significant of these is the monocalypt collection (*Eucalyptus* subgenus *Eucalyptus*), which comprises about 2,600 specimens from western and eastern Australia. This collection encompasses all species of the subgenus and includes voucher specimens sampled for DNA sequencing, seedlings cultivated from the specimens (which display characters useful for identification) and collections preserved in alcohol for microscopy. Multiple samples from



Fig. 1. Left, Curator Dr Gillian Brown's favourite specimen: *Tetratheca ciliata* (MELU D015072a). Top right, The original herbarium cupboards that were built to house Rupp's collection are still used today; they have moved buildings twice and are now used in conjunction with rolling compactus to house the c. 100,000 MELU specimens. Bottom right, Herbarium volunteer Megan Rixon curating the fungal collection at MELU; Megan has databased over 200 specimens of fungi.

different populations exist for many species, illustrating their geographic and morphological variation.

There are 16 herbaria in Australian universities, which together house over 420,000 specimens. MELU is only the second university herbarium to join AVH. The N.C.W. Beadle Herbarium (NE) at the University of New England joined AVH in 2013, and has over 80,000 records in AVH (Web ref. 5). Other university herbaria, notably La Trobe University Herbarium (LTB) and James Cook University Herbarium (JCT), are working towards delivering data to AVH in the coming months.

Web references

1. Query currently available MELU records in AVH: http://avh.ala.org.au/occurrences/search?q=collection_uid%3Aco64#tab_mapView
2. Query currently available Sophie Ducker records from Madagascar and the Mascarene Islands in AVH: <http://bit.ly/1zezQha>

3. Query currently available George Scott herbarium records in AVH: <http://bit.ly/1nrLFLF>
4. Query currently available Swart collections in AVH: <http://bit.ly/1ueH38L>
5. Query currently available NE records in AVH: http://avh.ala.org.au/occurrences/search?q=collection_uid%3Aco65#tab_mapView

Floral inhibition

When you get older, you mature, and you start liking flowers. Although I try and keep it manly.

David Beckham

I once had a rose named after me and I was very flattered. But I was not pleased to read the description in the catalogue: no good in a bed, but fine up against a wall.

Eleanor Roosevelt

Biographical notes on C.F. Plant (1843-1932)

A.R. (Tony) Bean
Queensland Herbarium

Charles Frederic[k] Plant was born in Nottingham, England in 1843. He came to Australia as a young man, in company with his brother, E.H.T. Plant. They travelled to the Palmer River goldfields and other parts of north Queensland, in the pursuit of gold and other precious metals. By 1882, Charles was the Managing Director of a mine at Kingsborough (NW of Mareeba) and a wealthy man. On 15th January 1884, he married Isabel Marion Pegus at Charters Towers (Web ref. 1), and he then resided in that town. They had five children.

He was a prominent and highly respected citizen of Charters Towers, and he engaged in many social and administrative activities – he was for instance, the president of the *Philosophical Society* in the town (Web ref. 2). The house that was built for him in 1890/91 was said to be “the most magnificent in Queensland” (Web ref. 3).

C.F. Plant was not a botanist, nor even a recognised plant collector, but had probably been encouraged to collect some plant specimens by F.M. Bailey. Plant wrote at least eight letters to Bailey, starting in April 1890, and ending in July 1891, most of which were accompanied by specimens for identification; the letters have not survived, merely Bailey’s recording of inward and outward correspondence (Queensland Herbarium archives; Bailey Book, number 1).

BRI holds 125 specimens collected by C.F. Plant. It seems that Plant supplied a rectangular label for each of his specimens with a collection number written in blue crayon (Fig. 1); someone (at Brisbane?, but not F.M. Bailey) has written at the bottom of these labels his name, the month and year when they were received, and the locality. In most cases, F.M. Bailey then wrote the name of the plant on this same label. For many of Plant’s specimens however, his original label was not kept, and instead there is a label in Bailey’s handwriting that routinely omits both the collection/receipt date and collection number.

Plant’s specimens are from two localities only – Charters Towers, for which there are 69 specimens, most collected in January 1891 or April 1891, and a few collected during 1890. The collection numbers on the Charters Towers

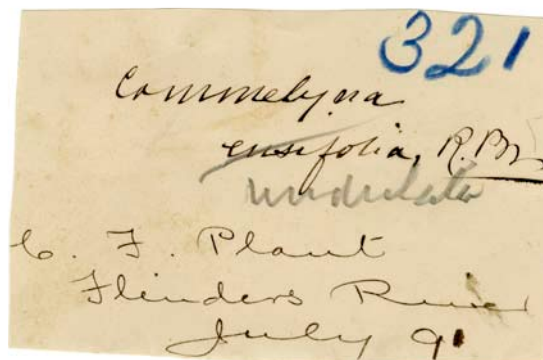
specimens range from 8 to 227. His only other collecting locality was “Flinders River, July 1891”, for which there are 56 specimens at BRI. The collection numbers for these specimens range from 247 to 390.

Although “Flinders River” is a very vague locality, we can determine just where he was from a contemporary newspaper article. 1891 was the year of the big shearer’s strike, with tensions high throughout inland Queensland and New South Wales. Troops were sent to towns and properties in wool-growing areas, to prevent the real possibility of a civil war. C.F. Plant volunteered for duty with the military in April 1891, and his company was immediately sent by train to Hughenden, and then onto Cambridge Downs (north of Richmond):

They left Hughenden about 1st May to escort the first batch of free labourers, introduced by Mr Kilgour, to Cambridge Downs. The men ... had a rough time in returning, as they were stuck up on the banks of the Flinders by the flooded state of the river, and were short of rations for some days. (Web ref. 4)

While stranded beside the river for several days, Mr Plant would have had very little to do, so it must have seemed to him an ideal opportunity to make a collection of plants for F.M. Bailey. The location was just north of Richmond, probably at 20°41’S 143°08’E.

Fig. 1. This label from a specimen in the Queensland Herbarium (BRI 058802) is C.F. Plant’s and shows his collector’s number in blue crayon. His name, the month and year when they were received, and the locality are written in an unknown hand. The original determination is written by F.M. Bailey.



Once he had dispatched the Flinders River specimens, Plant's flirtation with botany was over.

C.F. Plant moved to Brisbane in 1898, and lived in the suburb of Ashgrove for the rest of his life. He died on 7th December 1932 (Web ref. 5).

Acknowledgements

The newspaper articles were accessed using "Trove", a website maintained by the National Library of Australia.

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5. *The Brisbane Courier*, 8 December 1932: [http://trove.nla.gov.au/ndp/del/article/41200394?searchTerm=brisbane courier and "c.f. plant"&searchLimits=dateFrom=1932-01-01||dateTo=1932-12-31](http://trove.nla.gov.au/ndp/del/article/41200394?searchTerm=brisbane%20courier%20and%20%22c.f.%20plant%22&searchLimits=dateFrom=1932-01-01||dateTo=1932-12-31)

Derivation of the generic name *Cullen* Medik.

P. W. Michael

National Herbarium of New South Wales

Recently at Mundubbera in Queensland I came across a legume with tough trailing stems, leaves with five leaflets at the end of short stalks and dark warty fruit sitting in the open calyces. With the help of Stanley and Ross's *Flora of South-east Queensland* (Vol. 1, 1983) I was able to identify it as *Psoralea tenax* Lindl., commonly known as Emu-foot. Now, since the revision of *Cullen* by Grimes (1997) it is known as *Cullen tenax* (Lindl.) J.W.Grimes.

Friedrich Medikus (1787), author of the genus appears to have given no reason for his choice of the name *Cullen* for two species then known as *Psoralea corylifolia* L. and *P. glandulosa* L. My searches for a reason he might have had were fruitless until I thought of looking at van Wijk's *A Dictionary of Plant Names* (1911) where I found listed, among other names for *Psoralea glandulosa* the French common names *coulén* (from Emile Littré's *Dictionnaire de la Langue Française* 1873) and *cullen jaune* (from Henri-Ernest Baillon's *Dictionnaire de Botanique* 1886), and the German name *cullentee*.

This led me to the original description of *Psoralea glandulosa* in Linnaeus's *Species Plantarum* (second edition 1762) where he cites works by Pietro Arduino (1759) and Louis

Econches Feuillée (1725). Both Feuillée and Arduino refer to the common name *culen* and note its medicinal uses by the native Indians of Chile.

Amedée François Frezier in his *Relation du Voyage de la Mer du Sud aux côtes du Chili et du Pérou* (1732) clearly indicated that *culen* is the Indian name. He also gave his interpretation of the Spanish name as *l'alvaquilla*, later as *la albaquilla* in a quotation from the Spanish translation of his work in Juan Ignacio Molina's *Compendio de la Historia Geografica, Natural y Civil del Reyno de Chile* (1788). We learn that the name was given to this plant because its smell is a little like that of basil (*albahaca* in Spanish). Today it is written as the diminutive *albahaquilla*, as, for example, in *CRC World Dictionary of Plant Names* (1999), where one of the common names for *Cullen glandulosum* is *Albahaquilla de Chile*. Molina also records that the leaves were used in infusion and enjoyed as an aromatic tea. This would explain the German common name *cullentee*.

Psoralea glandulosa was introduced to Europe about 1770 according to *Curtis's Botanical Magazine* (Vol. 25 1807) where there is an illustration of this species in plate 990. The plant is featured too in Robert Sweet's *British*

Flower Garden (Vol. 3, plate 296, 1829) with an extract from an English translation of Molina's work in which *cullen* and *yellow cullen* are mentioned.

Medikus would have known this plant and at least one or other of the references I have mentioned, and I believe that his name *Cullen* must surely have been derived from the name given by the Araucanian Indians, the original inhabitants of Central Chile, to the plant still widely known as *Psoralea glandulosa*.

It is ironic that the Chilean plant *culen* has been moved by Grimes (1990) to a different genus *Otholobium* and that 24 of the 32 species of *Cullen* described by Grimes (1997)

are Australian endemics and none of them are from the New World.

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Crowdfunding – a new funding source?

Robyn M. Barker
State Herbarium of South Australia

Have you heard of *Pozible* (Web ref. 1), *Indiegogo* (Web ref. 2), *Chuffed* (Web ref 3), *Thinkable* (Web ref. 4) or *Experiment* (previously known as *Microryza*: Web ref. 5)? If you have then you are probably aware of the term crowdfunding¹, the latest way to raise money for all sorts of projects, big and small. There are three components of the crowdfunding model, the people suggesting the project, the community from which funds are raised and a coordinator who brings the two parties together. Most crowdfunding drives set a financial goal and a date by which the goal is to be achieved; failure to meet the goal usually means the money is handed back but this, and the amount charged by the intermediary company, varies with the crowdfunding company.

Projects funded in this way range from video games, movies, real estate, solar panels for roadways, 3D printers, fashion and music to charitable works and political causes. On the big side in the Australian scene, in March the *Business Review Weekly* listed the seven biggest projects for technical gadgets of the last year (see Web ref. 6), all of them needing more than \$100,000 while there is another list on Wikipedia (Web ref. 7) of projects seeking even

larger funding (many of them unsuccessful). Some scientists are now jumping on the bandwagon, with varying success, and listed below are some examples of projects which are closer to the systematics world.

Project: Azolla, a little fern with massive green potential

Kathleen Pryer, Fay-Wei Li, Paul Wolf, Carl Rothfels & Erin Sigel, Duke University, USA.

- Funding sought for Genome sequencing of Azolla
- Funding target of \$22,000 achieved.
<https://experiment.com/projects/azolla-a-little-fern-with-massive-green-potential>

Project: Help save South East Australia's unique and threatened orchids!

