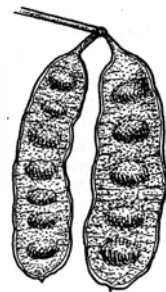
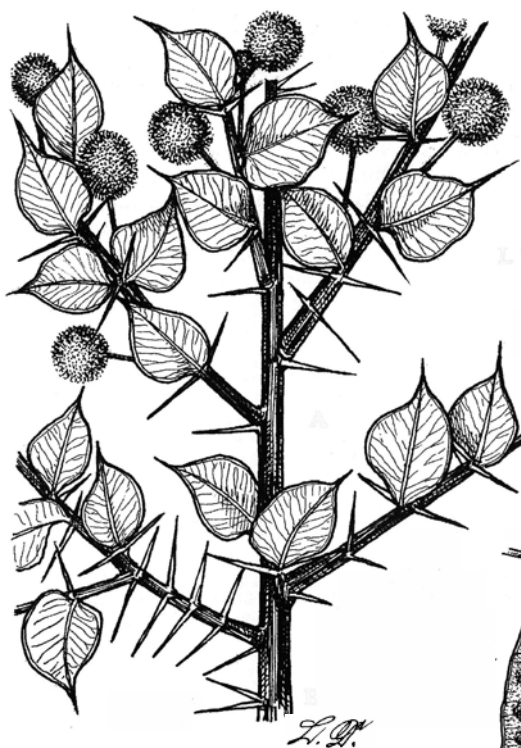


ASBS

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Grant application closing dates

Hansjörg Eichler Research Fund:
on March 14th and September 14th each year.
Marlies Eichler Postdoctoral Fellowship:
on July 31st each year.

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Web presence

ASBS Facebook Group

Viewable currently to any member of Facebook;
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Cover image: *Acacia strongylophylla* F.Muell. Branch

surrounded by (clockwise from top) phyllode, legumes,
and seed with funicle. Artist: Ludwik Dutkiewicz.

From: D.J.E. Whibley & D.E. Symon, *Acacias of South Australia*, 2nd edn (1992), with permission of Board of the Botanic Gardens and State Herbarium (South Australia).

Publication dates of previous issue

Australas. Syst. Bot. Soc. Newslett. 179 (June 2019)

ASBS Web site: 6 Aug 2019. Printed version: 14 Aug 2019.

From the President

I am writing this from Melbourne, in the middle of southern Australian Spring, which I usually notice first approaching with the flowering of wattles, as there are a few particularly early flowering species of *Acacia* that I keep an eye out for in late Winter, like *Acacia suaveolens*. Actually, while many people remind me that there are *Acacia* species flowering at all times of the year, and yes there really are, there is definitely a mass of southern Australian species that flower in late Winter and early Spring (or “Sprinter”, sensu Entwistle 2014). That is the time most people seem to notice and make mention of them, hence Wattle Day is marked on 1 September, but sometimes I think it could just as easily be marked on 1 August. This being said, in metropolitan areas of southern Victoria I probably also notice just as much the showy deciduous exotic species, like the flowering apricots or plums (e.g. *Prunus mume*), starting to flower in late Winter, or I am hit by the scent of fragrant plants, like *Daphne odora*, marking the approach of warmer weather with another sense that is probably stronger than the visual.

In this corner of Australia, we have been fortunate to have had some decent rainfall, in comparison to the large parts of Australia in extended drought. These drought conditions are no doubt challenging for many of our ASBS members and may make us look at issues of global change and how we might make any sort of impact on these issues, with our work and in our personal lives. I am not one to advocate for political positioning for ASBS, but I do think we need to at least engage with the issues and have some role. What that is, I remain unsure, but at some point business-as-usual may not be possible. However, I do think that we can contribute strongly to the discussion, and perhaps our science of systematics, phylogenetics and biogeography hold some of the only keys to helping understand the historic tolerances and responses of the flora to changing climate. This, along with our curated collections of specimens through time, potentially allow us to act by assisting and informing others to understand global change and its impact, and we should remind ourselves of the importance of our work in this respect.

Wellington conference

As I am writing this, I am just about to book my flights for the 2019 ASBS-NZPCN Joint Conference: *Taxonomy for Plant Conservation – Ruia mai i Rangiaitea* to be held on 24–28 November 2019 in Wellington, New Zealand. It makes me think about the diversity of environments and floras our Australasian society covers from New Zealand to New Guinea with Australia in the middle, regions united by geographical proximity, biogeography and (some) elements of their floras. The monsoon tropics and arid Australia are certainly markedly different to the temperate biomes in terms of climate, yet they are tied together through their historical evolutionary links, and I think it is these similarities and differences that make systematic botany so interesting!

Heidi Meudt and Rewi Elliot, on behalf of the organizing committee, have a detailed update about the conference elsewhere in this Newsletter (see p. 16), but they have allowed me a sneak peek at the Conference program, and it is looking packed with interesting talks, posters and events. Attention is focussed on the importance of conservation of biodiversity and the place of systematics and taxonomy in this endeavour.

Over 180 people have now registered, which is excellent. The field-trips and workshops all look amazing, and there is still some room on all of these and the conference dinner, so if people want to register or add extras to their registration they still may do so.

Prospective attendees can also register for the conference until 1 November, so you still have time not to miss out!

ASBS Funding

Congratulations to Trevor Wilson (RBG Sydney), who has been chosen as the 2019 Marlies Eichler Postdoctoral Fellow for his project entitled, “A new key for Australia’s Bugle Subfamily (Ajugoideae: Lamiaceae): a phylogenetically informed taxonomy assisted by next generation sequencing methods”. The Fellowship will run for two years beginning on 1 November this year.

On other grant news, I mentioned in my previous President's Report that I would like to review if the current funding that ASBS offers our members is meeting the society's needs. For this reason, I have just contacted the ASBS Grants Policy standing committee (members of this committee are listed at the front of the Newsletter) with the aim of activating the committee to review our newest funding scheme, the Marlies Eichler Postdoctoral Fellowship, now that three rounds of this fellowship have been offered.

Nancy T. Burbidge Medallist

I note that the guidelines for the Burbidge Medal regarding its announcement state: "If time permits, the decision will be announced in the next newsletter or failing that in the conference program".

Therefore, it is my great pleasure to announce here that the 2019 Burbidge Medallist is Barry Conn. Without stealing too much thunder for the upcoming ASBS conference, where Barry will present his Burbidge Lecture, Barry has had a long career in systematic and taxonomic botany at several institutions, both in Australia and in Papua New Guinea. While Barry formally retired a few years ago from the Royal Botanic Gardens Sydney, he has remained active on work in New Guinea and has recently published, with Kipiro Q. Damas, a three book series *Guide to the Trees of Papua New Guinea*.

Other news

I want to draw attention to some other news items and to the active ASBS Facebook page where these are posted. Unfortunately we have very sadly lost some of our esteemed botanical colleagues in the past few months, and our

thoughts go out to those affected.

Among many snippets and posts a couple of others that caught my attention were the Alice Springs Herbarium recently celebrating its 65th anniversary with a post on the ASBS Facebook page with a photograph of George Chippendale identifying plant specimens, and also notable was the 10 year anniversary of the formation the Managers of Australasian Herbarium Collections (MAHC) group, who were photographed meeting in Darwin recently.

Postscript

Finally, I have just been informed by Bill and Robyn Barker, our excellent Newsletter editors, that they have decided to make this their final year in that role. This was slightly shocking news to me, and something I have not wanted to think about I must admit! The ASBS Council will discuss how to continue the Newsletter (and it may not be in its current form necessarily). That being said, I whole-heartedly thank both Bill and Robyn for all of their efforts on behalf of the ASBS membership, for producing a consistently interesting and content-rich Newsletter for the Society. It is a credit to their hard-work, eye for detail and persistence.

I would also like to put out the call that anyone who may like to contribute to the Society as newsletter editors to please contact me or other Council members.

Reference

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Dan Murphy

Australasian Systematic Botany Society Inc.

Annual General Meeting

Council advises members of
the ASBS annual general meeting
to be held in conjunction with the conference in Wellington, New Zealand.

**The AGM will be held on Tuesday 26th November 2019 at 3:45 pm at
Museum of New Zealand Te Papa Tongarewa in the Rangimarie room.**

Jen Tate, Secretary

Taxonomy Australia report

In the last ASBS Newsletter I reported on discussions and an agreement reached within the Taxonomy Australia Steering Committee about key messaging for taxonomy and systematics in Australia. In brief, the Steering Committee agreed that we need to present a bigger, bolder, break-through vision for taxonomy and systematics in Australia and our plans for documenting Australia's biodiversity. In the age of global heating and a global extinction crisis, messaging out that we're working on documenting our biodiversity but it's likely to take four centuries to complete the task, simply doesn't cut through. We agreed that a bold, break-through vision is that we have the technologies, just not the resources, to discover and document all Australian species in a generation (25 years).

Whenever I talk with people outside our sector, whether members of the community, government advisors, or business leaders, this message works, while the business-as-usual message doesn't. And given the dire state of support and funding for taxonomy and systematics, we need a message that works.

Two issues, however, need to be dealt with before we can start advocating a bold science mission to discover and document our biodiversity in a generation. The first is that we don't yet quite know how to go about doing this, and the second

is that we aren't yet able to work out how much it will cost. These of course are the first two questions anyone will ask, and we need good answers.

Taxonomy Australia is working to secure funding to address these questions. We have developed a proposal to:

1. bring together a national meeting to discuss and settle the first question (what suite of existing technologies, from DNA barcoding to machine learning, do we need to deploy, how should we deploy them, and are they adequate for the task),
2. take the results of the national meeting around all states and territories for further discussion and consultation, and
3. engage professionals to help us develop a credible budget for the mission.

We have not yet secured funding for these initiatives, but are very actively trying. I hope that by the next *ASBS Newsletter* I can report on success in this. We then can roll out these series of meetings to really engage with the questions, and with ramping up taxonomy and systematics in Australia to the benefit of Australia, our science, our biodiversity, and our community.

Kevin Thiele

Eichler Research Fund report

Molecular systematics of the Australasian genus *Corunastylis* Fitzg. (Prasophyllinae, Orchidaceae) using next-generation sequencing

Selen Mashayekhi

National Herbarium of New South Wales

The genus *Corunastylis* Fitzg. comprises at least 75 species, most of which are endemic to Australia (Fig.). Two species are found in New Zealand and one in New Caledonia. *Corunastylis* plants are terrestrial herbs, which grow in forested habitats, heathland and moss beds over rock plates (Jones, 2006). The genus belongs to the orchid subtribe Prasophyllinae within tribe Diurideae. Traditionally, three genera have been recognized within Prasophyllinae: *Genoplesium*, *Microtis* and *Prasophyllum* (Pridgeon et al., 2001). There have also been proposals to only recognize one genus (*Prasophyllum*) or two genera (*Microtis*

and *Prasophyllum*) within Prasophyllinae (Pridgeon et al., 2001). Early molecular phylogenetic studies confirmed the monophyly of Prasophyllinae (Kores et al., 2001, Pridgeon et al. 2001, Clements et al., 2002), but uncovered the polyphyly of *Genoplesium* (Clements et al., 2002). Subsequently, a revised generic classification for Prasophyllinae was proposed, which re-established the genus *Corunastylis* to which all species of *Genoplesium*, except the type species *Genoplesium baueri*, were transferred. Additionally, two new genera, *Mecopodium* D.L.Jones & M.A.Clem. and *Chiloterus*



Fig. From left, *Corunastylis apostasioides*, *C. densa*, and *C. stephensonii*.

Ph. Alan Stephenson

D.L.Jones & M.A.Clem. were established, based on floral morphological differences (Clements et al., 2002; Jones and Clements, 2004). However, previous molecular studies included only a few *Corunastylis* species and therefore, phylogenetic relationships within the genus are still poorly understood.

The aim of this project is to unravel phylogenetic relationships of *Corunastylis* and the related *Mecopodum* and *Chiloterus* – both oligotypic genera (i.e., genera with few species) – using a next-generation sequencing approach.

Methods

Fieldwork: Early in my project, I conducted fieldwork in Kanangra Boyd National Park, Yengo National Park, Gibraltar Range National Park (Feb 2017), Werakata National Park and Werakata Conservation Reserve (Apr 2017). I also conducted two local field trips to Royal National Park and the Shoalhaven area (Mar 2017), which were enabled by funding of the Eichler grant. However, unfavourable climatic conditions with prolonged droughts resulted in only a small number of species being encountered in flower (11 species, see Table 1). Thus I focused my sampling effort on existing herbarium collections. The Eichler grant enabled me to visit my collaborator Mark Clements at the Australian National Herbarium in July 2017 and study herbarium specimens of *Corunastylis*. With Mark's assistance, I was able to include tissue from expertly curated *Corunastylis* herbarium collections for the project including every described *Corunastylis* species (78 species) as well as ca. 35 taxa which represent taxonomic synonyms, phrase name taxa and other potentially

new species.

Molecular: The High Throughput Collection Genomics (HTCG) project, funded by CSIRO, is generating the plastome data for a wide range of Australian native orchids, including *Corunastylis*. To elucidate phylogenetic relationships in *Corunastylis*, I chose genome skimming as my next generation sequencing approach. This time- and cost-efficient method uses whole genome shotgun sequencing to generate data from the plastid genome and the ribosomal RNA cistron. The method has been shown to be suitable for sequencing of fresh as well as degraded DNA such as from herbarium material. The HTCG team has made significant progress in improving optimisation, miniaturization, and cost savings. However, the testing and optimisation of lab procedures and workflows is taking much longer than anticipated; although, given the expected savings per sample, it seems most appropriate to have all the processes in place before commencing with large scale data generation.

So far, I have analysed a preliminary data set for 20 samples including 17 *Corunastylis* species, 2 *Mecopodum* species, and one *Chiloterus* species. The Eichler grant also enabled a research visit to Katharina Nargar's lab at the Australian Tropical Herbarium in June 2017 where I obtained training in DNA assembly and downstream bioinformatic analysis of genome skimming data. I assembled each plastome using Geneious (version 11.1.4; Kearse et al., 2012). The assembled sequences included 78 protein encoding genes, 10 introns and 23 intergenic spacers. I produced a multisequence alignment of 58,398 bp length for 20 taxa using Geneious MAFFT plugin (version

11.1.4; Katoh et al., 2002) and converted the alignment to a data matrix in NEXUS format for phylogenetic analysis. Sequences were analyzed using maximum likelihood in RAxML (Stamatakis et al., 2008) run on the CIPRES portal (Miller et al., 2010). To assess nodal support, 1000 bootstrap replicates were performed. The resulting phylogenetic reconstruction showed that *Corunastylis* is paraphyletic, with species of *Mecopodium* and *Chiloterus* nested within it. The results revealed that four of six morphological groups in *Corunastylis* (*sensu* Jones, 2006) are supported as monophyletic with bootstrap support values ranging from 90 to 100 (Mashayekhi unpubl. data).

Next steps

Genome skimming data for all sampled individuals will be analysed, including phylogenetic analyses, divergence time estimations, ancestral range analyses and ancestral trait analyses. The latter will assess the systematic value of floral morphology within a phylogenetic framework and examine the evolution of these key characters. The remaining budget from the Hansjörg Eichler Scientific Research Fund will enable the renewal of my Geneious licence as well as fund another research stay at the Australian Tropical Herbarium in Cairns and the Australian National Herbarium in mid-2020 to finalise analyses and work on manuscripts.

Acknowledgments

I am very thankful for the financial assistance

from the Hansjörg Eichler Scientific Research Fund, Australian Orchid Foundation, and CSIRO. I am grateful to Alan Stephenson, Brian Towle, Gavin Phillips, Boris Branwhite, Wendy Grimm, and Joel Cohen for their invaluable help on tracking down *Corunastylis* in the field. I also thank my collaborators: Katharina Nargar, Mark Clements, and Peter Weston for their support and advice in my research.

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Table 1. Species sampled and collection details.

Taxon	Collection No.	Collection Date	Collectors	Locality
<i>Corunastylis insignis</i>	Gp152	17 Oct 2016	G. Phillips, S. Mashayekhi, B. Branwhite	Charmhaven
<i>Corunastylis laminata</i>	Sm68	25 Mar 2017	S. Mashayekhi, A. Stephenson, M. Biabani	Shoalhaven
<i>Corunastylis stephensoni</i>	Sm69	25 Mar 2017	S. Mashayekhi, A. Stephenson, M. Biabani	Shoalhaven
<i>Corunastylis nuda</i>	Sm70	30 Mar 2017	S. Mashayekhi, B. Towle, M. Biabani	Royal National Park
<i>Corunastylis fimbriata</i>	Sm71	30 Mar 2017	S. Mashayekhi, B. Towle, M. Biabani	Royal National Park
<i>Corunastylis filiformis</i>	Sm71	30 Mar 2017	S. Mashayekhi, B. Towle, M. Biabani	Royal National Park
<i>Corunastylis apostasioides</i>	Sm72	30 Mar 2017	S. Mashayekhi, B. Towle, M. Biabani	Royal National Park
<i>Corunastylis apostasioides</i>	Sm76	2 Apr 2017	S. Mashayekhi, M. Biabani	Weakata Conservation Reserve
<i>Corunastylis trifida</i>	Sm75	2 Apr 2017	S. Mashayekhi, M. Biabani	Weakata Conservation Reserve
<i>Corunastylis</i> spp.	Sm74	2 Apr 2017	S. Mashayekhi, M. Biabani	Weakata Conservation Reserve
<i>Corunastylis ruppii</i>	-	-	J. Cohen	West Wallsend
<i>Genoplesium baueri</i>	Gb17E027	2 Mar 2017	W. Grimm	Ku-ring-gai Wildflower Garden

1649.
Kores, P. J., M. Molvray, P. H. Weston, S. D. Hopper, A. Brown, K. M. Cameron, and M. W. Chase. 2001. A phylogenetic analysis of Diurideae (Orchidaceae) based on plastid DNA sequence data. *American Journal of Botany* 88: 1903–1914.
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Articles

Nothing changes – early taxonomic difficulties and suggestions for a concerted approach to the documentation of Australian flora, fauna and geology

Robyn Barker
State Herbarium of South Australia

While browsing the web I came across a letter written to *The South Australian Advertiser* in 1885. Its subject was the South Australian Museum and it was written in response to a previous enquiry to the editor by “An Enquirer” published on Thursday 12th March under the title “A hint to colonial scientists” (Web ref. 1).

The “Enquirer”, on behalf of a number of young people, was interested in exploring the neighbourhood for specimens of animal and plant life. However, a collection of specimens was “of little real value unless scientifically arranged and classified”. The use of the term “real value” might indicate that some sort of monetary return was envisaged but more likely it was an expression of an interest that is always to be found in elements of the general community. The further request for a “small cheap book by which we could, for instance, find out the species to which each of our fifteen orchids or of our ten different kinds of spider belong” align more with natural curiosity which for those less isolated might have been answered by membership of a group such as the recently formed (1883) Field Naturalists Society of South Australia. The formation of the Handbooks Committee of South Australia in the early 1900s addressed this need for more accessible scientific literature very successfully for many years (Ziedler 2002). It is the final sentence of the letter which is almost prescient as it invokes today’s Citizen Science.

I have heard that by careful research the information can be obtained in the Adelaide Library and Museum, but this is of little use to those who live some three hours’ journey from the capital. Now if to meet

the above-mentioned need one of our professors or scientific fellow-colonists would put together in a concise and well-arranged form their knowledge of South Australian organic life, so that classes/orders, and species could be identified with some degree of certainty, I am quite sure it would be received by scores of households with the greatest interest. And I venture to suggest that the interests of science would be promoted by such a publication as it would awaken an intelligent interest in the subject all over the colony, so that each neighbourhood would become a centre of research and possibly of discovery.

It was J.W. Haacke (Fig.), the former Director of the South Australian Museum, who responded a week later. His response is illuminating as to the state of taxonomy within and outside South Australia and Australia at this time. Even more noteworthy in the present-day context is his call for a national approach to the documentation of the fauna and flora before it disappears and involving “citizen scientists” in the process. He has comments about the way in which science is presented to the public and how it should be popularised, as well as the qualities of the person who should replace him. At the time of his appointment to the South Australian Museum position Haacke was still a young man and had only been in the “colonies” for a limited time. Haacke’s letter has notable parallels with the push for research and accessible documentation of Australia’s biodiversity in the 1970s and at the present time and is almost fully quoted here.

DR. HAACKE ON SCIENCE IN
SOUTH AUSTRALIA.¹

TO THE EDITOR.

Sir—A letter by “An Enquirer” in Thursday’s *Advertiser* calls for some remarks by a professional man; and as I venture to think that from my knowledge of the fauna of South Australia, and from my acquaintance with some of the ways the love of nature and science is officially fostered in this country, the contents of this letter may be of some use, I place it at your disposal. ...

“An Enquirer” deprecates the absence of a popular work on the flora and fauna of South Australia, and encourages scientific men to undertake the compilation of such a work. Of the flora of the colony I know little, and I believe that Professor Tate is the only scientific man in South Australia who would, at the present time at least, be morally entitled to write a popular key to its genera and species. *As far as I know our flora is well known, and the publication of a popular work on this subject could be advantageously undertaken already at the present time.* But it is widely different with our fauna, and to prove this I must be somewhat explicit. The mammalia or milk giving animals and the birds of South Australia are well known, but the publication of a popular work on them can only be undertaken by a naturalist who has a complete collection at his disposal. Such a collection does not exist, and I doubt that it will ever exist. *Our native mammals and birds are rapidly dying out, and if immediate steps be not taken to collect what is still to be collected young South Australia of the next generation will only have a very inadequate knowledge of the mammals and birds of the land colonised by their fathers.*

I regret to have to say that the gentlemen whose duty it is to see a colonial natural history collection formed seem to be unaware of the real state of things. These remarks will also stand for the rest

of the land fauna of the colony.

The reptiles and amphibians of South Australia are also comparatively well known, but I believe that many species new to science are still to be found, and an exhaustive work on these animals cannot be written within a short time. In a still higher degree this applies to our fishes. Although the knowledge of its piscifaua is of the greatest importance to a country from an economical point of view, nothing is at the present time being done in our colony to foster this knowledge. A short time ago I was fortunate enough to make some important scientific observations in two species of our fishes, which of course caused me to try to properly identify them. The fishes

referred to belong to the commonest, and one species may every day be seen represented by a dozen specimens in the fish-shops of Adelaide; but I found out that I would have to establish two new species. The mollusca of South Australia are well known, but only those with shells, as most conchologists find it inconvenient to have the scientifically more important soft parts represented in their collections, which leads them to neglect the animals without shells. ... As the number [of our South Australian mollusca] is great it would take a scientist a considerable time to write a history of them.