Jo Lynch, Noushka Reiter & Julie Whitfield, Australian Network for Plant Conservation and Royal Botanic Gardens Melbourne

- Funding sought for fitting out a conservation laboratory to propagate and grow orchids for reintroduction now and into the future.
- Funding target \$66,970, \$8,112 raised with 16 days to go.
<https://www.chuffed.org/project/save-our-threatened-orchids/>

Project: Almander Project

John Wamsley, Friends of Scott Creek Conservation Park, South Australia

¹ Crowdfunding is defined in the Oxford English Dictionary as "the practice of funding a project or venture by raising many small amounts of money from a large number of people, typically via the Internet".

- Funding sought to restore threatened wetlands at Scott Creek Conservation Park by rehabilitating degraded upland swamps, bogs, spring-fed gullies and seasonal creek lines.
- Funding target over 2 years is \$15,000, first year closed with \$8,429 raised.
<https://www.chuffed.org/project/almanda>

Project: Is the heart of South America the cradle of the blue pygmyflower plants group?

Alina Freire-Fierro, Academy of Natural Sciences of Drexel University

- Laboratory and travel expenses to further studies in the genus *Monnina*.
- Funding target \$4,000, raised \$405 with 23 days to go (on 22/10/2014)
<https://experiment.com/projects/is-the-heart-of-south-america-the-craddle-of-the-blue-pygmyflower-plants-group?s=discover>

Project: How do tropical landscapes drive insect evolution?

Dominic Evangelista | Jessica L. Ware. Rutgers University, USA

- Funding sought to cover costs for collection of specimens [cockroaches] from the field and for genetic sequencing. The main goal of \$4000 will cover the majority of the field collection and some of the genetic sequencing supplies. The stretch goal will provide the remainder of the money necessary for the genetic sequencing. Without the stretch goal money we may be able to scrounge by but it would definitely be extremely helpful if we were fully funded!
- Funding achieved \$4,125
<https://experiment.com/projects/how-do-tropical-landscapes-drive-insect-evolution>

As you might expect those projects involving cute and cuddlies are more likely to be funded – see for instance the project to discover Papua New Guinea's mountain mammals where \$21,913 was raised by Deakin University and the Tankile Conservation Alliance to carry out a camera trapping study of animals in the Torricelli Mountain Range (Web ref. 10: the site has appealing photographs).

On the other hand a Nature Foundation SA Project to raise funds to purchase an off-road vehicle to conduct surveys and manage feral predators on Witchelina Nature Reserve, while still having some time to run, looks less likely

to achieve its goal, perhaps because the location is a lot less exotic (Web ref. 11).

There is plenty on the web about the process and there are also plenty of tips about how best to level your pitch but one thing to bear in mind, this is all about having a saleable product and how you go about marketing it, something that systematists are not always good at.

Background information

The following articles and a site promoting Crowdfunding in the Asia-Pacific region (Web ref. 12) may be of use.

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- 4: www.thinkable.org/
- 5: <https://experiment.com/>
- 6: http://www.brw.com.au/p/tech-gadgets/the_seven_biggest_australian_crowdfunding_eguQMoGHmYy3i7LPsDV8xL
- 7: http://en.wikipedia.org/wiki/List_of_highest_funded_crowdfunding_projects
- 8: www.brw.com.au/p/tech-gadgets/the_seven_biggest_australian_crowdfunding_eguQMoGHmYy3i7LPsDV8xL
- 9: http://en.wikipedia.org/wiki/List_of_highest_funded_crowdfunding_projects
- 10: www.pozible.com/tenkile
- 11: www.pozible.com/project/184712
- 12: <http://crowdfundvibe.com/>

How to while away your days, months and even years – developing a key to eastern Australian rainforest plants

Gwen Harden
Nambucca Heads, NSW 2448

How this project started ...

In the early 1970s demand for information about rainforests was increasing as forest protests and court cases stimulated great public interest in eastern Australia. As a result a series of workshops on the identification of rainforest plants was organised by the University of New England Departments of Botany and Continuing Education. Schools were held along the coast in New South Wales and north to Gympie in Queensland. It was through these schools that the need for a series of booklets arose as participants were keen to go home to their own patch of rainforest and identify the plants growing in them.

The region has a history of publications on rainforest plants (Fig. 1). John Williams had been compiling a *Checklist of the Rainforest Flora of New South Wales* for many years; it was first published in May, 1979. It was followed soon after by the 'Blue Book', *Rainforest Trees and Shrubs* (Williams & Harden) in July 1979. In 1980 the 'Green Book', *Rainforest Climbing Plants* (Williams & Harden) was published. These booklets were widely used and it was decided to extend the coverage to include south-eastern Queensland (north to Gympie), and so the 'Red Book' was published, *Trees & Shrubs in Rainforests of New South Wales & Southern Queensland*

(Williams, Harden & McDonald) in 1984. These booklets were prepared so that they could be readily used by professional botanists as well as interested members of the community.

The Red and the Green Books became basic references for identifying rainforest species in New South Wales and southern Queensland. Over 17,000 copies of the Red Book were printed by the late 1990s. In spite of its continuing demand there was a need for both it and the Green Book to be updated.

In retirement it seemed such a good idea ...

The second phase of the project commenced in 2001, after I had retired from the Royal Botanic Gardens in Sydney and moved to Valla Beach on the mid-north coast of New South Wales. It consisted of two main parts; the updating and expanding of the rainforest books and a longer-term project to produce a digital key based on those books.

The idea to go digital came after a discussion with Terry Tame who agreed to input the material from the books into the Delta program. After further discussions with John Williams and Bill McDonald we asked Hugh and Nan Nicholson to join the team and supply the photographs of the plants. John's health was deteriorating from Parkinson's disease and even though he was interested in our progress he was

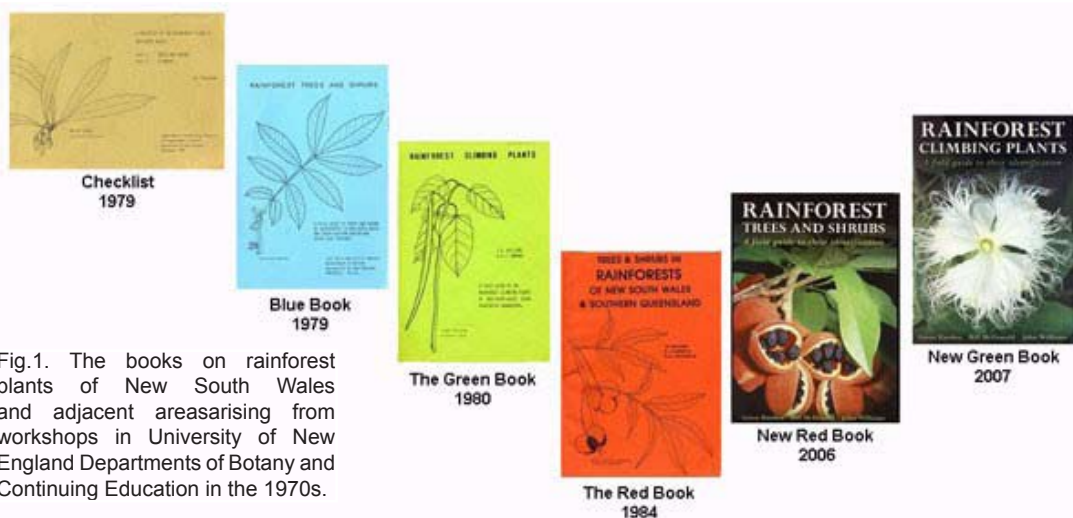


Fig.1. The books on rainforest plants of New South Wales and adjacent areas arising from workshops in University of New England Departments of Botany and Continuing Education in the 1970s.

not able to be directly involved. Unfortunately, he didn't see the end results as he died just before the updated Red Book was published.

We felt there was a need to continue the vision of John 'to share knowledge and love of rainforests and rainforest plants with as many interested people as possible, in a language and format that could be understood and used by all'. That is largely why we have continued to make the books and the USB 'user friendly' and explain and illustrate the terms, forest types and how to use the Lucid key etc.

The new Red Book, *Rainforest Trees and Shrubs* (Harden, McDonald & Williams) was published in 2006, followed in 2007 by the updated Green Book, *Rainforest Climbing Plants* (Harden, McDonald & Williams). These new editions expanded the coverage from New South Wales and south-eastern Queensland to include Victoria and north to the Tropic of Capricorn at Rockhampton, as well as inland to the drier western vine thickets. As well as co-authoring these books I decided to self-publish.

The production of the digital key encompassed all of our lives from 2007 onwards. Until then Bill and I were primarily involved with updating the books while Terry Tame and Hugh and Nan Nicholson had commenced gathering information and images for the key.

From the beginning Terry was our IT person and as the updated information was made available from the books he transferred in to a Delta program. Terry did all the original setting out, came up with the first selection of features and states to be used in the key and much of the original scoring. After a number of years this information was transferred to Lucid and in 2010 the information for the taxa was transferred to the Fact Sheet Fusion program (of Lucid) so that the treatment was more consistent and easier to update and add images. In August 2012 Terry resigned from the project and as a result I had to 'learn' the intricacies of the Lucid program and vagaries of working with html files and with inserting and linking files!

At the same time, Hugh and Nan Nicholson travelled extensively, crisscrossing the area from Rockhampton to southern Victoria numerous times seeking to track down all of

the 1139 taxa in the field, and photographing those features which aid in their identification and recognition. Nan has collected and identified voucher specimens for most of the images. Hugh has co-ordinated the inclusion of the images and the majority are his own, but for those he was not able to take himself has sought them from numerous sources to make the final selection more comprehensive. Hugh and Nan would often send specimens back to me so that I could check the scoring from fresh material (as much of the original scoring was from herbarium specimens) and so that I could do additional line drawings.

And it continued, on and on ...

We toiled on for years. Many times we thought that we were reaching the finish line, but we then realised that some parts were not to our desired standard. So we laboured on, checking details again. The more information we gathered and the more we refined the descriptions for the fact sheets and the general introductory sections, the more checking we felt we needed to do!

Then when most botanical parts were to our standard all the final details had to be sorted out with Lucid! Matt Taylor (Director of Identic Pty Ltd, developer of Lucid) has greatly encouraged and assisted us to complete this project. He has spent many days with me assisting in bringing all the parts together in an attractive format and ensuring that all sections work correctly. He also spent countless hours adding to and checking formatting to ensure that this Lucid key was able to meet our additional requirements. Matt has been very patient in explaining how the program works and what I needed to do get the most from it.

One of the continuing problems was the need to 'capture' any recent name changes and then deal with them. At times, we, like Germaine Greer in her recent book *White Beech*, expressed frustration with 'bloody botanists' who kept changing plant names. We appreciate the reasons that taxonomists do this though it is often tiresome in that it involves changing the name seven times in Fact Sheet Fusion and the Lucid Builder programs!

During the preparation and production of this work we have all contributed our time and resources without any external funding or direct assistance. This has meant that it is essential

that we recoup some of the expenses by the sale of the product. On the other hand it has enabled us to work to our own timetable and standards without the usual time constraints.

A number of colleagues (staff at herbaria and other professionals in the field) have been very generous with their time (and comments) in answering questions, checking the content and trialling the key. We thank you for your input and patience.

It is finished ...

At last after 13 years we have done it! *Rainforest Plants of Australia – Rockhampton to Victoria* the USB is in our hands (after years of being a CD and then a DVD) (Fig. 2). Friends and colleagues have become wary of asking ‘how is it going?’. Either, they will receive a tirade about all the problems we are having, and they wish they had never asked. Or, we just say nearly finished – the only problem is we have been giving this reply for many years! At last it is safe for people to ask this question!