Fig. J.W. Haacke,

State Library of South Australia,
(B 22154, Web ref. 2)

Our knowledge of the butterflies, beetles, and other insects of South

Australia is in a sorrowful state, and not a single man in South Australia has the means to identify the species of even a single genus of them. I believe that a great many of our insects will be found to be new, and the descriptions of those that are already scientifically known are scattered over a multitude of inaccessible publications. Some dozens of skilled entomologists will have to work for years before a natural history of our insects, which are very numerous, can be published. To give you some idea of the number of the species of Australian insects I will only mention that of the Tineidae, a family of small lepidoptera, which is estimated at 10,000. I warn your readers

¹ To ease reading we have introduced italics, highlighting parallels with modern views and main points, and paragraphs.

not to rely on some would-be entomologists. I know one of them who is fond of describing new species, even such as are not new, and who can easily be put into a rather awkward position by the question—Which known species is the nearest related to the one described as new, and where is it described? ...

A history of the Australian crayfishes, crabs, shrimps, and their relations, has been published by Mr. Haswell, of Sydney, but the South Australian fauna is not sufficiently considered in this work. It will, again, take some time before a separate book on our own crustaceans can be written.

“An Enquirer” speaks of “our ten species of spiders.” I beg to inform him that 1,000 would be nearer the mark. A number of them are described in Dr. Koch’s and Count Keyserling’s work on “Australian Spiders;” but this publication, which has been worked at for many years, and of which only three volumes are published, is still rather incomplete even in its published parts, and what is worse for Australian readers, it is written in German.

Our scorpions are also very inadequately described, and the same is to be said of our centipedes.

The number of our starfishes and their relations is small; still smaller is our knowledge of them, and smaller still are the means at our disposal to identify the species. Of our land, marine, and freshwater worms we know little or nothing; most of them will be found to be new. The same may be said of our polyps and infusorias and other microscopic forms. The Australian sponges are being described by D. von Lendenfeld, of Sydney. He has identified most of the species represented in the Adelaide Museum, but since the museum has been left to the care of nobody a confusion of the sponges has taken place, and a new collection will have to be formed, and to be sent to Dr. von Lendenfeld. ...

The above will, I trust, sufficiently show the impossibility at the present time of the compilation of a general work on the fauna of South Australia.

But what is to be done? Well, at the present day when so much is being said on local federation, the following suggestion may not be altogether out of place:—*I suggest that the various Governments and Parliaments of Australia be induced to supply the means for the publication of a grand work on the zoology, ethnology, botany, and paleontology of Australia. This work would have to consist of a sufficient number of volumes, and an equally sufficient number of specialists should be engaged for its*

publication. It should be accompanied by large illustrations, both artistic and natural, similar to those in Gould’s *Mammals and Birds of Australia*, and to the plates in Brown’s *Forest Flora of South Australia*.

As the publication of each a work would necessarily have to be extended over a considerable number of years the annual money supply from each colony would be comparatively small, and by the colonies going hand in hand a large saving would be effected for a number of species of animals, plants, and fossils are to be found in more than one colony, or even in every one of them, and descriptions and illustrations of them need not be published in every colony in which they occur. It is essential that only Australian naturalists should be employed at such a work, and a sufficient number of able *men* could be found if the various colonies were to go together. But if the colonies undertake separately the publication of works on their natural history not a single one will be found able to procure a sufficient number of scientific workers.

Such a work as I have in view would of course be too expensive to reach the library of everyone, but with such a work at their disposal a few good all-round naturalists would be able to compile handy and cheap volumes for the use of every lover of natural history. In Germany there is at present being published a new edition of Leunis’s *Zoology*. This work is unique and admirable, as it enables all people able to read and to see to identify every species of the German fauna. A similar work we want in Australia, as it will enable every one to take part in the scientific exploration of the country he lives in. *But we must soon set to work, as it is important to know the distribution of our animals and plants, and as the constant progress of European settlement is rapidly destroying the original outline of their distribution.*

So what are amateur naturalists to do before they have handy works at their disposal? I cannot recommend them to seek information at the museum. It is true you see there a multitude of labels, but these labels will on close examination betray the cowardly ignorance so common in human beings, an ignorance which seeks to hide a want of knowledge of which nobody need be ashamed. *It is quite impossible for one man to know all birds or all fishes or all insects that have been described, but I have met some people who imagine that a naturalist must know even the animals that have not been described.* Gather indiscriminately a dozen Australian animals of different species and ask the greatest zoologist in the world to give you the names of them; he will tell you that he does not know them. I have

in my official position in South Australia always had the courage to say that I did not know this or that animal or mineral, but well-meaning friends have warned me not to do so or the people would say that I did not deserve my pay. I venture, however, to say that the men who do not deserve their pay are those who try to hide an excusable want of knowledge in special cases, thereby betraying, at least to persons able to judge, their cowardice and general ignorance.

To return to the museum labels, some of the scientific names they pretend to give are spelt in a horrible way, probably by some “entomologist”.² However, I have been lately informed that it is not the intention to make the museum a source of edification and information, a temple of education and science. The people of South Australia I am told are unable to judge, and can only appreciate Barnumistic³ shows. It does not seem to occur to people holding such views that the public, if really so very ignorant, have a right to demand to be educated by those whose business it is to foster public education, nor do these people in their desire to provide for the animate, minerals, and fossils of South Australia the opportunity of showing themselves, remember that scientific men also require a little bit of an opportunity of a show, especially when they have been induced to leave other countries.

I make these remarks in order to assist the unfortunate scientist who will next occupy the position formerly occupied by Mr. Waterhouse⁴ and myself with results disastrous to both of us. I hope that a gentleman will be chosen whose ability and honesty is well-known throughout the United Kingdom. Such a scientist, although he may require a salary of £1,000 per annum, is the only person who can make of the museum an institution creditable to South Australia, an institution which justifies Parliament in voting money for its maintenance.

The reason is simple. The museum is in such a state that it can only be reorganised by a man who enjoys the confidence of his masters, whom they therefore can entrust with sufficient power. Young and compara-

tively unknown men, like myself, cannot be relied on—so at least their masters think. The masters want time to find out their ability and honesty; they hamper them at all ends and corners; they interfere in every transaction, and the result, of course, is muddle. If a man is not procured for the museum in whom full power can be placed from the beginning, it will be time for our members of Parliament to shut up the expensive toyshop at North-terrace. ...

There is so much work at the museum for a scientific man that a new scientific director, who can devote all his time to the museum, must be engaged. A little Barnum will not do. It should be remembered that a man whose duty it is to popularise science must not only be in the possession of some science, but also of a considerable knowledge of the principles of education. ... -I am, &c.,

J. W. HAACKE, Ph.D.
Late Director Adelaide Museum.
Port Vincent, March 14, 1885.

The South Australian Advertiser
19 Mar 1885, p. 6 (Web ref. 3)

German-born, Dr J. W. [Wilhelm] Haacke (1855–1912), gained his doctorate in zoology in 1878 from the University of Jena. He was then employed at the Zoological Institute of the University of Jena followed by employment at the Zoological Institute at the University of Kiel. He migrated to New Zealand in 1881 where he was first engaged by Professor Parker at the Otago Museum, Dunedin, and then by Dr. Julius Haast at the Canterbury Museum, Christchurch.

In 1882 he was initially appointed as the Acting Curator (March 22nd) of the South Australian Museum while the first curator, Frederick George Waterhouse, was on leave. He was subsequently appointed Curator (November 3rd) with a later change of title to Director (February 2nd 1883). One of his actions was to destroy a large number of deteriorated zoological collections which had for a long time been on display at the old museum and with their demise he successfully argued for the employment of a collector to replace them, as well as further staff for normal curatorial purposes. In 1884 he was the first to show that the echidna was egg-laying (Osborn 1885; Royal Society of South Australia 1884). He held the Director's position until November 1st 1884 when, partly because of criticism by the public that too many of the South Australian collections were being sent overseas, he offered his resignation. This was to take effect following 6 months paid leave which he apparently spent in

² A reference to one “would-be entomologist”: “the same gentleman spells the name of the branch of science maltreated by him ‘entomology’”.

³ A reference to P.T. Barnum (1810–1891), owner of “Barnum’s American Museum”. He tended, however, towards live rather than inanimate museum displays and was particularly fond of devising hoaxes. He was the subject of a 2017 motion picture *The Greatest Showman*.

⁴ F.G. Waterhouse, Curator at the SA Museum (see below).

South Australia studying jellyfishes. He wrote the letter reproduced above during this time, while based at Port Vincent on Yorke Peninsula.

Following his 6 months leave he was appointed as the chief scientist on the New Guinea Exploration Expedition, also referred to as the *Bonito* expedition, organised by the NSW branch of the Royal Geographical Society of Australasia. This expedition to the Fly River area, under the leadership of Henry Charles Everill, lasted from June to December 1885, and at one stage it was reported in the Australian newspapers (erroneously) that the whole party had been massacred (Web ref. 4) A picture of the expedition members, including Haacke, can be seen in Karen Wilson's (1990) article on the botanist to this expedition, William Bauerlen. Further information can be found in Dwyer et al. (2015).

Returning to Adelaide after the expedition he gave accounts to the newspapers, one of which can be seen on p. 26 of the *Adelaide Observer* of December 19th 1885 and he gave a number of lectures on evolution at the Freethought Lecture Hall in the first half of 1886 (Web ref. 5). He appears to have departed for Germany in September 1886 where he had been asked to represent South Australia at a colonisation conference (Web ref. 6) in Berlin. He travelled and lectured around Germany and was from May 1888 to April 1893 director of the Zoological Gardens, Frankfurt (Web ref. 7), during which time he completed a second thesis at the Technische Universität, Darmstadt. He moved to Darmstadt and spent much of his time as an independent scholar when a hoped-for professorship did not result. In 1898 he was living in Munich according to the obituary of his father-in law, Carl von Bertouch.

Haacke is credited with the introduction of the term "orthogenesis" (Levit & Olsson 2006) for directed evolution.

After his departure from Adelaide Haacke continued contact with the board of the South Australian Museum, probably because of his Adelaide associations, having married a daughter of Mr. C. von Bertouch of Adelaide.

Were Haacke's wishes on his replacement fulfilled? Haacke was succeeded, albeit unofficially, at the South Australian Museum by Edward C. Stirling (1848–1919). While born in South Australia,

Stirling was a graduate of Cambridge University and on his return to South Australia he engaged in a number of activities including politics, surgery at the Adelaide Hospital and in his role as Professor of Physiology at the University of Adelaide. However, in the absence of a Director at the Museum, it was his role as Chair of the South Australian Museum Committee from 1884 and his interest in the emerging discipline of anthropology which occupied him most (Hale 1956). As a result he was responsible for building what is often acknowledged as the best ethnographic collection in Australia. He became Honorary Director of the Museum in 1889.

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- 1 A hint to colonial scientists. *The South Australian Advertiser* March 12 1885, p. 6. <https://trove.nla.gov.au/newspaper/article/35978136>
2. <https://collections.slsa.sa.gov.au/resource/B+22154>
3. Dr Haacke on science in South Australia. *The South Australian Advertiser* 19 Mar 1885, p. 6. <https://trove.nla.gov.au/newspaper/article/35978571>
4. New Guinea Expedition. Confirmatory news as to the massacre. Alleged decapitation of the victims. *South Australian Register* 16 Nov 1885 p. 5 <https://trove.nla.gov.au/newspaper/article/44534674>
5. *South Australian Weekly Chronicle* 1 May 1886, p. 15 <https://trove.nla.gov.au/newspaper/>

article/93769573

6. *The South Australian Advertiser* 5 Jun 1886. p. 5
<https://trove.nla.gov.au/newspaper/article/37164718/2297812?searchTerm=haacke>

7. *The Express and Telegraph* (Adelaide), 11 June 1888, p. 2. <https://trove.nla.gov.au/newspaper/article/207768239>

Announcement

New *Flora of Tasmania Online* website

With National Science Week about to commence across Australia, the Tasmanian Museum and Art Gallery (TMAG) is proud to launch the new *Flora of Tasmania Online* (FTO) website.

The Flora is an ongoing project by TMAG's Tasmanian Herbarium, aimed at providing a modern account of Tasmania's vascular plants. The Tasmanian Herbarium contains the world's largest collection of Tasmanian plant specimens, from the early European voyages of exploration in the late 18th century, to collections made today. The Herbarium's collection spans 250 years of research into Tasmania's remarkable flora.

The botanical information on the new site is largely the original work of the Herbarium team, with some content contributed by authors from other institutions.

Having the *Flora of Tasmania* available online in this new format will allow the Herbarium to update content as new research becomes available, providing up-to-date taxonomic information on Tasmanian plants.

The aim of the project is to eventually describe all of the approximately 3000 Tasmanian vascular plants. The current focus of the FTO is on the Angiosperms (Flowering Plants—140 families), especially the Dicotyledons (100 families). Priority has been given to families that have seen significant taxonomic change since the publication of Winifred Curtis' *Student's Flora of Tasmania*.

Noteworthy changes to this edition of the Flora include:

- New front matter and branding
- Improved navigation
- Distribution maps based on specimen data in the Herbarium
- New family treatments:
 - Burmanniaceae
 - Proteaceae
 - Myrtaceae
 - Polygalaceae
 - Celastraceae

Thymelaeaceae
Nyctaginaceae
Ericaceae
Phrymaceae
Lentibulariaceae
Pittosporaceae

- Major updates to:
 - Violaceae
 - Droseraceae
 - Menyanthaceae
 - Minor taxonomic updates to:
 - Amaranthaceae
 - Nothofagaceae
 - Updated references and styling to every other treatment
 - The last 10 editions of the *Census of the Vascular Plants of Tasmania*
- In the near future you can expect to see:
- New family treatments:
 - Boraginaceae
 - Picrodendraceae
 - Major taxonomic updates:
 - Ericaceae
 - Thymelaeaceae
 - A 2019 edition of the *Census of the Vascular Plants of Tasmania*

The Tasmanian Herbarium will continue to update the site and add new content as it becomes available.

There are plans to add a news blog to the website. In the meanwhile make sure to check regularly for updates.

For more information and enquiries, please contact the Herbarium at (03) 6165 5143 or FloraTasmania@tmag.tas.gov.au

Visit the new *Flora of Tasmania Online* at: <https://flora.tmag.tas.gov.au/>

Yours sincerely

Dr Gintaras Kantvilas
Head of Herbarium, on behalf of
Janet Carding
Director of the Tasmanian Museum and Art Gallery

ABRS report

The ABRS has been very busy preparing for the release of the 2020-21 round of the National Taxonomy Research Grant Program and for the next Bush Blitz expedition. Progress is ongoing with the Flora of Australia and the Bryophytes of Australia eFloras.

Flora of Australia

ABRS is working with a number of contributors to add or update taxon profiles on the *Flora of Australia* (FoA) platform (Web ref. 1). Since June, the family treatments Alismataceae, Cornaceae and Sarraceniaceae have been published or updated online. Draft treatments are being prepared on the platform for Cyperaceae, Ericaceae, *Hibiscus*, Rhamnaceae and other groups. We are also looking forward to the outcomes of the Flora Writers contracts mentioned in the last newsletter report.

In September, Phillip Kodela visited NSW for discussions with botanists about their systematic research projects, latest findings, ABRS grants and flora treatments. It was a good opportunity to catch-up and assess progress and potential developments with several families for the FoA, as well as training contributors on using the electronic platform. This follows on from a visit by Peri Bolton to NSW in August, for discussions on Bryophytes of Australia. Peri also visited Adelaide Herbarium (AD) where she provided technical support to contributors using the platform. Many thanks to everyone at AD and NSW for being welcoming and helping ensure our visits were very productive.

Please contact the ABRS (address below) with any feedback about the FoA content and

platform functionality, or if you would like to contribute new taxon profiles or update existing descriptions.

Bush Blitz

The next expedition will be held in the Little Desert National Park, Victoria, from 21 Oct to 1 Nov 2019, and will include Bush Blitz TeachLive, involving science teachers from across Australia as well as through the Bush Blitz Adventure Portal, where schools can follow the expedition online including a live chat session with experts in the field. Expressions of interest for Bush Blitz research contracts close on 11 October. Refer to the Bush Blitz website for more information on how to apply (Web ref. 2).

Grants

The ABRS will likely open the 2020–21 National Taxonomy Research Grant Program (NTRGP) round to applications in late October 2019. As part of a broader Australian Government policy the ABRS has transitioned administration of this grants program to the Department of Social Services' Community Grants Hub. More information on the NTRGP will shortly be available at the ABRS website (Web ref. 3) and the Community Grants Hub website (Web ref 4).

Web references

- 1: www.ausflora.org.au
- 2: <http://bushblitz.org.au/>
- 3: www.environment.gov.au/science/abrs/grants/
- 4: www.communitygrants.gov.au/

ABRS
October 2019
abrs@environment.gov.au

News

Dual birthdays for Northern Territory Herbarium

The Northern Territory's first herbarium (NT) was established in Alice Springs in 1954 within the Commonwealth Government's Animal Industry Branch to help the pastoral industry identify poisonous plants. George Chippendale was appointed to oversee the herbarium which he did until 1966 when John Maconochie took over the role. In 1967 the herbarium relocated to the Arid

Zone Research Institute, south of Alice Springs.

A second herbarium (DNA) to deal with the tropical elements of the Northern Territory flora was established in Darwin in 1966 within Berrimah Farm (Calley 1997) in Berrimah, a suburb of Darwin. Clyde Dunlop was in charge of this herbarium from 1972 and he oversaw its move to Palmerston in 1988. The original inadequate office space with insect and humidity control issues was finally replaced by a new

purpose built herbarium opened at the same site in 2002 (Short 2002).

In 1989 much of the Alice Springs collection had been moved to Darwin, with the retention of a working set in Alice Springs. However with the coming of Dave Albrecht and Peter Latz in 1993 and the building of a new herbarium on the edge of the Desert Park in 1998, the Alice Springs herbarium collection blossomed once more. Now the Alice Springs herbarium is the responsibility of Peter Jobson while that in Darwin is overseen by Ian Cowie. Peter noted on ASBS FaceBook that the Northern Territory Herbarium as an entity was 65 years old on 27th September this year while the newest Alice Springs herbarium, situated within the Desert Park, was 21 (Web ref.).

Happy Birthday Northern Territory Herbarium in its two guises!

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- Short, P.S. (2002). The official opening of the Northern Territory Herbarium. ASBS Newsletter 111: 6–8.
- Web ref. https://www.facebook.com/search/top?q=NT%20herbarium%20birthday&epa=SEARCH_BOX

NT Flora online

FloraNT is the primary online resource for information on the Northern Territory's flora. Images and distributions maps, species checklists, flora descriptions, conservation and weed status, ecological attributes, and ethno-botanical information are all available. The Northern Territory has a distinctive flora of more than 4,300 species of native plants, including some 702 endemic species concentrated particularly on the Western Arnhem Land Plateau. While the Northern Territory flora is primarily Australian in origin and occurrence, it naturally includes many species also found in nearby New Guinea, Timor-Leste and eastern Indonesia.

FloraNT also provides access to the Northern Territory Herbarium specimen data, which includes over 270,000 vascular plant specimens primarily from across northern Australia, but also Timor and Wetar.

Web ref. <http://eflora.nt.gov.au/home>

Stephen van Leeuwen leaving WA's Environment department

Steve van Leeuwen has resigned from his position as Assistant Director, Science within Biodiversity and Conservation Science at the Western Australian Department of Biodiversity, Conservation and Attractions. Steve has served his Department, the environment generally and Indigenous Australian affairs in many capacities (Web ref. 1).

That many people are extremely sad to see such a talented scientist depart can be seen by the accumulation of messages to Steve on his departure (Web ref. 2).

Web references

1. <http://www.nespthreatenedspecies.edu.au/people/dr-stephen-van-leeuwen>
2. <https://kevinthiele1.wixsite.com/svl-appreciation/card>

Katherine Nargar's new role in Orchid world

Katharina Nargar (Australian Tropical Herbarium) was nominated as Chair for the IUCN Molecular Identification of Orchids Subgroup at the last meeting of the IUCN Orchid Specialist Group at the 7th International Orchid Congress in Kew in May. She has now taken on the role. The group draws on the expertise of its members to support global orchid conservation efforts. They plan to pursue activities related to three core areas:

1. the compilation of current molecular data for identification to genus as an online resource;
2. the development of standardized molecular markers for target enrichment high-throughput sequencing with resolution for all genera; and aligning our activities with ongoing projects such as PAFTOL (RBG Kew) and Plant.ID (University of Oslo);
3. working with stakeholders in policy, management and public to provide expertise and, whenever possible, practical help on molecular identification and authentication of orchid material for monitoring trade and forensics.

Funding opportunity

National Geographic is committed to a better understanding of our planet and an improved ability to conserve our world's biodiversity. With the goals to 1) find and describe new species, and 2) better understand the patterns of distribution and abundance of poorly known groups of organisms, this request for proposals will support inventories, surveys, and research expeditions in

regions of the world where species discoveries are more likely to occur and where little or no information is available. We encourage proposals for work in any biome.

Successful applications must provide: 1) justification as to why the specific area or taxonomic group needs to be explored, 2) clear methodology for how species will be determined and a plan for taxonomic validation, and 3) a plan for depositing specimens and/or materials collected in an appropriate, permanent home. Preference will be given to proposals from applicants residing in the country of fieldwork, and all proposals must include at least one team member from the country where the fieldwork takes place. Projects that include the active involvement of early career conservationists are encouraged. [See website for further details].

Web ref. <https://www.nationalgeographic.org/funding-opportunities/grants/what-we-fund/biodiversity-exploration-and-discovery/>

New Zealand's CHR has the world's largest collection of subantarctic plants

With the building of the new Ernest Rutherford building at the University of Canterbury in Christchurch there was no longer room for the subantarctic collection of plants housed in their herbarium. Since these collections were not being used for teaching some 9000 specimens have now been transferred to the Allan Herbarium in Lincoln, and the herbarium has now become the world's largest holder of subantarctic plants (Web ref. 1). The collection, some of it dating back to the 1800s, was featured in a live streaming event during Conservation Week 2019 (Web ref. 2).