We thank the various herbaria (BRI, NSW, UNE, MEL, CFSHB) and their directors and staff who have willingly answered our questions and clarified our descriptions, especially for some of the new or unnamed taxa.

Thanks to Matt and the Lucid Team for their ongoing support – without their encouragement and availability we could not have done it. Matt has happily accommodated our request for a USB that would be distinctive and not lost easily on one’s desk (as with the credit-card USB of Euclid). It is a key-shaped USB on a green lanyard, in a DVD packet!

We are grateful to each other for ongoing support and enthusiasm to complete this USB and we look forward to life beyond this project!

And now ...

Following the release of this key and information system as a USB, it will be modified by Identic into apps for smart phones and pads (available through the Google Play Store and the Apple App Store).

We will continue doing workshops in the community and encouraging people to ‘play’ with Lucid. The Lucid key is complex and a very powerful program, but it is not necessary to understand and use all the functions to identify plants successfully

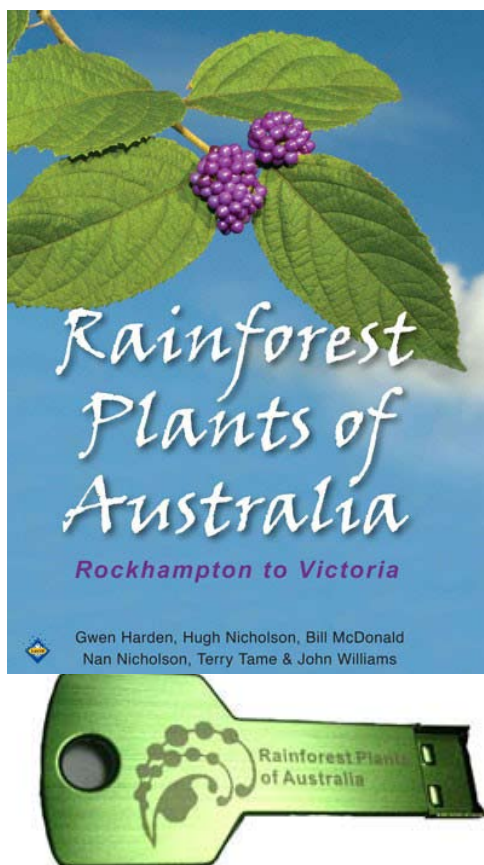


Fig. 2. The DVD packet of the new Lucid key *Rainforest Plants of Australia -- Rockhampton to Victoria*, and the key-shaped USB it contains.

The advantage of such an interactive key is that the key can be readily used by anyone with whatever material they have (whether leaves, flowers or fruit) and with whatever features they are comfortable with using. It is so satisfying to see people being able to identify plants for themselves the first time.

This whole process has been a great learning curve for us all. The challenges have been enormous, especially, as each of us has been working on our own, without any immediate backup. At times the tyranny of distance has had its advantages when, for various reasons, we were not all working to the same time sheet!

Something like this can be accomplished by any one, who has time and the inclination to do something useful, not only for their professional colleagues but also for many in the wider

community. So many people are interested to know more about plants, yet they do not have the facilities or the background to know where to start.

It is our responsibility to share the knowledge that we have as professional botanists with the community so that they have a greater understanding and appreciation of plants.

Take up Lucid and run with it!

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Acquiring your copy

Rainforest Plants of Australia – Rockhampton to Victoria; the USB is available from Gwen Harden's web site, www.rainforests.net.au, or from P.O. Box 186, Nambucca Heads NSW 2448. RRP \$100, web price \$80 (posted).

Point of view

Some thoughts on names for weedy exotic populations of widespread native species

Greg Keighery

Keiran McNamara Conservation Science Centre, Department of Parks and Wildlife,
Locked Bag 104, Bentley Delivery Centre, Western Australia, 6983

This note arose from trying to review and document the increasing number of weedy populations of overseas material of generally tropical species. Several of these listed below have been reviewed recently and were considered too variable to retain names for the Australian native populations which I submit is a loss of the valuable information contained in these names.

Orange Jessamine (*Murraya*)

Mabberley (2013) recently reviewed the genus *Murraya* in Australia leaving all populations under the widespread *M. paniculata* (L.) Jack. This has included weedy populations naturalised along the Ord River at Kununurra, and in Queensland. These populations are not distinguished on maps in the *Flora of Australia* or on Florabase and AVH. Thus all electronic

databases indicate a native population at Kununurra, despite these populations being under active control (Ord Land and Water, 2011) as part of integrated weed management of riparian areas of the Kimberley. The species is listed as a weed for Queensland and N.S.W. by Weeds Australia (Web ref. 1) under the rather odd name *Murraya paniculata* 'Exotica'.

According to Mabberley (2013) the species comprises "a number of apparently distinctive entities, one of which has been widely cultivated", and locally naturalised in the tropics. This is the Orange Jasmine or Orange Jessamine, *Murraya exotica* L., which has small leathery leaflets. The native forms, though quite variable and perhaps comprising several taxa (Brophy *et al.*, 1994), are thought by Nguyen (2012) to be a separate species (*M.*

ovatifoliata (Engl.) Domin). The cultivated plants are from China and Vietnam, and may be distinct from true *M. paniculata* which is confined to Malesia. Mabberley (2013) points out that the distinction between *M. ovatifoliata* and *M. paniculata* may be more complex, with a number of unresolved populations in Asia.

There seems little issue with using *Muraya exotica* L. for the distinctive weedy populations in Queensland, N.S.W. and Western Australia, and using Orange Jasmine or Orange Jessamine as the common name(s) for this taxon, not the native complex. The native populations can be still referred to as *M. paniculata* or *M. ovatifoliata* or *M. paniculata* var. *ovatifoliata* (Engl.) Domin. This would greatly aid delimitation and mapping of the weed as an exotic and would be a great improvement over the use of an informal cultivar name of no standing.

Interestingly, Mabberley (2013) also lists *Muraya koenigii* (L.) Spreng. (Curry Plant) as cultivated in Australia under the alternative name *Bergera koenigii* (L.) Roxb. This species is recorded as naturalised and under control in the same report (Ord Land and Water, 2011).

Taro (*Colocasia*)

Another example is Taro (*Colocasia esculenta* (L.) Schott). Hay (1996 and 2013) notes that a large number of forms and varieties have been formally named among the thousands of cultivars. Of these var. *aquatilis* or var. *acris* have been used to denote the wild type of this species. However, Hay rejects using any formal infraspecific taxa in such a plastic species.

In Western Australia, weedy populations of Taro are normally the sterile triploid with purple stems, usually listed as the cultivar 'Fontanesii' which originated in Sri Lanka. Most of the weedy populations are in the south west (several around Perth and along Gingin Brook), although recently I have determined another in the Kimberleys along a tributary of the Barker river at Mount Hart Conservation Park, where it is currently the target of an eradication plan.

In Western Australia the wild type is still listed under var. *aquatilis* and is listed as of conservation concern, while the weedy form is listed under var. *esculenta*. The native species is of considerable cultural significance to

Aboriginal people, who are actively managing the weedy population with the assistance of our Western Australian Government's Kimberley Science and Conservation Strategy. Therefore, the maps in Florabase clearly distinguish between the exotic and the native by maintaining the varietal names.

Using either the varietal name or a cultivar name for the weedy form enables much easier communication and does not require convoluted reasoning for why we are listing some populations of concern and others to eradicate. Furthermore, the management of a non seeding weed is connected with the name and we know it came from overseas, i.e. it is an exotic as well.

White Cedar/Persian Lilac (*Melia azederach*)

This is a more challenging example. A widespread and variable tree occurring from Iran to China and south to Australia. Mabberley (1984) notes that the introduced occurrences in Australia are from Iranian or Indian populations (Persian Lilacs or Bead Trees; or var. *azederach*), which are quite able to be weedy in temperate areas. The White Cedar from tropical areas does not seem as capable of being weedy in these areas.

Australian native populations have been separated previously as a separate species or variety (var. *australasica*). It is difficult to discern if separation of these populations is justified as no recent comprehensive review has been made; the variety is not recognised by Mabberley.

We now have the species listed as having native and naturalized populations without any separation on the distribution map which leads to confusion. One could use the available varietal names to separate native and naturalized populations. No formal cultivar names appear available (Spencer 2002) for the species in Australia. Alternatively one could use separate "common" names for each type on maps. Using White Cedar as a tag for native populations and Indian Lilac¹ or Bead Tree for the exotic populations.

In summary, I am not suggesting that we make up names, nor am I criticizing taxonomists

¹ Persian Lilac is not a good choice as it is also used for *Syringia × persica*, a true Lilac.

who are attempting to deal with widespread and variable species with challenging nomenclatures and variation patterns, but we are in the business of providing useful and meaningful handles for other biologists, land managers and the public in general. They use our electronic databases as authoritative and when valid names are available (even with caveats) for weedy populations, we should use them as value adding. This is especially the case when the default appears to be erroneous publicly used maps of species distributions combining native and naturalized populations that result in the masking of occurrences of actual and potentially serious weeds.

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- Web ref. 1. www.weeds.org.au/cgi-bin/weedident.cgi

News

“I am a Botanist” campaign

The Botanical Society of America has been running a ‘reclaim the name’ campaign for Botanists. Folks from all over the world are posting pictures of themselves with ‘I am a Botanist’ and some info about what they do (or not, some just say I’m a botanist). It’s pretty cool to see folks from every corner doing lots of different things. To see the pictures visit their home page (Web ref. 1) where you can also link to more information about the project and just why there is a need for such a campaign (Web ref. 2).

Web ref. 1. <http://www.botany.org/>

Web ref. 2. http://articles.philly.com/2014-09-13/news/53855438_1_plants-botanists-blindness#4hZx77d1xyO3FRfW.99

Jen Tate

News from the West

Goodeniaceae get-together

The Perth chapter of ASBS recently sponsored a half-day symposium by the Goodeniaceae Working Group (GWG), an international collaboration involving Kelly Shepherd (Western Australian Herbarium) and the

research groups of Dianella Howarth (St John’s University, Queens, New York) and Rachel Jabaily (Rhodes College, Memphis) in the United States. The group converged in Perth in late July as part of their 2014–2016 National Science Foundation grant *Phylogenetics and Floral Symmetry Development of the Core Goodeniaceae*. The New York contingent included undergrads Aedric Lim and Veronica Thompson who travelled with Dianella, while Andy Gardner (the project’s postdoc) represented the Memphis lab together with undergrads Eden Johnson, John Menz and Pryce Michener (Rachel was unable to participate since she is currently on maternity leave). The symposium was attended by around 40 people who heard about the group’s current research on the core Goodeniaceae group (*Scaevola* + *Goodenia s.l.*), which includes molecular phylogenetics and next generation sequencing, floral symmetry morphometric analysis, and studies of gene expression and floral symmetry.

The group’s whirl-wind visit included a week-long field trip to Charles Darwin Reserve (run by Bush Heritage Australia), Karara Station,



Fig. 1. Leigh Sage, Aedric Lim, John Menz, Veronica Thompson, Pryce Michener (back row L-R), Andy Gardner, Eden Johnson and Kelly Shepherd (front row L-R) on a granite outcrop near Thundelarra Station.

Ph. Spencer Willis

but remains on the editorial committee for *Nuytsia*. We congratulate Elizabeth (Lizzy) Joyce who has been awarded a First Class Honours degree at the University of Western Australia for her work investigating taxonomic boundaries in the *Tetradlea hirsuta* complex.

Web ref. 1. <http://www.gaiaresearch.com.au/author/alex/>

Juliet Wege and Kelly Shepherd
Western Australian Herbarium

and the Northampton and Kalbarri areas (Fig. 1). They were accompanied by long-time Goodeniaceae aficionado Leigh Sage (Department of Parks & Wildlife) and Spencer Willis, who in recent years has become highly proficient at photographing Goodeniaceae flowers while accompanying Kelly on field work. The team also visited Digby Gowns at Kings Park and Botanic Gardens to utilise the garden's impressive living collection of Goodeniaceae, and the Western Australian Herbarium to examine their collections.

WA Herbarium library facilities on the move

In other news, the purpose-built library in the Keiran McNamara Conservation Science Centre is being moved and the space converted to offices in order to accommodate another part of the department. The library will be partly housed in another building at the Kensington site, with the majority of journals and maps stored at the old herbarium building and accessible via request. The move will undoubtedly impact herbarium staff who rely heavily on the collection.

People

Alex Chapman has recently commenced work as a Consulting Scientist for Gaia Resources (Web ref. 1) although he continues to manage the Western Australian Herbarium's Facebook page in his capacity as Research Associate. Russell Barrett has recently moved to Canberra

John Scott, a major force in bio-control and ecology of invasive plants, has accepted a redundancy from CSIRO and will be leaving on October 24. In taxonomy John has worked on unravelling the status of *Salsola australis* and variation in *Tribulus terrestris*. He has also described a new genus and several species of fish and a fossil *Banksia*! John has an adjunct professorship at the University of Western Australia and will not be lost to science.

Greg Keighery

Northern hemisphere botanical institutions under threat

Vicki Funk (2014) has provided an illuminating summary of the fate of some of our fellow botanical institutions in the Northern Hemisphere, including Field Museum of Natural History, Californian Academy of Science, Royal Botanic Gardens, Kew, and the Smithsonian Museum. Much of this is of course mirrored in Australian and New Zealand institutions and this is the main driving force behind the development of a White Paper promoting our science (see p. 1). It seems ironic that the Paris Herbarium which languished for so many years is now showing the way.

Reference

Funk, V. (2014). The erosion of collections-based science: alarming trend or coincidence? *Plant Press* 17, No. 4. http://nmnh.typepad.com/the_plant_press/2014/10/the-erosion-of-collections-

based-science-alarming-trend-or-coincidence.html

Thanks to Jim Croft who drew this article to the attention of HISCOM members.

Peter Bostock retires

News came through on the HISCOM mail-list that Peter has retired. Peter was a founding and active member of HISCOM and BRI's long-time IT guru. He will be continuing on at the Queensland Herbarium as a Research Associate, no doubt involving himself with his botanical passion, the ferns.

Having problems playing your existing Lucid keys?

Having trouble running your previously working Lucid key such as *WATTLE*, *AusGrass*, *Euclid*, *Australian Orchid Genera*, *Families of Flowering Plants of Australia* and *Environmental Weeds of Australia*? A downloadable upgrade is available to registered users from the Lucid website (Web ref.)

For those keys not hosted on the Lucid site, there may remain difficulties for some of you in opening these keys, particularly if you are working within a network and are unable to download new software readily.

Web ref. www.lucidcentral.org/Support/Forums/tabid/240/forumid/7/threadid/410/scope/posts/language/en-US/Default.aspx

Interactive map of Leichhardt's 1844 expedition

In late September the ANU National Centre of Biography launched an interactive digital map of Leichhardt's successful 1844 Port Essington expedition (Web ref. 1). Leichhardt's route has been retraced using modern technology and current satellite maps. The map has furthermore been linked to the separate accounts of the journey by Leichhardt and three other members of the party, John Gilbert, Philip Williams and John Murphy as well as Glen McLaren's field notes from Retracing Leichhardt. You can select a camp, either from the Google map or from the "Select a Camp" button in the text and read all of the versions of what took place, and you can also compare the versions. There are also links in the text to Leichhardt's field maps held by the State Library of New South Wales, but these references appear to only be

mentioned under the McLaren entries, when it might have been better to have included them under all the entries for a particular camp. The map is accessible through the Leichhardt entry in the *Australian Dictionary of Biography*, but is presently not highlighted in any way on that page, which is a pity.

A new decorative wall map of the expedition (Web ref. 2), which presumably features artwork of artists Bill Gannon and Katharine Nix, has also been produced as part of the project. Price is \$30.

This is an exciting innovation and it is to be hoped that the Centre is able to do similar work for all of the other Australian expeditions of discovery, since it would be of immense benefit in our interpretation of the collections which resulted from these expeditions. According to the Australian Geographic website they are now apparently retracing the routes of the Forrest brothers.

References

Web ref. 1: <http://adb.anu.edu.au/entity/8843>

Web ref. 2: <http://eview.anu.edu.au/?leichhardt-map-expedition-from-moreton-bay-to-port-essington-1844-45/leichhardt-map-expedition-from-moreton-bay-to-port-essington-1844-45-paper-version>

Thanks to Philip Short for drawing the map to our attention.

Identify that Melbourne street tree

The City of Melbourne has a website Urban Forest Visual (Web ref. 1) detailing the genus, common name and expected lifespan of its street trees. Bring up the Melbourne map on this site and you can point to any tree along any road and within many parks or reserves for the information. There is also a link provided with each identification which enables you to send a message to the Council about that particular tree.

The interactive tree map allows you to explore Melbourne's tree data and learn more about the life expectancy and diversity of trees in the city. What is not immediately obvious is that the various shapes of the symbols are also informative as is the colour of the symbol. Diamond shapes represent *Eucalyptus*, circles are *Platanus* and triangles are *Ulmus*; if the symbol is green, then it represents a healthy

tree, but if it is pale or dark orange then it in decline.

With this in mind it is then quickly obvious that many of the roadside plantings of Plane trees (*Platanus*) and elms (*Ulmus*) are in decline.

Web ref. 1: <http://melbourneurbanforestvisual.com.au/>

Thanks to Jenny Barker
for drawing this site to our attention.

The Global Plant meeting in Panama

For two reports on the Global Plant meeting held recently in Panama see the following accounts by Michelle Waycott of AD (Web ref. 1) and Martin Kalfatovic of Biodiversity Heritage Library (Web ref. 2).

Web ref. 1: <http://know.ourplants.org/news/global-plants-panama-2014/#more-815>

Web ref. 2: <http://blog.biodiversitylibrary.org/2014/10/biodiversity-heritage-library-staff.html>



Tom Hare *Banksia* sculpture

For those wondering what Tom Hare would do with an Australian plant (*ASBS Newsletter* 158: 21), these images will give some indication. This is one of several creations that were at Kew in 2010 (Fig. 1).

Alex George

New online booking system for National Parks South Australia

For those of you wanting to visit South Australia's National Parks for field work, a new online booking system for entry, camping and accommodation has been instituted in line with interstate and international parks.

Park visitors can go to the National Parks site (Web ref. 1) to pay park entry fees, choose a campsite and book and pay for it or also book accommodation in Innes National Park and Mount Remarkable National Park. Bookings

can be made up to 12 months in advance. Other parks will gradually be brought into the system and you can find out whether fees apply to the particular park you wish to visit from the same web page.

A more comprehensive account of how the system works is available on the frequently asked questions

Fig. 1. Tom Hare's *Banksia* sculpture at Royal Botanic Gardens, Kew, in 2010.

Ph. A. George



about the online booking system page where alternatives are also given.

Web ref. 1: www.parks.sa.gov.au

New portal for environment information in South Australia

A new online portal, Enviro Data SA (Web ref. 1), developed by the Department of Environment, Water and Natural Resources (DEWNR) provides access to environmental data and reports in South Australia.

Developed as part of the Open Data policy agenda, the site brings together information from DEWNR, the Environment Protection Authority, Primary Industries and Regions, the Department of State Development, the Bureau of Meteorology, the Goyder Institute and the

Murray Darling Basin Authority.

It contains more than 50 data sets on people and the environment, land, water, coast and marine issues, plants and animals, the climate, and economy and industry with more to be added as they become available.

Web ref. 1: www.data.environment.sa.gov.au

Who contributes what?

Further to the article in *ASBS Newsletter* 159, p. 13, more amusing musings on the listing of authors and their contribution in multi-authored papers are to be seen in the following.

Lundberg, A. et al. (2014). Entropy in the list of authors of scientific papers. *Annals of Improbable Research* 20 (1): 15-17. www.improbable.com/airchives/paperair/volume20/v20i1/Entropy-Authors-AIR-20-1.pdf

From the Web

A UNESCO Declaration on botany and botanists

In the twenty-first century, botanists are facing a changing world. They must apply their knowledge and expertise to meet the actual needs of societies; address new economic, social, educational and environmental challenges; and contribute to the preservation of biodiversity.

A UNESCO conference entitled *Botanists of the twenty-first century: Roles, challenges and opportunities* held in Paris in September, brought together 300 stakeholders from 60 countries to develop plans for the future for the botanical profession. Amongst the participants were citizen scientists, conservationists, policy makers, academics, researchers and entrepreneurs, all of them with the object of demonstrating the relevance of botany currently and in the future. It provided an opportunity to share the latest scientific knowledge and identify global research priorities and policy issues in botany relating to key development areas such as food security, sustainable agriculture or biodiversity conservation.

The conference concluded with a Final Declaration (Web ref. 1) which some of you will have seen, calling for UNESCO to increase its support for capacity building programmes

in botany and to strongly encourage building bridges between botanists and society.

While all of the points of the final declaration are of relevance, perhaps of most interest to systematists are points 13 and 21 of the final declaration in which the delegates agreed:

to increase their efforts to achieve the objectives and targets of the GSPC, especially those primarily undertaken by botanists, including the successful completion of a World Flora Online by 2020 to provide an essential baseline of knowledge about plants of the world

and they called upon governments and other funding agencies:

to make available the necessary resources to maintain and strengthen botanical gardens, natural history museums, plant collections (herbaria, xylaria, etc.) and other relevant bodies and institutions, to ensure that they can continue as important centres for scientific research, knowledge and education and as vital repositories and sources of information for present day and future needs in achieving sustainability

Web ref. 1: Final Declaration of the conference. www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SC/pdf/ConfBotanist_Final-declaration-2014-eng.pdf

Paraphrased from the UNESCO web page at:
[www.unesco.org/new/en/natural-sciences/about-us/
single-view/news/building_bridges_between_
botanists_and_society/#.VEBzXZ0sXIU](http://www.unesco.org/new/en/natural-sciences/about-us/single-view/news/building_bridges_between_botanists_and_society/#.VEBzXZ0sXIU)

World Flora On-line

In case you hadn't heard of it, and I hadn't, The World Flora Online (WFO) project (Web ref.1) referred to above, is an initiative of Plants 2020 of the Global Strategy for Plant Conservation (GSPC) and was supported by a resolution of the IBC in Melbourne in 2011. Target 1 of the GSPC called for "A widely accessible working list of known plant species as a step towards a complete world flora" and this first phase was met in 2010 with the launch of The Plant List (Web ref. 2).

The next stage "An Online Flora of all known plants", will summarize information on the ca. 400,000 known species of vascular plants and bryophytes—information that is currently scattered in a wide variety of floristic and monographic works, both printed "legacy" publications and online digital resources.

The World Flora Online (WFO) is being **coordinated** by a consortium of botanical organizations, under the auspices of the Global Partnership for Plant Conservation (GPPC), as a response to Target 1 of the Global Strategy for Plant Conservation (GSPC). A total of 194 countries are signatories to the Convention on Biological Diversity which, through the GSPC, calls for the achievement of 16 targets by 2020.