Web references

- 1: <https://www.landcareresearch.co.nz/about/news/media-releases/allan-herbarium-now-the-world-leader-in-subantarctic-flora>
- 2: https://www.landcareresearch.co.nz/about/news/events/conservation-week-2019-livestreams/subantarctic-collection?fbclid=IwAR3svnrZsdi52ss4AWi5ltAl3QmP6rnutdzTTFfoeyGU_VqT6lbyd-ITig

When there's one tree left, there's still time ...

Pennantia baylisiana (Anacardiaceae), known by only one female tree from Great Island in the Three Kings Islands group, NW of the tip of New Zealand, was collected in 1945 by the late Professor Geoff Baylis. It was named *Plectomirtha baylisiana* in his honour by W.R.B. Oliver in 1948. In 1977 Baylis transferred the species to *Pennantia*. Cuttings he made from the tree were successfully grown at DSIR and

forty years later, a tree was seen with fruit from a cluster of flowers. No viable seeds were produced but geneticist and mycologist Ross Beever, with use of plant hormones, was later able to remedy this. Since then many saplings of the species have been produced. Two hundred of these have been now planted on Iwi land in the North Island. You can see more of this successful return from the brink of extinction online (Web refs).

Web references

- 1: <https://www.landcareresearch.co.nz/about/news/media-releases/kaikomako-manawa-tawhi-pennantia-baylisiana-returns-to-iwi> (with video)
- 2: https://www.nzherald.co.nz/the-country/news/article.cfm?c_id=16&objectid=12261254
- 3: www.rnzih.org.nz/pages/pennantia.htm

Making the PNG News

A review of Barry Conn and Kipiro Damas's *Trees of Papua New Guinea* appeared in the national PNG paper in August (Web ref. 1). Hopefully the message from the books will reinforce that of the PNG Forest Institute which on the international day of forests in March warned that PNG was at risk of losing all its forests (Web ref. 2).

Web references

- 1: <https://www.thenational.com.pg/scientists-publish-valuable-forest-inventory/>
- 2: <https://postcourier.com.pg/png-risks-losing-forests-goldman/>

Forestry herbarium transferred to University of Melbourne Herbarium

In August the Victorian School of Forestry (VSF) Herbarium was transferred from the University of Melbourne's Creswick campus to the University of Melbourne Herbarium (MELU) in Parkville. The herbarium contains approximately 5500 specimens collected between 1877 and 1992 by staff and students and provides a rich record of the research and teaching conducted in the VSF, now part of the University of Melbourne's School of Ecosystem and Forest Sciences (SEFS). Significant specimens in the collection include those of former VSF staff; E.J. Semmens, the Principal of the School from 1927 to 1951 (1500 specimens) and J.H. Willis, a student at the School from 1927 to 1930 and later botanist, Assistant Government Botanist, and Acting Director of the National Herbarium of Victoria (70 specimens). Other collectors represented include von Mueller and H.B. Williamson (Web ref. 1).

The c. 7,000 specimens of the Burnley Horticultural College Collection, originally used for teaching and research at the Burnley campus, were donated to MELU in 2007 (Web ref. 2). With the

addition of the VSF collection all of the University of Melbourne herbaria are now incorporated in MELU. The specimens will be curated and digitised by staff and student volunteers working in The University of Melbourne Herbarium and made available through their online herbarium (Web ref. 3).

Web references

- 1: <https://museumsandcollections.unimelb.edu.au/news/items/vsf-herbarium-transferred-to-university-of-melbourne-herbarium>
- 2: <https://online.herbarium.unimelb.edu.au/collection/ex-burnley-horticultural-college-herbarium>
- 3: <https://online.herbarium.unimelb.edu.au/>

UN Climate Change Report

In April 2016 the Intergovernmental Panel on Climate Change (IPCC), the United Nations body for assessing the science related to climate change, resolved to prepare a special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems. The resulting report, available on-line, was published in August this year (Web ref. 1).

The report was commented on by Mark Howden, Director of the Climate Institute, ANU, for *The Conversation* (Web ref. 2) who indicated that the report provided

...many examples of on-ground and policy options that could improve the management of agriculture and forests, to enhance production, reduce greenhouse gas emissions, and make these areas more robust to climate change.

But,

Given the mounting impacts of climate change on food security and land condition, there is no time to lose.

Web references

- 1: <https://www.ipcc.ch/report/srcc/>
- 2: <http://theconversation.com/un-climate-change-report-land-clearing-and-farming-contribute-a-third-of-the-worlds-greenhouse-gases-121551>

A second revised version of the International Code for Phytolith Nomenclature

Phytoliths, or silica deposits in plants, are increasingly being used “for answering archaeological, palaeoenvironmental, evolutionary, taxonomic and climatological questions, often within the framework of interdisciplinary research.” The need for a standard nomenclature was recognised in 2000 and the first Code of the International Phytolith Society was published in 2005. Widely adopted and accepted, the need for

revision was recognised again in 2014, the result being a new ICPN (ICPT 2019). Look on-line for further background (Web ref.).

References

- International Committee for Phytolith Taxonomy (ICPT). (2019). International Code for Phytolith Nomenclature (ICPN) 2.0. *Annals of Botany*. <https://doi.org/10.1093/aob/mcz064>
Web ref. <https://www.botany.one/2019/07/a-new-code-to-decipher-phytoliths/>

Journal devotes whole issue to “plant blindness”

“Plant blindness”, referenced previously in these pages (Web ref. 1), is a term developed for the human propensity to overlook plant species. A single issue of of *Plants, People, Planet* is devoted to the subject (Web ref. 2).

This special issue ... brings together a wide range of perspectives on the topic of “plant blindness”—the widest to date in one issue—with contributions from scholars working across a diverse range of disciplines, from the humanities and social sciences to plant science, conservation, and ecology. We also take this opportunity to showcase the work of visual artists working at the interface of art and plant science, and educators who use plants as a key subject in their education practice. The geographical reach of the contributions is also extensive with contributions from around the globe and the Twittersphere. [Website introduction to issue]

Amongst others, contributions in this issue include one paper on the only known underground flowering plant, the Australian orchid genus, *Rhizanthella*, a letter from a group who make the point that the term “Plant blindness” is not appropriate and should be changed, the use of more familiar food and agricultural plants in education to promote an awareness of plants in the curriculum, and even an analysis of plants in modern board games. All articles are freely available and accessible on-line.

Brett Summerell recently used the concept in the *Sydney Morning Herald* to stress the need for greater awareness of the role of plants in our quest to combat climate change (Web ref. 3).

Web references

1. www.asbs.org.au/newsletter/pdf/18-sep-176.pdf#page=8
2. <https://nph.onlinelibrary.wiley.com/toc/25722611/2019/1/3>
3. <https://www.smh.com.au/national/how-to-save-the-planet-overcome-plant-blindness-20191003-p52xd0.html>

Coming conferences

2019 ASBS-NZPCN Conference – September update

By Rewi Elliot and Heidi Meudt
2019 Conference Co-organisers
plants2019nz@gmail.com

Conference news

Are you getting excited about this year's ASBS-NZPCN Joint Conference in Wellington later this year? It's certainly going to be a big one, with conference numbers now up to 180 (and counting!) representing both the New Zealand Plant Conservation Network (NZPCN) and the Australasian Systematic Botany Society (ASBS). Here are some updates from the past month of conference planning:

Presentations. We have received about 80 abstracts to present talks or posters at the conference. The scientific committee is now assessing all the abstracts and hopes to get back to everyone who submitted abstracts very soon about their acceptance. Useful hints and tips for preparing your talk or poster can be found on our website: Guidelines for Presenters (Web ref. 1).

Conference extras including workshops (Web ref. 2), field trips (Web ref. 3) and dinner (Web ref. 4) are all going ahead as they have reached their minimum numbers. You can still register (Web ref. 5) for conference extras.

Other events. There are quite a few happening (Web ref. 6) just before, during and after the conference, some science/botany related, some not. Check them out! Make sure you consider these events when planning your travel dates.

These includes now four *public events* associated

with the conference that we have helped co-plan for that week. See the links for details and to register/purchase tickets.

1. Sunday 24 November, 9 am – 5 pm: *Wikipedia workshop* (Web ref. 7) on threatened plants. Free, but you need to register.
2. Monday 25 November, 6:30 pm: Friends of Te Papa Public lecture (Web ref. 8): *Solander, Sparrman, and the Anthropocene - Saving "the Environment" on a Planet made Unstable by Humans*. Speaker: Prof Sverker Sörlin. Registration and payment required; conference attendees get discounted tickets.
3. Thursday 28 November, 6:30 pm: Panel discussion on *The politics of collecting plants, from Banks and Solander to today* (Web ref. 9). Registration and payment required; conference attendees get discounted tickets.
4. Saturday–Sunday 30 November 1 December: *Botany for Botanical Illustrators* workshop (Web ref. 10). Registration and payment required; spaces are limited.

Silent auction (Web ref. 11). This will be run during the first two days of the conference. It will certainly be interesting, potentially a lot of fun, and will hopefully generate a good amount of \$\$ for our research funds. We still need donations too! Contact Matt Ward if you'd like to donate something. Email mattward@gmail.com

Conference goers (and others) going to New Zealand? Read this before you go

From 1 October 2019, visitors who are eligible to travel to New Zealand without a visa will be required to hold a New Zealand Electronic Travel Authority (NZETA).

Australian citizens travelling on an Australian passport are exempt, but Australian permanent residents will need to apply for an NZETA.

Travellers will need to receive approval from NZETA at least 72 hours prior to check-in for a flight to New Zealand or connecting through New Zealand.

Visitors may also be required to pay an International Visitor Conservation and Tourism Levy (IVL). Australian citizens travelling on an Australian passport are exempt from this.

For more information, visit the New Zealand Immigration site at <https://www.immigration.govt.nz/new-zealand-visas/apply-for-a-visa/about-visa/nzeta>

Keynote speakers. Don't forget our three fantastic speakers (Web ref. 12):

- Hon Eugenie Sage, Minister for Conservation, Minister for Land Information New Zealand and Associate Minister for the Environment
- Melanie Mark-Shadbolt, Kaihautū Chief Māori Advisor to the Ministry for the Environment, the Director Māori of NZ's Biological Heritage National Science Challenge and CEO of Te Tira Whakamātaki
- Kevin Thiele, founding Director of Taxonomy Australia, an organisation established to advocate and implement in Australia the recommendations of Discovering biodiversity: A decadal plan for taxonomy and biosystematics in Australia and New Zealand 2018–2027 (Web ref. 13).

You haven't registered yet?

Feeling a fear of missing out? Don't worry, it's not too late to register (Web ref. 5). Standard registration fees now apply:

- NZPCN or ASBS members: \$420
- Non-members: \$525
- Students, unwaged or retired: \$260
- Single day: \$260

New Zealand Department of Conservation (DOC) staff can register using the members' rate, as DOC is a corporate member of NZPCN

Book your travel and accommodation now

Wellington is a very popular destination for tourists and conferences alike, particularly at the time of year the conference will be held. Hotels are notorious for filling up fast, particularly in the CBD around Te Papa! If you are coming to the conference, we suggest you book your travel and accommodation now, if you haven't already done so. We have some suggestions on our website that may be useful to you.