The project is being **organized and coordinated** by the WFO Council, formed at a WFO workshop at the Missouri Botanical Garden in St. Louis, Missouri, U.S.A., in July 2012. The first meeting of the WFO Council was held at the Royal Botanic Garden, Edinburgh, Scotland, in November 2013 (Web ref. 3) with a second meeting held at the Komarov Botanical Institute in St. Petersburg, Russia, in June this year. The WFO Council currently comprises 22 member institutions or projects who have signed the Memorandum of Understanding and committed to the goals of the WFO; the Australian Biological Resources Study (ABRS) is one of these.

The Guide for Contributors Version 1.0 and dated August 2014 is now available on the WFO website (Web ref. 4). Apparently several families have been more or less completed

in a prototype format, even though the final model has not yet been determined. The Plant List is the basis for the Flora even though this is not being updated and contributors are referred to the source database in case updating has occurred there. New descriptions are not required for each species and it is possible to include more than one from previously published resources, whether this be from a monographic work or from a regional flora. Interactive keys are the preferred form where possible, without any suggestion of which software might be most appropriate while "if multiple keys for different geographic areas can be assembled that could be very useful".

From past experience with regional floras and with a diminishing pool of available systematists, the achievement of a useful product by 2020 seems ambitious, unless specific funding is available to employ experienced systematists to expedite it and much more rigorous guidelines are available for contributors. Linkages to other world online products such as GBIF and Encyclopaedia of Life would seem sensible but there was no mention of these in the guidelines. Suggestions, and a list of problems that need to be overcome, have been made by those involved in the South African project to achieve the national online Flora of South Africa within the same time frame (Victor et al., 2014); this apparently comprehensive document should be required reading for anyone contemplating involvement in the WFO.

References

- Victor, J.E., Smith, G.F., Turland, N.J., Le Roux, M., Paton, A., Figueiredo, E., Crouch, N.R., Van Wyk, A.E., Filer, D. & Van Wyk, E. (2014) Creating an online world flora by 2020: a perspective from South Africa. *Biodiversity and Conservation* 23: 251-263.
- Web ref. 1: http://www.plants2020.net/world_flora/
- Web ref. 2: Web ref. 2 www.theplantlist.org
- Web ref. 3: [http://mobot-biodiversity-jc.weebly.com/
uploads/1/8/6/0/18603232/report_on_the_1st_
meeting_of_the_council_of_the_world_flora_
online.pdf](http://mobot-biodiversity-jc.weebly.com/uploads/1/8/6/0/18603232/report_on_the_1st_meeting_of_the_council_of_the_world_flora_online.pdf)
- Web ref. 4: [http://www.plants2020.net/files/
Plants2020/World_Flora_Online/WFO_guide.pdf](http://www.plants2020.net/files/Plants2020/World_Flora_Online/WFO_guide.pdf)

An e-monograph of Caricaceae

While looking at the World Flora Online project I came across a paper drawing attention

to an e-monograph of Caricaceae (Carvalho et al. 2014), with the suggestion that this might be the first taxonomic monograph of a plant family completely published online. The actual website seems to be a work in progress (I was unable to access the whole paper) and can be found at Web. Ref. 1. Online keys were generated using Xper3 (Web ref. 2) and were easily mastered. Despite a discussion in the paper on synonyms, this information did not seem to readily be available, but this may have been because navigation of the taxonomic pages was not intuitive for this navigator. Any search of a species name ended in a summary page, and there was no obvious link from this to the usual taxonomic information but I eventually found that you need to click on the word “species” on the bar above and then

tick “Taxa with all available data” to access the sort of information you would expect of a monograph. The photographs of the species are superb, as are the character photographs used in the online keys, and once you have mastered the navigation this is a useful site.

References

- Carvalho, F.A., Filer, D. & Renner, S.R. (2014). Taxonomy in the electronic age and an e-monograph of the papaya family (Caricaceae) as an example. *Cladistics* (Early view) 5 Nov 2014. Article first published online: 13 Aug. 2014. DOI: 10.1111/cla.12095 <http://onlinelibrary.wiley.com/doi/10.1111/cla.12095/abstract>
Web ref. 1: <http://herbaria.plants.ox.ac.uk/bol/caricaceae>
Web ref. 2: <http://www.xper3.com/>

Robyn Barker

ABRS report

ABRS now co-located

In July 2014 the ABRS staff members from the Franklin building at the Australian National Botanic Gardens packed their belongings and co-located to the Ellis Rowan building, with the other ABRS staff (Fig. 1). This is the building next to the cafe. The flora component (including the library) occupied 33 crates!

We have all kept our previous telephone numbers.

Flora of Australia

Annette Wilson was contracted to complete preparation of the *Flora of Australia* volume 37 – *Asteraceae* 1. This book will cover all the Australian *Asteraceae* except for the tribes *Gnaphalieae* and *Astereae*, which were destined for volumes 38A and B respectively. Volume 37 was sent to CSIRO Publishing in October and we expect it will be available in early 2015.

Annette officially left ABRS in April 2014, having returned to Western Australia prior to that. Her position is currently being reviewed, but there are no plans at present to re-advertise it.

Flora of Australia Online

The following volumes of the *Flora of Australia* were added to *Flora of Australia Online* database some time back: Volumes 3, 11A, 11B, 12, 16, 17A, 17B, 18, 22, 25, 35, 45, 46, 48, 49 and 50.

These 16 volumes account for 6,246 species

from the published volumes of the *Flora of Australia* and include all of the nomenclatural and taxonomic information.

In the near future we plan on the National Species Lists (NSL) infrastructure enabling the nomenclatural information from the *Australian Plant Census* (APC) to be used for the *Flora of Australia Online*. With this in mind we have begun to load only the “profiles information” (everything in a flora account of a taxon bar the nomenclatural summary) for the remaining published volumes of the *Flora of Australia* into the *Flora of Australia Online* database. Since this information is not complete until the NSL can link and deliver the nomenclature from APNI, it has been loaded to a draft *Flora of Australia Online* database that is not yet available to the public.

I have loaded profiles-only information for an additional 3,014 species from volumes 4, 8, 19, 26, 28, 29, 37, 39, 44A & 44B to the draft *Flora of Australia Online* database. This draft database includes a link to the relevant *Flora of Australia* volume reference in APNI. This link is crucial to ensure the integrity of the data in APNI and of the functionality of the NSL.

Profiles-only information from the remaining published volumes of the *Flora of Australia* will be loaded by the end of the calendar year. These are volumes 26 and 37 and they will add another 1,004 species to the database.

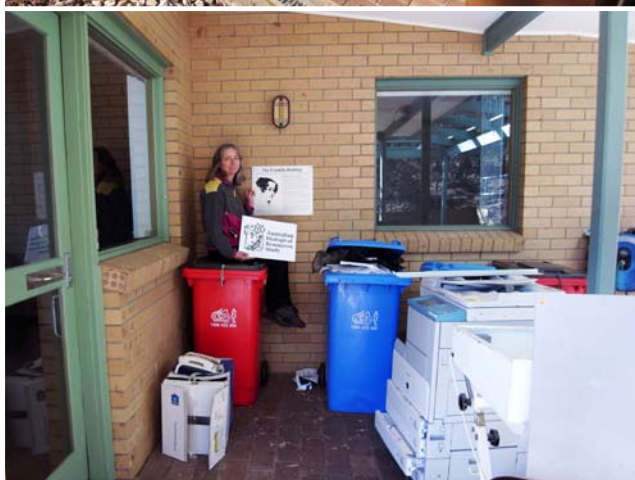


Fig. 1. ABRS on the move. Top to bottom: a, surplus furniture, Franklin Building July 2014; b, the Franklin Building main entrance looking a little cluttered! c, Ellis Rowan Building: new home for *Flora of Australia* team after the crates were unpacked! [Is this the hallmark of an innovative ABRS Where's Wally production, starring Helen Thompson in her first and last role, sporting, instead of red stripes, the ABRS motif? Ed.]

The hardcopy of Volume 37 is due for publication in 2015 and as agreed with CSIRO we do not make the information from newly published volumes available online for the first 12 months following publication. Therefore the Volume 37 data will need to be hidden from public view for 12 months following publication.

Once loaded the published volumes will account for 10,264 species (including the off-shore island volumes), or 9,063 species (excluding the off-shore island volumes). At that stage we hope to begin loading the profile information from the many unpublished manuscripts. Some of these may need review as many were submitted some time ago and we have not had the resources to edit and publish them. Then the big job will be to move to delivering and maintaining the profiles information for the current concepts in the *Australian Plant Census* to create an up to date *Flora of Australia Online*!

Staff retirements

There will be a number of staff retiring from ABRS in the coming months. Mike Preece, our Director, will be leaving ABRS in December. Pam Beesley (fauna team) and Helen Thompson (flora team) will both retire at the end of February 2015. Current plans are to re-fill both positions after they have been reviewed.

Mike Preece & Helen Thompson
November 2014

Here are some relevant web sites. Eds.

<http://www.anbg.gov.au/abrs/online-resources/flora/main-query-styles.html>
<http://www.rb.gov.vic.gov.au/science/projects/taxonomy/atlas-of-living-australia-national-species-lists-project>
<https://www.anbg.gov.au/confluence/display/bdv/National+Species+Lists+Services>
<http://www.ala.org.au/about-the-atlas/our-data-providers/systems-supported-by-the-atlas/>
<http://www.anbg.gov.au/abrs/online-resources/flora/main-query-styles.html>

Book reviews

Allan Cunningham's Tasmanian explorations and collections

Alex George
Kardinya, Western Australia

The Botanist and the Judge: Allan Cunningham in Tasmania 1818–1819.

By A.E. & T.A. Orchard.

Botanical interpretation by S.J.

Jarman & G. Kantvilas.

Privately published, Weston Creek, A.C.T., 2014. Pp vi, 176.

ISBN 978-0-9941505-0-9 RRP \$A34 (paperback).

Available from A.E. Orchard, PO Box 3427, Weston Creek, A.C.T. 2611

Email teston@tpg.com.au

This is the second in a series of publications by Tony and Tessa Orchard on one of Australia's most significant early explorers and plant collectors, Allan Cunningham (Orchard & Orchard, 2013). They derive from an exhaustive search for original sources—journals, correspondence, herbarium specimens, as well as relevant literature (including newspapers), though two important works on Cunningham are not cited (McMinn, 1970, Curry *et al.*, 2002). Almost everyone who has studied the systematics of Australian plants has dealt with his collections but to many, despite the biography by McMinn, he has been a shadowy figure and his specimens (especially the labels and numbering 'system') confusing. The Orchards' work will culminate in a new biography that presumably will cover discussion of earlier studies and the various versions of Cunningham's journal such as those held at the Mitchell Library. The slant of these first two works is clearly botanical, containing detailed listings and analyses of his collections that may not appear in the biography.

The book starts with an 'Introduction' that briefly explains Cunningham and Barron Field (the 'Judge' of the title) and how their lives were intertwined. The book has much more than these two, however, covered in nine chapters plus a very important appendix. A 'Prelude' summarises the discovery and exploration of Van Diemen's Land before

Cunningham's arrival in January 1819. It also summarises his activities in New South Wales from December 1816, and the first voyage with Phillip Parker King in the *Mermaid* (to balance the summaries of the voyages in a later chapter, and so make this a better stand-alone work, a little more detail would have been good here).

Next is 'Preparations for the Journey to Tasmania', a transcript of Cunningham's journal covering the days in Sydney from 21 November 1818 to the voyage south and arrival off Hobart on 31 December.