Sponsorship

A massive thank you to our sponsors:

- Wildland Consultants Ltd.
- Otari-Wilton's Bush Trust
- Manaaki Whenua – Landcare Research
- Biosecurity New Zealand – Ministry for Primary Industries
- Queenstown Natural Perfumiers
- Coastlands Plant Nursery
- Museum of New Zealand Te Papa Tongarewa
- Te Papa Press

Sponsorship opportunities are still available. Please see our Sponsorship page (Web ref. 14) or contact the organisers for more details.

Student support is available

While ASBS and NZPCN have offered some financial support to their student-members to attend the conference, the NZPCN offer is now closed. ASBS student-members who are presenting at this year's meeting can get details from the ASBS website (Web ref. 15), download the application form, and submit it to the Secretary at secretary.asbs@gmail.com at least four weeks prior to the conference.

How to contact us

If you have any questions or think we can be of assistance, please don't hesitate to contact us on plants2019nz@gmail.com

Rewi Elliot and Heidi Meudt

On behalf of

The 2019 Conference Organising Committee
<https://systematics.ourplants.org/organising-committee/>

Web references

- 1: <https://systematics.ourplants.org/registration/guidelines-for-presenters/>
- 2: <https://systematics.ourplants.org/programme/workshops/>
- 3: <https://systematics.ourplants.org/programme/field-trips/>
- 4: <https://systematics.ourplants.org/programme/program-overview/>
- 5: <https://systematics.ourplants.org/registration/>
- 6: <https://systematics.ourplants.org/programme/other-events/>
- 7: <https://www.tepapa.govt.nz/visit/whats-on/events/wikipedia-edit-thon-endangered-plant-species>
- 8: <https://www.friendsoftepapa.org.nz/event/solander-sparrman-and-the-anthropocene/>
- 9: <https://www.tepapa.govt.nz/visit/whats-on/events/panel-talk-politics-collecting-banks-and-solander-today>
- 10: <https://systematics.ourplants.org/programme/botany-for-botanical-artists/>
- 11: <https://systematics.ourplants.org/programme/silent-auction/auction-items/>
- 12: <https://systematics.ourplants.org/programme/keynotes/>
- 13: <https://www.science.org.au/support/analysis/decadal-plans-science/discovering-biodiversity-decadal-plan-taxonomy>
- 14: <https://systematics.ourplants.org/supporters/>
- 15: <http://www.asbs.org.au/asbs/student.html>

Deaths

Paul Gioia (1959–2019)

Alex Chapman, Perth

For those of you who knew Paul Gioia, our friend and colleague passed away on the morning of Saturday 17th August, aged 60¹.

Paul suffered from lymphoma for over 20 years and he and his medical team were generally able to manage it quite successfully until last year. A range of treatments over the past 10 months, culminating in a bone marrow transplant in April, had Paul responding well until very recently.

Paul worked in the Science Division of CALM, DEC, DBCA for some 35 years and made a very significant contribution to WA's biodiversity knowledge and data management, exemplified by the State's biodiversity Census system (1990) and NatureMap (c. 2000).

Together with other biodiversity informatics staff, his work has enabled and underpinned the management and dissemination of accurate, authoritative and timely information on the State's flora, fauna and fungi. He was recognised nationally for his innovative systems development through his work with TERN and the more recent development of Biosys – a flexible



biodiversity data repository being adopted by conservation agencies across Australia.

Many would also remember Paul for his great passion for music, blues piano especially, for which he had an ecstatic gift (Web refs 2–4). He formed or played in a number of bands that performed across Australia, and he scored and recorded a number of albums, to wide acclaim.

¹ Based on Alex's tribute on Paul's passing on the ASBS and WA Herbarium Facebook pages (Web ref. 1).

All who met him will remember an engaging, quick thinker, who had a great capacity for compassion and communication, informed by a deep humanity. His community work, whether providing comfort to the refugees at Northam



detentioncentre, or campaigning for the return of real music to Radio National, were equally sincere and passionate.

Our thoughts are with his loving wife Caryl and his two boys Andrew and David, whom Paul saw grow into fine musicians and then embark on their own careers with the same passion

and dedication as their parents.

Paul's funeral service was held on Monday 26th August at 11 am at the Pinnaroo Valley Memorial Park. The ceremony was very touching, with musician-friends playing some of Paul's compositions, a glimpse into Paul's scientific contributions delivered by Dr Margaret Byrne, and heartfelt tributes from his church friends and family.

Web references

1. <https://www.facebook.com/WesternAustralianHerbarium/posts/for-those-of-you-who-knew-paul-gioia-our-friend-and-colleague-passed-away-on-the/2446255132085010/>
2. www.paulgioia.com/media.html
3. www.paulgioia.com/videos.html
4. <https://thewest.com.au/entertainment/fringe-festival/oceans-of-musical-talent-ng-b881092328z>

David G. Frodin (1940–2019)

David Frodin was lecturer in botany at the University of Papua New Guinea, Port Moresby from 1971 until 1987 and was later employed at the Royal Botanic Gardens, Kew, from 1993 until 2000. He remained associated with Kew until his death in London on the 12th of August. David was known for many things but primarily his several editions of *Guide to Standard Floras of the World*, his work on Araliaceae, particularly *Schefflera*, and his documentation of the history of Papuan botanical collections (Frodin 1989, 1990). While in PNG he contributed to the *ASBS Newsletter* about botanical happenings there, including his and Greg Leach's report of the herbarium in UPNG being burnt (Frodin & Leach 1980). We hope to bring you a full account of David's botanical life in a future newsletter.

References

Frodin, D.G. (1990). Explorers, institutions and outside influences: botany north of Thursday.

In P. Short (ed.) *History of systematic botany in Australasia. Proceedings of an ASBS symposium held at the University of Melbourne, 25–27 May 1988*. (ASBS Society Inc.: Canberra). Pp. 193–215.

Frodin, D.G. (1990). Botanical progress in Papuaia. In P. Baas, K. Kalkman & R. Geesink (eds) *The Plant diversity of Malesia. Proceedings of the Flora Malesiana Symposium commemorating Professor Dr. C. G. G. J. van Steenis Leiden, August 1989*. (Kluwer Academic Publishers: the Netherlands), pp. 235–247.

Frodin, D.G.. (1984). *Guide to standard floras of the world: an annotated, geographically arranged systematic bibliography of the principal floras, enumerations, checklists, and chorological atlases of different areas. 1st edition*. (Cambridge University Press). 2nd edn 14 Jun 2001, 2nd edn revised June 2011.

Frodin, D.G. & G.J. Leach (1980). University of Papua New Guinea Herbarium needs assistance. *ASBS Newsletter* 24: 5–7. <http://www.asbs.org.au/asbs/newsletter/pdf/80-sept-024.pdf#page=7>

Jan-Frits (JeF) Veldkamp (1941–2017)

A full obituary for JeF Veldkamp by his Leiden colleagues can be found at the reference below.

Reference

Baas, P. & Hovenkamp, P.H. (2018). In memoriam

Jan-Frits Veldkamp (31 March 1941 -12 November 2017). *Blumea* 63: 1–10. <https://doi.org/10.3767/blumea.2018.63.01.01>; accessible at <https://www.repositorio.naturalis.nl/document/655537>

Les Pedley (1930–2018)

The third issue of Volume 10 of *Austrobaileya* has been dedicated to Queensland botanist Les Pedley. At the beginning of the volume there is an appreciation of Les by Gordon Guymer and a complete list of his publications by Paul Forster. The third paper in the volume is Les's sixth paper in his series *Notes on Acacia*. The paper contains the descriptions of ten new species of *Acacia*, all of them endemic to Queensland.

References

Forster, P.I. (2019). Mostly about wattles: The publications of Les Pedley. *Austrobaileya* 10(3): 291–296

Pedley, L. (2019). Notes on *Acacia* Mill. (Leguminosae: Mimosoideae), chiefly from Queensland, 6. *Austrobaileya* 10(3): 297–320

Points of view

Herbaria and their future

The use of herbarium specimens for all sorts of research continues to grow apace. Listed below are some papers encountered recently and some that look to the future. Where the title makes the use self-evident no comment has been made.

Using diatoms from herbarium specimens to indicate water quality

Van Dam, H. & Mertens, A. (1993). Diatoms on herbarium macrophytes as indicators for water quality. *Hydrobiologia* 269/270: 437–445.

Downloadable from https://www.researchgate.net/publication/226587601_Diatoms_on_herbarium_macrophytes_as_indicators_for_water_quality

Herbaria and ethnobotany

Ethnobotanical information from herbarium labels is not always found in publications.

Souza, E.N.F. & Hawkins, J.A. (2017). Comparison of herbarium label data and published medicinal use: herbaria as an underutilized source of ethnobotanical information. *Economic Botany* 71: 1–12. <https://doi.org/10.1007/s12231-017-9367-1>

Digitization of herbaria enables novel research

The world's herbaria are transforming, and collectively they offer new avenues for synthetic research that can address pressing societal problems related to climate change, food security, and conservation. Champions of herbaria have long promoted the value of collections, and, with digitization and technological breakthroughs in imaging, molecular biology, and genetics, herbaria, like fine wine, continue to increase in value with time. [Quoted from concluding paragraph]

Soltis, P.S. (2017). Digitization of herbaria enables novel research. *American Journal of Botany* 104(9): 1281–1284. <https://doi.org/10.3732/ajb.1700281>

Changing uses of herbarium data with time

An analysis of publications using herbarium specimens or data since 1920 until the present indicates a blossoming of research topics.

Incidentally the senior author of this paper also maintains a weekly blog. Collected on this day, which features the story behind individual specimens in the Carnegie Museum's herbarium. (Web ref.)

Heberling, J.M., Prather, L.A. & Tonsor, S.J. (2019). The changing uses of herbarium data in an era of global change: an overview using automated content analysis. *BioScience*, 69(10): 812–822. <https://doi.org/10.1093/biosci/biz094> (not freely available). Free access at: <https://academic.oup.com/bioscience/advance-article/doi/10.1093/biosci/biz094/5556012?guestAccessKey=729c20b3-d784-40d3-a64c-db45ef26c5c7>

Web ref. <https://www.masonheberling.com/collected-on-this-day>

Integrative and translational uses of herbarium collections across time, space and species

In the last couple of months the journal *Frontiers in Plant Science* has brought together five articles under the research topic “Integrative and translational uses of herbarium collections across time, space and species”. A precis of these articles is included below. Two of them are fully available while the other three will eventually become so.

- Factors affecting targeted sequencing of 353 nuclear genes from herbarium specimens spanning the diversity of Angiosperms.

A discussion of the information obtained from using the targeted sequencing approach and the Angiosperms353 universal probe set to recover up to 351 nuclear genes from 435

herbarium specimens, the oldest 204 years. Since the quality of the results are impacted by factors such as specimen age, preservation method, climate and morphological traits, recommendations are made for the achievement of optimal results in the future.

<https://www.frontiersin.org/articles/10.3389/fpls.2019.01102/full>

- Museomics clarifies the classification of *Aloidendron* (Asphodelaceae), the iconic African tree aloes

Using a combination of herbarium specimens, including type specimens, one of them 130 year old, and living collections to produce a phylogeny for the tree aloes.