The chapter 'Cunningham in Tasmania' is a transcript of his journal from 1 January 1819 to their arrival back at Sydney on 14 February. In general, Cunningham wrote each day about his activities, the landscape, vegetation, the ease or difficulty of moving through it, and the weather (the last apparently following an instruction from his patron Joseph Banks to include observations on climate). He also wrote about managing his collections—drying, sorting and packing specimens and seeds. There is nothing about the built environment and people (including his companions). Although his schooling was limited, he gained a good knowledge of English and the Classics (McMinn, 1970), and he clearly had a very good knowledge of relevant botanical texts. Given that his effects taken on his voyages included several boxes and a 'Government chest', it seems likely that he took his reference books along, but one suspects that he had a retentive memory for plants and their names. The Latin of his descriptions of plants that he believed to be new species is generally correct.

Unless it is still known by the name given by Cunningham, each plant mentioned in the journals is given its current accepted name with author, in an endnote, this being the important contribution by Jean Jarman and Gintaras Kantvilas. The authors note that they have

retained Cunningham's spelling and abbreviations but have amended the punctuation 'to reflect modern usage, and improve readability'. References are included in the endnotes to each chapter and generally are meticulous.

There follows 'John Septimus Roe', surveyor on King's voyages and in Van Diemen's Land, and later Surveyor-General of Western Australia, with whom Cunningham was associated in all of King's Australian surveys and who would have picked up an awareness of plant collecting from him.

A chapter titled 'Naming the Huon Pine' discusses the discovery of the timber by early settlers (who found it washed up on river banks) and their frustration at not locating its source; its early exploitation; then Cunningham's difficulties and ultimate success in finding fertile material that allowed it to be identified. From Brown's description of *Dacrydium* in Flinders' *Voyage to Terra Australis* (1814) he surmised that it was related to that genus but would prove 'probably to be a new genus'. It would be published as a *Dacrydium* by William Hooker in 1845, but some 160 years later placed in a new genus *Lagarostrobos* by Chris Quinn, vindicating Cunningham's opinion.

There is a short chapter on Robert Littlejohn, a Scottish gardener and an early settler and collector in Van Diemen's Land, whose collection of seeds was passed to Cunningham to be placed in order and a selection sent to

Aiton at Kew (Cunningham listed 44 samples). The Orchards even found a view of Hobart from the report on a French expedition that shows where Littlejohn's property lay.

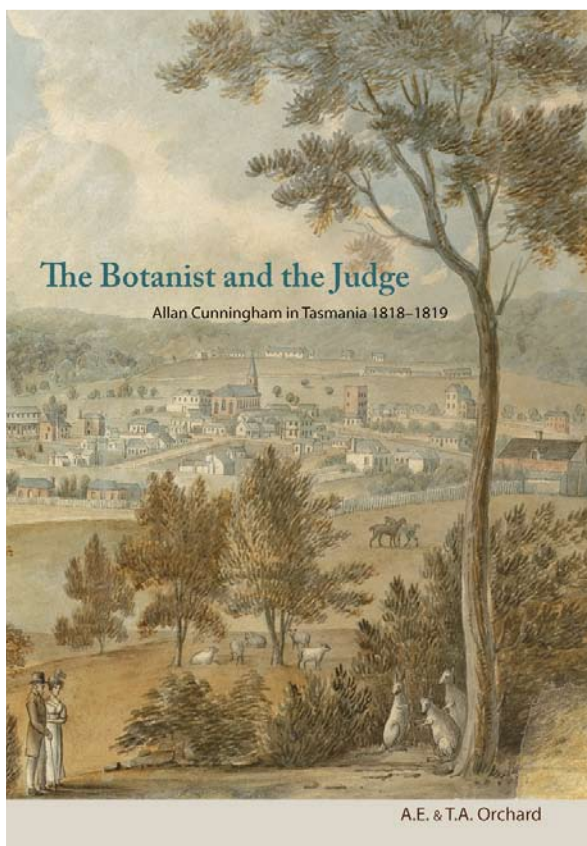
'Supreme Court Judge Barron Field' is an account of his life and career that included a

term as Judge of the Supreme Court of New South Wales. He was a controversial person who alienated many in the colony but improved the judicial system. He also wrote poetry, rather despised by critics in Sydney, but included in *Geographical Memoirs of New South Wales by Various Hands*, a book that he edited. He was instrumental in getting two manuscripts published, the journals of explorer John Oxley and the memoirs of a convict, James Henry Vaux, whose life is neatly summarised here. Cunningham

contributed several chapters to *Geographical Memoirs*, there describing a new genus as *Fieldia*, naming it after the judge.

Then comes 'Allan Cunningham's Later Career', a very good, concise account describing the later voyages with King, his trip across the Blue Mountains with members of a Russian expedition in 1820, his further explorations in New South Wales, visits to Norfolk Island and New Zealand, his sojourn in England and return to Sydney.

'Phillip Parker King' is a short chapter that outlines his life and his role as captain of the *Mermaid* and *Bathurst* on which Cunningham



served as plant collector, later continuing their acquaintance in Sydney. King was an executor of Cunningham's estate and assisted in raising funds for a monument to him, placed in the Botanic Gardens in Sydney.

Finally, and what will be of great practical value for botanists, is 'Appendix: Plant Specimens Collected in Tasmania'. This tabulates all the collections from Van Diemen's Land that the authors traced. In one column it gives Cunningham's notes and in another column lists each specimen found, the herbarium where housed and any annotations on the sheet, followed by the current name with author(s). A huge amount of time has gone into locating these sheets and recording the data (it whets the appetite for further papers in this series that will do the same for his other Australian collections). The authors give translations of Cunningham's short Latin descriptions that he wrote for plants that he believed to be new species (except no. 110).

The image on p. 39 of a herbarium sheet at Kew of *Acacia verticillata* is a splendid example of the challenge for the botanist facing a sheet on which are mounted multiple specimens and labels from several collectors, as was commonly done in the 19th century when paper was in short supply.

There are copious illustrations (many in colour), mostly from published works, chosen to show the *dramatis personae*, the places and landscapes, plants and specimens. Those of plants are taken from contemporary publications, plus two made by the gardener/artists at Kew in the 1820s, George Bond and Thomas Duncanson, not previously published. Recent photographs are included of Mt Wellington and Macquarie Harbour.

No reason is given for the use of Tasmania in the subtitle, instead of Van Diemen's Land or Island. It was not given its current name until 1855. In the text and endnotes modern placenames are used (not always quite correctly, e.g. King George's Sound, Hell's Gates). Although it is probably clear to all Australian readers, for those unfamiliar with

Hobart's mountain it might have been worth mentioning that Cunningham's Mount Table is Mt Wellington.

I have few criticisms and they are minor. On p. 3 I would have thought that in the late 18th and early 19th centuries Europeans were expanding exploration of the *unknown* world (why explore the known?). On p. 6 it's not strictly correct that in 1800 the British Government thought that the French might have 'designs on parts of the newly settled continent' since it was still unknown whether the western part (New Holland) was connected to the east (New South Wales). The French expedition of 1800–03 was led by Nicolas (not Nicholas) Baudin. It would have been nice to have the full legend for the illustration of Huon Pine on p. 76, to a less extent that on p. 74. For readers not familiar with the practice of numbering plant specimens it would have been worth explaining the abbreviation s.n. (Latin, *sine numero*, without number). I noticed a few other typos and inconsistencies but none is misleading and they are not worth mentioning.

This is a well-researched work, clearly written and beautifully illustrated. Importantly, it has a good index (but I noted that diacritics have disappeared, and the entries for the first paragraph on p. 4 are listed as p. 3, presumably due to a late amendment in pagination). The book will be an essential source for anyone studying or interested in Cunningham's collections and the exploration of Tasmania. I have enjoyed reviewing it and look forward to the other publications on this collector still to come from these authors.

References

- Curry, S., Maslin, B.R. & Maslin, J.A. (2002), *Allan Cunningham: Australian Collecting Localities*, Flora of Australia Supplementary Series no. 13, Australian Biological Resources Study, Canberra.
- McMinn, W.G. (1970), *Allan Cunningham: Botanist and Explorer*, Melbourne University Press, Carlton.
- Orchard, A.E & Orchard, T.A. (2013), *Allan Cunningham's Timor collections*, *Nuytsia* 23: 63–88.

A Cook's tour of flowering plants

Peter G. Wilson
Royal Botanic Gardens, Sydney

The flowering plants handbook: a practical guide to families and genera of the world. By James W. Byng. *Plant Gateway Ltd., Hertford, SG13 7 BX, United Kingdom. 2014. 619 pp. eISBN 978-0-9929993-1-5 (eBook version, published 16 October 2014)*

James Byng is a recent PhD graduate who complicated his life by undertaking compilation of this book while completing his doctoral studies and publishing it without any external funding. This would have been an ambitious undertaking for a more senior botanist but the end result is a very useful guide to the recognised families of flowering plants and most genera. A hard-copy version of this book is due to appear in due course, but the electronic version is available now. The eBook is moderately priced for such a comprehensive, well-illustrated introduction to the flowering plants. Acquiring it via Google play at the link provided will cost approximately AUD \$23.80.

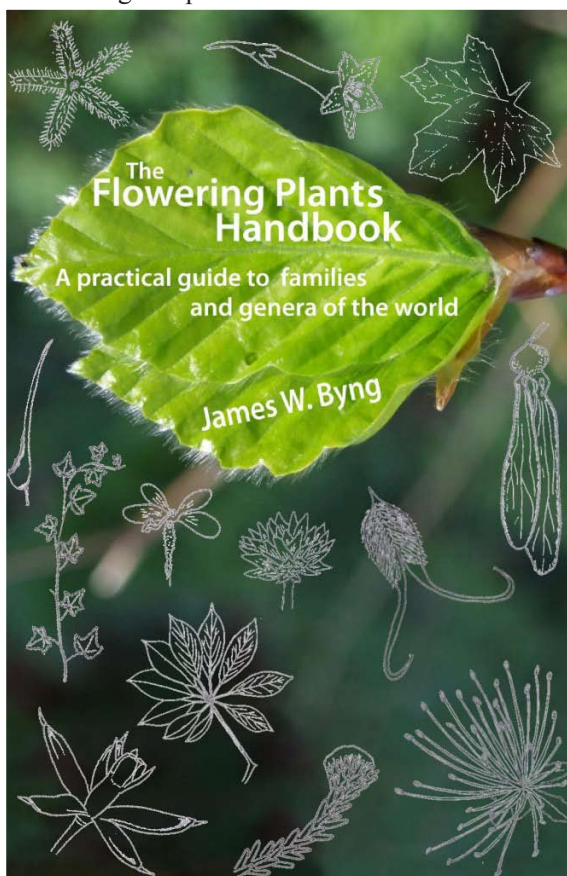
The preface includes a guide to using the book, which is complemented by an online tutorial on the Plant Gateway website. To quote from this page, the book “aims to guide the user from many flowering plant families and genera to one (or few) in four ‘easy’ steps.” The first step is to select from six major groups in the flowering plant phylogeny. Half of these are groups of convenience and are not monophyletic, but this

is an understandably pragmatic approach to simplify the choices. There are illustrations of typical features for each group to assist decision making and separate section listing families under useful diagnostic characters like parasitic habit or presence of exudates. The next step is to go through the descriptions of the orders and from there to determine family. It is only at this stage that traditional keys replace visual cues.

A total of 413 families are recognised and they are arranged according to the linear sequence of families in APG III as published by *Haston et al. (2009)*. The website blurb says “The Flowering Plants Handbook book contains very concise morphological notes, when compared with these legendary series, and aims to provide a practical framework to teach, learn and identify the world’s flowering plant families and genera for botanists, conservationists and biologists worldwide.” Each family is illustrated with a range of photographs, many of which are sourced online with appropriate ‘Creative Commons’ attribution. Each family has a good description

followed by the number of genera and species, distribution, floral formula, and significant references. Where relevant, the author also lists useful species and families with which it could possibly be confused, as well as notes on classification and recent nomenclatural change.

Although the coverage of families is comprehensive, in this edition there is an upper



limit of 160 genera treated per family. There are no keys to genera and the author suggests that the user should consult local floras and websites. To this end, in various places throughout the book, there are links to external websites, like the Kew *World Checklist of Selected Plant Families* or the online *Key to Genera of Euphorbiaceae s.l.* In this regard, the eBook version has the advantage of clickable links to these resources as well as to the sections dealing with each of the six major plant groups. In a very large family like Euphorbiaceae, which easily exceeds the 160 genus limit, the family is broken down by tribe, each of which has a short diagnostic description. Beyond that, the coverage is limited, so that the first subfamily listed, the Acalyphoideae, is represented by only 11 genera out of c. 100. On the other hand, in families that fall below the upper limit of genera, like the Myrtaceae, there is a little more flexibility so that, in the section on the tribe Myrteae, the genera are listed by distribution and the large and widespread genus *Eugenia* appears under each of the three broad geographic regions: 'American', 'Asian–Australasian' and 'African and Eurasian'.

A work with this scope will necessarily have some shortcomings. The author notes that botanists with experience in particular families should be able to begin at the family or generic level rather than starting with the six major groups and working down the hierarchy from there. I attempted to do this with an unfamiliar genus, *Cistus* (Cistaceae), that I had seen in cultivation recently. Getting from

the major group (Rosids) to the correct order (Malvales) and from there to Cistaceae would not necessarily be easy for someone without a level of training in systematics. However, the ease of navigating through the text and the links to confusingly similar families (in this case, Actinidiaceae, Clusiaceae, Rosaceae and Theaceae) assists one in learning to distinguish superficially similar families. An acknowledged shortcoming is the quality of some images sourced from the internet. Future editions (the author says there will be annual updates) will address this as better images become available, and there are plans to expand family treatments (including Euphorbiaceae) to cover all recognised genera. The author's stated aim is to build on this work in a collaborative manner with the users. Feedback is, therefore, encouraged.

For the eBook, it should be noted that the license is restricted to a single computer or device, so care should be taken in deciding where to install it. My review copy was downloaded onto an iPad where it is readable via the free Bluefire Reader app. A preview of the book is available (Web ref. 1) — this preview amply illustrates the features of the book outlined above.

Reference

Haston, E., Richardson, J.E., Stevens, P.F., Chase, M.W. & Harris, D.J. (2009) The Linear Angiosperm Phylogeny Group (LAPG) III: a linear sequence of families in APG III. *Botanical Journal of the Linnean Society* 161: 128–131.

Web ref. 1. <http://www.plantgateway.com/wp-content/uploads/2014/10/Free-sample-pages.pdf>

All about *Melaleuca*

Review by: Bob Hill
University of Adelaide

Melaleucas. Their Botany, Essential Oils and Uses. By J.J. Brophy, L.A. Craven & J.C. Doran.
Canberra, ACT Australian Centre for International Agricultural Research, 2013.
415 pp. ISBN 978 1 922137 51 7 (print)
AUD\$85. 9781922137524 (online).
<http://aci-ar.gov.au/publication/mn156>

In the areas of Australia that I know best, *Melaleuca* is a large part of what makes our

country unique. There is a fascination in seeing extraordinary thickets of stout stems that are impassable and lead the imagination of children, and quite possibly adults, to very interesting places. But *Melaleuca* is also one of those background plants that has possibly never quite received the attention it deserves, and so it was in this frame of mind that I approached this very extensive work on the genus. I was not disappointed. If anyone has even a slight interest in this remarkable genus, then this book will provide the information you need.

I learnt in the first few pages that the name *Melaleuca* comes from the Greek *melas*, meaning black or dark, and *leucon*, meaning white. I probably should have worked this out for myself, but what I didn't know is that this unusual name probably arises from the white branches and black trunk of the first named species, *M. leucadendra*, the trunks of which are often blackened by fire.

It is apparent that *Melaleuca* species have a remarkable capacity to survive and thrive in what are normally regarded as highly suboptimal habitats. A few species are tolerant of extremely saline conditions and many are also tolerant of alkaline soils, drought and frost. The authors catalogue a fascinating array of adaptations of species to accomplish these feats. For example, in response to fluctuating saline groundwater, *M. halmaturorum* develops roots that access water from deep in the profile in late summer when salt has accumulated in the surface soils. It then uses rainfall

and shallower groundwater after winter rains have replenished the profile. Some wetland melaleucas develop aerial adventitious roots on their stems and within the papery bark to the height of the maximum water level during flooding. *M. quinquenervia* produces fine adventitious roots in seasonally inundated forests in northern Queensland, which are considered to be part of the reason that transpiration in this species was unaffected by long periods of inundation.

The fire ecology of *Melaleuca* is also covered. Many melaleucas are highly fire tolerant at maturity when the thick protective layer of

bark has formed. Individual plants regenerate from fire via coppicing through stimulation of epicormic buds. Populations may also expand via fire-induced release of seed from serotinous capsules on the tree and stimulation of germination of seed in soil seedbanks. Some *Melaleuca* species can root sucker, and through root extension and interconnectivity form dense clumps in single clones. This is a

common adaptive characteristic of wetland plants subject to very difficult conditions for survival, growth and sexual recruitment.

I also was largely unaware of the extraordinary range of uses this genus has been put to. Adelaide is the queen of the brush fence cities and it is still quite common to see teams of people constructing these sturdy, utilitarian and surprisingly attractive additions to the leafier streets of the wealthier suburbs. But I didn't know about the myriad other uses. Our indigenous people apparently used

Melaleuca variously for water repellent roofing material, raft-making, in food preparation, bandages, blankets, baby slings, body wraps in burial ceremonies and for dresses denoting marriage. The leaves of some species were used as flavouring in cooking and *M. argentea* leaves were burnt to repel mosquitoes. The trunks of some species were used for construction of canoes and shields.

However, the real surprise for me was the current uses of *Melaleuca*. While there are several minor uses, like fencing and wood fibre, the big industry is essential oil production. One of the broad-leaved paperbarks, *M.*



quinquenervia, is harvested for its essential oil, called niaouli oil, in New Caledonia and also in Madagascar, where it is cultivated for this purpose. More recently plantations of this species have been established in Vietnam for essential oil production. In Indonesia, selected forms of *M. cajuputi* subsp. *cajuputi* are the source of cajuput oil, widely used as a liniment and inhalant. Natural stands are managed to optimize oil production, and plantations have been established. One of the outstanding features of this book is that the authors recognized a deficiency in information on the oil content of many *Melaleuca* species and they set about rectifying that as part of this work. They note that at the beginning of their work on this book, no information on oils existed for about 90 species. By the time they were finished almost all of these had been analysed. This goes far beyond the dedication of most authors of works of this kind – this book is not just a summary of existing knowledge, it is a major new contribution to our understanding of this large, complex and important genus.

Inevitably, not all the news about *Melaleuca* is

good. *M. quinquenervia* was first introduced into southern Florida in the late 1800s, where it escaped cultivation on seasonally wet sites and has assumed weed status. It occurs now on more than 200,000 ha of wetlands in southern Florida and is a major problem. It has also been naturalized in the Hawaiian Islands. This is now recorded as a very major weed species.

This book represents an outstanding piece of scholarship on behalf of three very experienced researchers. It is an excellent and comprehensive catalogue of the species, with clear identification of gaps in our knowledge, it provides a summary of everything we know about this genus, including how best to cultivate it from seed and other options, it summarises many interesting aspects of the ecology and economic uses of the species, and it provides valuable new information on oil content of many species and suggestions of horticultural potential in many others. The authors are to be congratulated. There are many good reasons to buy this book. If you are thinking of undertaking a similar venture, using this book as a model would be a very good start.

A Latin primer for plant taxonomists

Review by: David R. Murray
Gwynneville, New South Wales

A Primer of Botanical Latin with Vocabulary. By Emma Short and Alex George.
Cambridge University Press 2013.
304 pp. ISBN: 9781107693753 AUD\$69 (paperback).
<http://www.cambridge.org/us/academic/subjects/life-sciences/botanical-reference/primer-botanical-latin-vocabulary>

The authors are well known to Australian taxonomists, and well qualified to produce a book of this kind. Emma Short spent 5 years at the Royal Botanic Gardens, Kew, and checked Latin for *Australasian Systematic Botany* for 18 years. She has also taught courses in Botanical Latin, and worked as a freelance translator. Alex George was a botanist with the Western Australian Herbarium for 21 years, and Editor of *Flora of Australia* for 12 years. He has employed his Latin in describing 360 new taxa, editing, and translating for other botanists.

The aim of the authors is not simply to provide a vocabulary of words used in constructing binomials, but to go back to the fundamentals of Latin grammar, and present these to the budding taxonomist. As they themselves explain, even though it is now permitted to publish descriptions of new taxa in English, taxonomists still need to be able to translate from Latin to access all those species descriptions published over several centuries before the present.

I particularly like the first Latin sentence they present: *Puer fructum carpit* – The boy picked the fruit (literally the boy the fruit picked). How innocuous compared to the first Latin sentence I was introduced to in my first year at high school: *Dominus feminam vocat* – The master calls the woman. My wife Gayle recalls: *Davus Rufusque servi sunt* – David and Rufus are slaves. No one worried about sexism or political correctness in the 1950s.

It is clear from the examples just given that Latin word order is different from English – the verb comes last. And whether a noun is the subject or the object is coded in its ending. Sometimes prepositions are built into the ending – this is called ‘case’.

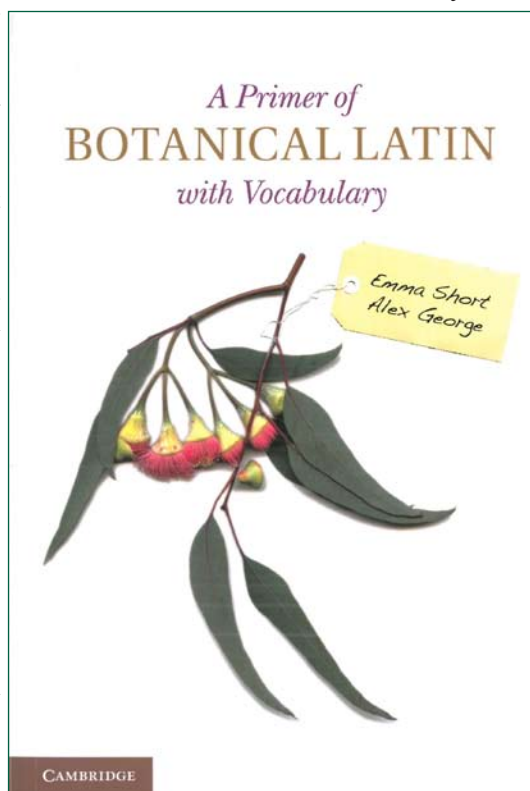
The authors proceed to present Grammar as Part I, beginning with nouns, and their five declensions. Five cases, singular and plural, are listed for each example. The vocative case is dispensed with, as botanists do not need to be writing “Oh tree, I want to hug you”. Then follow the adjective and the participle, the adverb, the preposition, the conjunction, the pronoun, the verb, numerals and measurements, prefixes and suffixes, and miscellany. Miscellany includes a section on forming specific epithets.

Part II provides some introductory exercises in translation, followed by their answers. Part

III then provides guidelines on preparing descriptions for translation from English into Latin, followed by advice on translation from Latin into English.