<https://www.frontiersin.org/articles/10.3389/fpls.2019.01227/abstract>

- Elucidation of hosts, native distribution, and habitat of the Coffee Berry Borer (*Hypothenemus hampei*) using herbaria and other museum collections

Using archival sources (mainly herbaria but also other museum collections), we surveyed 18,667 predominantly wild-collected herbarium specimens mostly from Africa, Madagascar and Asia, for coffee berry borer occurrence. A total of 72 incidences were confirmed for presence of the coffee berry borer, with identifications assisted by micro-CT for SEM ... Our herbarium survey confirms literature and anecdotal reports that the coffee berry borer is indigenous to tropical Africa, and that coffee species, and particularly robusta coffee, are important hosts. We identify the wetter type of Guineo-Congolian forest as either the preferred or exclusive native habitat of the coffee berry borer. [From the abstract]

<https://www.frontiersin.org/articles/10.3389/fpls.2019.01188/abstract>

- Unlocking the secrets of extreme seed longevity: the relevance of historic botanical collections to modern research

A 2000 year old date palm seed, *Phoenix dactylifera* L., was germinated in 2005 and this is the longest known example thus far for seed viability. This study compared the viability and ultrastructure of date palm seeds collected in 1873 from Baghdad and kept in the Economic Botany Collection (EBC) at the Royal Botanic Gardens, Kew with seeds collected in 2004 and stored in the Millennium Seed Bank (MSB). The seeds from the MSB remained viable and their ultrastructure was that of freshly harvested seeds while the much older seeds

were found to be non-viable and displayed significant ultrastructural changes. Such seed studies are important in establishing what happens to seeds in storage but are reliant on well-documented collections, such as those associated with herbaria or museums. [Abstract]

<https://www.frontiersin.org/articles/10.3389/fpls.2019.01181/abstract>

- A target capture-based method to estimate ploidy from herbarium specimens ...ploidy diversity within and between species may be ascertained from historical collections, allowing the determination of polyploidization events from samples collected up to two centuries ago. [from the Abstract]

<https://www.frontiersin.org/articles/10.3389/fpls.2019.00937/full>

Next generation collections

All of these uses for herbarium specimens reinforce that herbarium collecting does need to continue, but do we need to review how it is done? Schindel & Cook (2018) suggest the need for a decade-long investment in research collection infrastructure.

Schindel D.E. & Cook J.A. (2018). The next generation of natural history collections. *PLoS Biology* 16(7): e2006125. <https://doi.org/10.1371/journal.pbio.2006125>

Conference report

US Botany 2019 Conference at Starr Pass, Tucson, Arizona

Andrew Thornhill
State Herbarium of South Australia

The 2019 US Botany conference was held on July 27–31 at the Starr Pass Marriott Resort on the outskirts of Tucson, Arizona. The conference began on the Saturday and Sunday with a series of day trips to the deserts surrounding Tucson. There were also a number of varied workshops ranging from the use of digitized records, trait scoring, and the use of R to make figures. Other

workshops were focussed on teaching PhD students how to write resumes and collaborate and network. There is good support for students to attend the US Botany conference and at least a third of the attendees at each conference are students.

Monday to Wednesday was the main program of the conference, with over 2000 attendees and

Fig. Anticlockwise from top left: a, the view to the Sonoran desert from the patio of the Starr Pass Marriott Resort where 2019 US Botany conference was held. b, The hills surrounding the conference resort were all completely covered with saguaro cactus (*Carnegiea gigantea*). c, The four Australian ASBS attendees from left, Mike Crisp, Andrew Thornhill, Peter Jobson, and Bort Edwards. Ph. A. Thornhill



1000 presentations. There were many concurrent presentations and it is often a difficult decision on what to see during the day as there are many high quality and interesting talks that conflict. One thing I made sure of was to see the three Australian ASBSer's talks. Mike Crisp presented his eucalypt phylogenomic research, Peter Jobson gave a talk on the flora of Alice Springs and surrounds, and Bort Edwards presented the North American Asteraceae work that he has been doing at the Smithsonian Institute.

On the Tuesday night at the American Society of Plant Taxonomists Banquet the two major awards of the organisation were awarded. This year Lena Struwe of the Chrysler Herbarium at Rutgers University in New Jersey was presented the Peter Raven award for outstanding science communication and Lucinda McDade from Rancho Santa Ana Botanic Garden in California

was the Asa Gray Award recipient for her life time work in botany. The night was also a celebration of Vicki Funk from the Smithsonian Institute in Washington D.C. and the ASPT announced that a new graduate student research grant named in her honour would be awarded annually beginning in 2020.

This was my third US Botany conference and I will endeavour to go again next year in Anchorage, Alaska. Over the years I have made new friends and collaborations and I highly recommend to any ASBS botanist who can find the time and funds to attend a US Botany conference, not only to learn but to expand your network into the large northern American botanical community. You may also be surprised at how many people from around the world already know who you are and know of your work, as some of the Australian attendees have found out at past meetings.

Book reviews

Be edified: reach for WA's book on plant names

Review by: Brendan Lepschi, Australian National Herbarium, Canberra

Western Australian plant names and their meanings

By F.A.Sharr (third edition by Alex George), 2019

Four Gables Press, Kardinya, WA, 399 pp.

One of my enduring memories of Alex George is of the period in the late 1980s-early 1990s when Alex managed book sales for the local branch of the (then) Society for Growing Australian Plants (SGAP) in Canberra. SGAP book sales were a convenient outlet for me as a young person interested in plant taxonomy to purchase new volumes of the *Flora of Australia* as they became available. I can well recall one occasion, when after purchasing volume 18 of the *Flora*, Alex handed me a large, soft bound book (one of four similar volumes) saying "this is something else that might interest you". That book was the first volume (A-C) of the recently published *Australian Plant Name Index* (APNI). I remember looking at the content and thinking to myself "God, this is so *boring*, what the hell would I want this for?" and then handing the book back to Alex without further comment. Clearly, I came later to my (now considerable) interest in plant nomenclature than did Alex. The volume reviewed here is not that far

removed from APNI in content, being concerned entirely with scientific plant names, but, unlike APNI, it is the kind of work that serves both as a reference and something that you might pick up and read for pleasure.

As explained in the preface, this book updates and builds upon earlier editions authored by the late Francis Aubie (Ali) Sharr (1914–2002), former State Librarian of Western Australia from 1955 to 1976. As well as his professional interests in things bibliographic, Sharr had strong interests in photography and the Western Australian flora, the latter resulting in the publication of the first edition of this book in 1978. This latest (third) edition follows the same basic format as Sharr's original work but is updated (as may be expected) and expanded. Dealing with plant names on a daily basis, I am frequently intrigued as to the derivation of these names. As Alex mentions in the introduction to this work, botanists, especially workers in the 18th, 19th and early 20th centuries, did not (and sometimes still do not) explain derivations for their names. This work provides derivations for a staggering 6614 generic, specific and infraspecific names relevant to the Western Australian flora. And by "the Western Australian flora" I mean all vascular plant taxa known to

occur in the state of Western Australia, including introduced species, which makes it all the more remarkable as these taxa introduce further levels of complexity and difficulty in unravelling and pinning down accurate derivations. Works of this nature can also be problematic in terms of scope – where do you draw the line at what names to include? Accordingly, names treated in this book are restricted to those listed as ‘current’ on the Western Australian Herbarium’s *FloraBase* (Web ref.) with some exceptions, as explained in the introduction.

The bulk of the book is comprised of the Glossary, which is arranged hierarchically by rank (genus, species and then subspecies, variety and form) with names then listed alphabetically in each section. In keeping with Sharr’s original concepts, the linguistic derivation of each name is provided, followed by a comprehensive derivation and gender. For species and infraspecies, the genus or species with which the name is associated is also provided for context. Despite Sharr’s existing work, there is a considerable amount of new information in this third edition, representing a significant amount of effort on the part of the author, including research into the derivation of several historical names and biographical information for several individuals honoured with plant names. Apart from new names published since the second edition appeared in 1996 (significant, considering the enormous output of staff at PERTH over the past two decades), George provides orthographic corrections (which have been gratefully received by me and my colleagues as editors of the *Australian Plant Name Index*) and derivations for some 900 infraspecific names, which were omitted from previous editions. At the risk of sounding completely pinheaded, the editorial consistency across the entries in the Glossary is also very welcome. In large and complex works

like this book, consistency is vital to allow comparison and for readability, but all too often falls by the wayside as the project progresses.

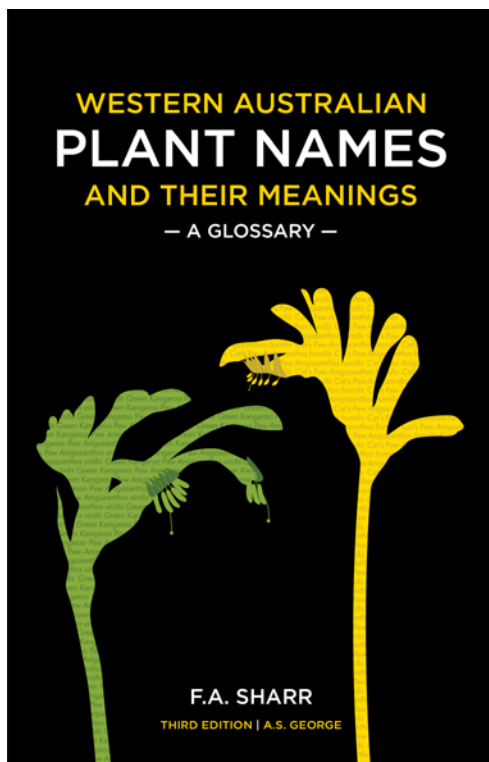
As well as a thoroughly comprehensive and readable Glossary, which is also very convenient, absolving the reader from having to chase down individual works to check derivations (and in many cases, being disappointed on discovering the author didn’t provide one), the book includes other information to provide additional context and explanation. The Introduction from the

second, enlarged edition from 1996 is repeated and includes an excellent summary on botanical names, including brief biographical sketches on a few botanists whose plant names appear with some regularity the glossary and a brief timeline of botanical collecting in Western Australia to 1850. A minor quibble, but it would perhaps be worth extending the collecting timeline to take in activity post-1850, which seems to be a rather arbitrary cut-off. A glossary of botanical terms used in the Glossary proper, explanation of abbreviations and two appendices, listing sources of names and further reading, complete this pleasing volume.

Maybe it’s because I’m a plant name nerd, but I

really like this book. I can happily pick it up and dip into it anytime, not unlike other volumes on my bookshelf such as the second and fourth *Herman* treasuries by cartoonist Jim Unger and *Things Bogans Like* by E. Chas McSween et al., albeit when I reach for *Western Australian Plant Names* I’m looking to be edified rather than amused, although the level of enjoyment is the same. Buy this book - you won’t regret it. And to paraphrase Temporary Australian Prime Minister Scott Morrison, how good would it be if there were books like this for each Australian State and Territory?