Part IV consists of the Vocabulary. More than half the book is devoted to the vocabulary, which is excellent.

How well have the authors succeeded in their aims? I think very well indeed. The presentation is clear and comprehensive. The examples are apt and useful. I can see this book becoming as indispensable to taxonomists of the present and the future as W.T. Stearn’s *Botanical Latin* was to those of previous generations.



A botanical Solomon Grundy -- an artist's view of the life of *Banksia menziesii*

Review by: Bob Hill
University of Adelaide

Firewood Banksia. By Philippa Nikulinsky
Fremantle Press, Fremantle. 2014
second edition of a book first published in 1992
56pp. ISBN: 9781922089816. AU\$ \$35.00 (hardback)
<http://www.fremantlepress.com.au/media/2014/1398/Firewood+Banksi>

This beautiful book from Fremantle Press documents in extraordinary detail aspects of the morphology of the Firewood Banksia, *Banksia menziesii*, through a full 12 month cycle.

In her introduction, the author and artist Philippa Nikulinsky says,

The reality can be seen in the two continuous cycles of the banksia – the sequence of flower to seed, earth, new plant and bud; whilst on each individual tree, a bud develops and then flowers as the bud for the next season begins.

Philippa is a very talented artist, with a remarkable eye for detail. The book contains a series of line drawings with the part she wishes us to focus on delicately coloured to draw the eye. The accuracy is, to my eye, flawless and she often focuses on detail of well worn plant parts – for example, leaves that are decrepit and badly insect attacked. This adds to the authenticity of the work.

The illustrations begin with the flower bud, go through the development of the inflorescence, through fertilization to development of the cone, seed release, and finally germination of an individual seed, ending at the point of renewal. There are more than 20 full page illustrations, so the changes from one to the next are often subtle and clearly show the cycle through development, fertilization, decline of the majority of flowers that go unfertilized and then seed production and release.

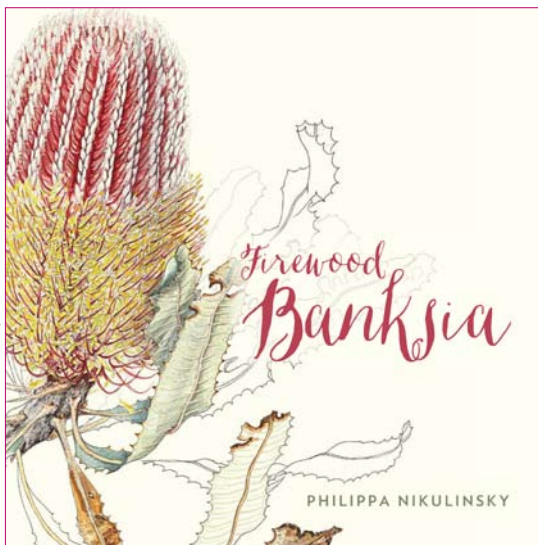
For those who enjoy detail presented in high quality illustrations and with little fuss around the accompanying text, this book is a great pleasure. I have already gone back to it several times to remind myself

of some of the detail shown.

Book Review Editor's note

When I first read through this book I immediately thought of the 19th century children's verse *Solomon Grundy* leading me to add the title to Bob's review. In the short ten line rhyme, Solomon's life is tracked from his birth on Monday to his death on Saturday and burial on Sunday. However, while Sunday marks the end for poor Solomon, Philippa's last image of a germinating seedling sees life renewed for the Firewood Banksia.

John Clarkson



New books

Earthquakes and scientific collections don't mix

This book was noticed while reading Vicki Funk's article on the state of botanical institutions today (p. 22). Some would say it is more relevant for our friends in the Shaky Isles, but that might be tempting fate. Freely downloadable, the book documents the effects of an earthquake on the Smithsonian Institution in 2011.

Unexpected—Earthquake 2011: Lessons to Be Learned. By Charola, A. Elena, Corine Wegener, and Robert J. Koestler, editors.

Smithsonian Contributions to Museum Conservation, number 4, viii + 105 pages, 86 figures, 3 tables, 2014.

Downloadable at: <http://opensi.si.edu/index.php/smithsonian/catalog/book/47>

This volume brings together nine reports and six short communications that describe damage and other problems for the Smithsonian Institution caused by the earthquake that

occurred in the Washington, D.C., area on 23 August 2011. The first chapter is a summary of the presentation by Secretary G. Wayne Clough to the Smithsonian community nearly a month after the event, and the second gives an overview of the impact that the earthquake had on buildings and collections. The third chapter describes in detail both damages to and post-seismic stabilization of the Hempstead House, listed as a historic site on Smithsonian property in Maryland. The fourth chapter describes some of the damage to and subsequent conservation of fossils in the National Museum of Natural History; the next two chapters describe damages suffered by the Botany-Horticulture Library and the fluid collection located in this same building. The short communications report whether damage was suffered in six other Smithsonian museums. Chapter eight deals with the Smithsonian's Museum Support Center, describing damage suffered by collections in the pods of this center as well as the structure overall and, in particular, its roof, in which many previously undiscovered leaks

were subsequently exposed (over offices and laboratories) by Hurricane Irene.

The final chapter brings together recommendations for measures to be implemented based on the experience gained. An epilogue on the need for preparedness for unexpected emergencies and a bibliography close the volume.

What would Nigella do? Making Australia's seasons more palatable

In case you have not caught up with the news, Tim Entwisle has published his long held views on Australian seasons. His book has been reviewed in *The Age* (Web ref. 1) and *The Sydney Morning Herald* (Web ref. 2) or you can read the transcript of his Ockham's Razor presentation (Web. ref. 3). It was the *Sydney Morning Herald* reviewer

who made that comparison with a well-known chef: "Entwisle is to plants what Nigella Lawson is to food"

Sprinter and Sprummer. Australia's Changing Seasons. By Timothy Entwisle.

CSIRO Publishing, September 2014.

Paperback, 184 pages, 200 x 130 mm,
illustrations, maps

ISBN: 9781486302031 - AU \$ 29.95

Web ref. 1: <http://www.theage.com.au/victoria/professor-tim-entwisle-a-man-for-all-seasons-adds-a-sprummer-to-the-mix-20140331-35u7c.html>

Web ref. 2: <http://www.smh.com.au/entertainment/books/australias-four-seasons-are-really-six-20140908-10ciyg.html#ixzz3Ha0uL3DE>

Web ref. 3: <http://www.abc.net.au/radionational/programs/ockhamsrazor/5705564>

Robyn Barker

Food for thought

David Symon's culinary collecting practices

David Symon always had an interest in pears. Here's how he acquired some of the specimens

later grown at the Waite Arboretum. His ever-thinking opportunism may well be frowned on today but is probably as difficult to police now as then.

Robyn Barker

THE UNIVERSITY OF ADELAIDE SOUTH AUSTRALIA
HERBARIUM OF THE WAITE INSTITUTE
ADW No. 54482
Name *Pyrus communis*
Locality and details *Waite Arboretum*
tree No 477
Early season foliage.
Seed originally from Greece -
- grown from seed from bright green
conical pears served on the ship
between Piraeus & Heraklion
Lat. Long.
Coll. *D Symon* Coll. No.
Date *16/10/1979* Det. *D. E. SYMON*
DUPLICATES SENT TO

Fig. Labels from David Symon's two vouchers for plantings in the Waite Arboretum; the specimens are now housed in the State Herbarium of South Australia.

UNIVERSITY OF ADELAIDE SOUTH AUSTRALIA
HERBARIUM OF THE WAITE INSTITUTE
ADW No. 54890
Name *Pyrus pyrifolia*
Locality and details *Arboretum tree No 442 A*
Grown from seed from pear in
Hong Kong market - 1970
Coll. *D Symon* Coll. No.
Date *7/11/1983* Det.
DUPLICATES SENT TO *to Westwood*

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ASBS publications

Australasian Systematic Botany Society Newsletter

Back issues

Back issues of the Newsletter are available from Number 27 (May 1981) onwards, excluding Numbers 29, 31, 60, 84–86, 89–91, 99, 100, 103, 137–139, 144–. Here is the chance to complete your set.

Australian Systematic Botany Society Newsletter No. 53 Systematic Status of Large Flowering Plant Genera

Edited by Helen Hewson, 1987

This Newsletter issue includes the reports from the February 1986 Boden Conference on the “Systematic Status of Large Flowering Plant Genera”. The reports cover: the genus concept; the role of cladistics in generic delimitation; geographic range and the genus concepts; the value of chemical characters, pollination syndromes, and breeding systems as generic determinants; and generic concepts in the Asteraceae, Chenopodiaceae, Epacridaceae, *Cassia*, *Acacia* and *Eucalyptus*.

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Evolution of the Flora and Fauna of Arid Australia (book)

Edited by W.R. Barker & P.J.M. Greenslade.

Peacock Publications, ASBS & ANZAAS, 1982

This collection of more than 40 papers will interest all people concerned with Australia’s dry inland, or the evolutionary history of its flora and fauna. It is of value to those studying both arid lands and evolution in general. Six sections cover: ecological and historical background; ecological and reproductive adaptations in plants; vertebrate animals; invertebrate animals; individual plant groups; and concluding remarks.

Cost: \$20, plus \$10 postage (in Australia).

This book is almost out of print. There are a few remaining copies.

To order a copy of this book email Bill Barker at: bill.barker@sa.gov.au

History of Systematic Botany in Australasia (book)

Edited by P.S. Short. A4, case bound, 326 pp. ASBS, 1990

For all those people interested in the 1988 ASBS symposium in Melbourne, here are the proceedings. It is a well presented volume, containing 36 papers on: the botanical exploration of our region; the role of horticulturalists, collectors and artists in the early documentation of the flora; the renowned (Mueller, Cunningham), and those whose contribution is sometimes overlooked (Buchanan, Wilhelm).

Cost: \$10, plus \$10 postage (in Australia)

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AUSTRALASIAN SYSTEMATIC BOTANY SOCIETY INCORPORATED

The Society

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

Membership is open to all those interested in plant systematics. Membership entitles the member to attend general meetings and chapter meetings, and to receive the Newsletter. Any person may apply for membership by filling in a "Membership Application" form, available on the Society website, and forwarding it, with the appropriate subscription, to the Treasurer. Subscriptions become due on 1 January each year.

The ASBS annual membership subscription is AU\$45; full-time students \$25. Payment may be by credit card or by cheques made out to Australasian Systematic Botany Society Inc., and remitted to the Assistant Treasurer. All changes of address should be sent directly to the Assistant Treasurer as well.

The Newsletter

The Newsletter is sent quarterly to members and appears simultaneously on the ASBS Website. It keeps members informed of Society events and news, and provides a vehicle for debate and discussion. In addition, original articles, notes and letters (not exceeding ten published pages in length) will be considered. Citation: abbreviate as *Australas. Syst. Bot. Soc. Newslett.*

Contributions

Send copy to the Editor preferably by email attachment submitted as: (1) an MS-DOS file in the form of a text file (.txt extension), (2) an MS-Word.doc file, (3) a Rich-text-format or .rtf file in an email message or attachment or on an MS-DOS disk or CD-ROM. Non-preferred media such as handwritten or typescripts by letter or fax are acceptable, but may cause delay in publication in view of the extra workload involved.

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The deadline for contributions is the last day of February, May, August and November. All items incorporated in the Newsletter will be duly acknowledged. Authors alone are responsible for the views expressed, and statements made by the authors do not necessarily represent the views of the Australasian Systematic Botany Society Inc.

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A 20% discount applies for second and subsequent entries of the same advertisement. Advertisements from ASBS members are usually exempt from fees but not the insertion costs in the case of a flyer. Contact the Newsletter Editors for further information.

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