Web ref. <https://florabase.dpaw.wa.gov.au/>



A curate's egg

Review by David Mabberley, Sydney and Oxford

Food plants of the World: identification, culinary uses and nutritional value

By Ben-Erik van Wyk

CSIRO Publishing, 2019

520 pp. ISBN 978 1486311668

\$Aus 89.99

This book, the second edition of a book published in 2005, was first issued in South Africa, where its author works at the University of Johannesburg; the edition here is distributed exclusively in Australia and New Zealand. It describes itself as 'a comprehensive photographic guide to over 400 (some 350 in the first edition) food, beverage, spice and flavour plants' and indeed it is beautifully illustrated with over 1000 colour photographs, by the author and others, of over 400 species, complete with a checklist of more than 800 'commercialised' food plants.

There are brief introductory chapters covering 'centres of domestication' largely according to Vavilov, then commodity groups, each with lists of species – 'cereals', 'pulses', 'nuts and seeds', 'fruits', 'vegetables', 'culinary herbs', 'sugars, gums, gels and starches', 'beverage plants', and 'spices and flavours'.

In his Introduction, the author says,

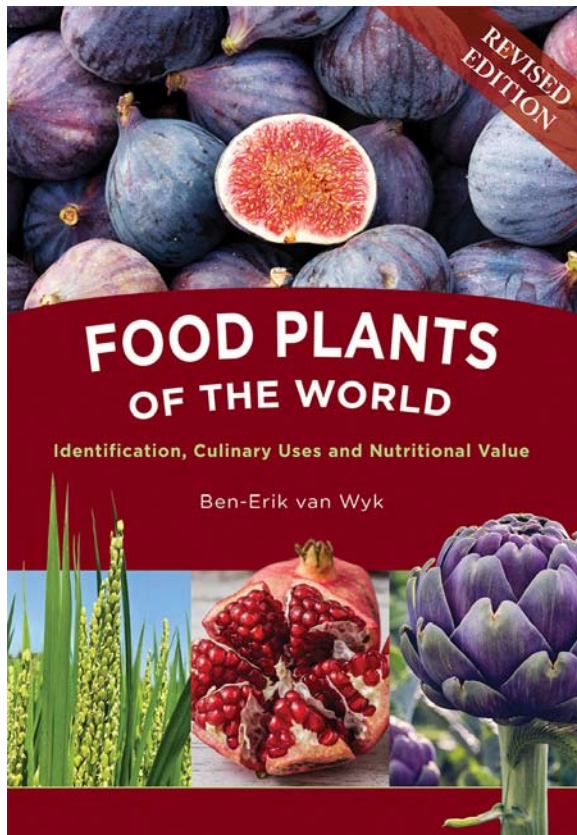
The book is intended to provide quick answers to a wide range of questions about food plants – how to identify them, how to use them in cooking and their nutritional value. For each plant, a short, scientific-

cally accurate summary is given of the characteristics of the plant, its origin and history, the parts that are used, brief notes on cultivation and harvesting and especially the culinary uses and nutritional value. The most commonly used vernacular names are given in various languages, including Chinese, French, German, Hindi, Indonesian, Italian, Japanese, Malay, Portuguese and Spanish. For the botanically minded reader, the correct scientific name, main synonyms, author citation and family name are provided. Where possible, the main culinary uses are mentioned, including famous recipes and famous dishes or drinks that have become widely known.

And it does that. The plants with descriptions in plain English are listed in alphabetical order of Latin names, but with no keys to identification. In not arranging the plants by family, identification of an unknown edible plant is difficult, though vernacular names can give a lead – and the superb photographs (though without scale objects) should help confirm a correct identification, but an indication

in the text of allied plants, either in the 'checklist' or others, would have helped. After the species accounts is a general chapter on 'nutrients, diet and health' and the book ends with a glossary, further reading, acknowledgments and index

Some plants will be unfamiliar to Australasians as there is inevitably a bias towards African ones, with one of the first in the book, *Acanthosicyos horridus* (nara), not in cultivation anywhere but



a food-plant in Namibia for over 8000 years. Contrariwise some plants familiar in Australasia, such as babaco, are relegated to the ‘checklist’, where it appears under *Carica*, when its correct name is *Vasconcellea* × *pentagona*. It is to be hoped that in any new edition or reprint other outdated names in the main text and ‘checklist’ will also be replaced. For example pearl millet is now *Cenchrus spicatus*, while *Plectranthus amboinicus* (Indian borage) and *P. esculentus* (Livingstone potato) are now in *Coleus* once more; jaboticaba is *Myrciaria cauliflora*, strawberry guava is *Psidium cattleianum*, rosemary is *Salvia rosmarinus*, black sapote is *Diospyros nigra*, Jerusalem cherry is *Alseodaphne officinarum*, Para cress is *Acmella oleracea*, curry-leaf is *Bergera koenigii* and wasabi is *Eutrema japonicum*. *Amaranthus hypochondriacus* has recently been included in *A. hybridus*, from which ‘*A. caudatus*’ (Inca wheat) has been derived.

There are several slips in spellings and authorities

of the Latin names, but these are minor quibbles. However, there are several errors of fact in that the apple is said to have originated in Asia Minor when it was in China, and there is confusion on the origin of edible bananas. The hybrid (and often apomictic) origins of limes and oranges, lemons, calamondin, grapefruit and other citrus fruits are not acknowledged. Also concerning is the use of infraspecific (‘subsp.’, ‘var.’) names for what are cultivars or cultivar groups, as in the beets, mustards and cabbages, besides cannabis.

Nonetheless, giving courses on ‘Economic Botany’, I welcome this beautiful guide insofar as it covers one group of plants covered by that title, namely the all-important edible ones. But we await a more broadly-based book set in an evolutionary and ecological context to help our appreciation of human interactions with the plant world, not only up to now but also, more importantly, in the future – which will be very different.

New books

The future of natural history museums

Edited by Eric Dorfman

Routledge; 2018

ISBN: 9781138692633; PB; 268 pp;

<https://www.routledge.com/The-Future-of-Natural-History-Museums/Dorfman/p/book/9781138692633>

Natural history museums are changing, both because of their own internal development and in response to changes in context. Historically, the aim of collecting from nature was to develop encyclopedic assemblages to satisfy human curiosity and build a basis for taxonomic information. Today, with global biodiversity in rapid decline, there are new reasons to build and maintain collections, while audiences are more diverse, numerous, and technically savvy. Institutions must learn to embrace new technology while retaining the authenticity of their stories and the value placed on their objects.

The Future of Natural History Museums begins to develop a cohesive discourse that balances the disparate issues that our institutions will face over the next decades. It disassembles the topic into various key

elements and, through commentary and synthesis, explores a cohesive picture of the trajectory of the natural history museum sector.

This book contributes to the study of collections, teaching and learning, ethics, and running non-profit businesses and will be of interest to museum and heritage professionals and academics and senior students in Biological Sciences and Museum Studies. [Publisher’s blurb]

You can access the titles of all of the contributed papers through the publisher’s website but on the Amazon site (Web ref. 1) it is possible to read the Introduction by the editor and this provides a very informative precis of the contents of each of the papers. Further information can be found in a blog about the book by the editor (Web ref. 2) and a review (Web ref. 3).

Web references

- 1: <https://www.amazon.com/Natural-History-Museums-Advances-Research/dp/1138692638>
- 2: <https://ericdorfman.com/2017/10/22/the-future-of-natural-history-museums/> (blog by the editor)
- 3: https://www.researchgate.net/publication/334522838_The_Future_of_Natural_History_Museums (Review)

**Kangaroo grassland to Geelong
Botanic Gardens and Eastern Park:
a chronological pictorial history**

by Ian Rogers

Melbourne: self-published 2018.

*ISBN: 9780646981581; Quarto, 485
pp., colour and black and white photo-
graphs, laminated boards.*

\$80AU plus postage

Order form at <http://friendsgbg.org.au/>

A history of the Geelong Botanic Gardens, the oldest Australian regional botanic garden. The author was the curator for twenty years.

**Working with Nature: saving and
using the World's wild places**

By Jeremy Purseglove

Profile Books, Bevin Way, London.

April 2019

ISBN 978-1788161596, HB; 288

pp; RRP: \$32.99AU; eISBN 978-

1782834960 RRP: \$17.35AU

<https://profilebooks.com/working-with-nature.html>

From cocoa farming in Ghana to the orchards of Kent and the desert badlands of Pakistan, taking a practical approach to sustaining the landscape can mean the difference between prosperity and ruin. *Working with Nature* is the story of a lifetime of work, often in extreme environments, to harvest nature and protect it - in effect, gardening on a global scale. It is also a memoir of encounters with larger-than-life characters such as William Bunting, the gun-toting saviour of Yorkshire's peatlands and the aristocratic gardener Vita Sackville-West, examining their idiosyncratic approaches to conservation.

Jeremy Purseglove explains clearly and convincingly why it's not a good idea to extract as many resources as possible, whether it's the demand for palm oil currently denuding the forests of Borneo, cottonfield irrigation draining the Aral Sea, or monocrops spreading across Britain. The pioneer of engineering projects to preserve nature and landscape, first in Britain and then around the world, he offers fresh insights and solutions at each step. [Publisher's blurb]

Preview pages, including the Table of Contents, first pages and the Index are available through Amazon while Booktopia has a slightly different set of pages available. First pages includes almost all of the Introduction and almost all of

the first chapter. The latter, entitled "The Orchid Gardens" includes earlier influences of living in the Director's House of the Singapore Botanic Gardens where his father was director from 1954–1957. These were enough to convince me that I wanted to read more, but you can see what others have to say at the web references below.

Web references

- 1: <https://geographical.co.uk/reviews/books/item/3222-working-with-nature-saving-and-using-the-world-s-wild-places>
- 2: <https://www.ecos.org.uk/ecos-403-book-review-working-with-nature/>
- 3: <https://pryorfrancis.wordpress.com/2019/05/13/back-to-nature-again/>

Tony Rinaudo – the Forest-Maker

Johannes Dieterich (Editor)

Rüffer & Rub Sachbuchverlag; May, 2018.

ISBN: 3906304361; 152 pp.

After more than 35 years working across Asia and Africa, World Vision's Natural Resources Management Specialist and agronomist, Tony Rinaudo, was last year awarded the prestigious "Right Livelihood Award" (Web refs 1-3). This is a Swedish award, sometimes referred to as the "Alternative Nobel Prize", given for the solving of global problems. The book detailing his technique for the greening of dryland at minimal cost and improving the livelihoods of millions of people was published just before the award.

The Australian agronomist Tony Rinaudo revolutionized reforestation in Africa with Farmer Managed Natural Regeneration (FMNR). His method is based on deploying tree stumps and roots that still grow even in degraded landscapes: thanks to the protection and care of the shoots, the original tree population can be regenerated without major financial costs. The method is now successfully applied in at least 24 African countries. Where the desert was still expanding 20 years ago, farmers reforest large areas with FMNR: in Niger alone seven million hectares of land were already restored in this way. Up to 700 million people will possibly be obliged to leave their homelands during the next three decades because of increasing desertification in the landscapes where they live. In the opinion of scientists, there is only one hope: to convince the local farmers of 'sustainable land management'. Tony Rinaudo believes that with FMNR he has found the

appropriate method for such management
[Publisher's blurb]

If you can't find the book then you can read about his techniques in the recommendations he made for Rwanda (Rinaudo 2014). His attitude to the use of native perennials and also to weeds has clearly been successful and he also promotes Australian *Acacia* species with edible seeds as a food source.

References

Rinaudo, T. (2014). *Rwanda Technical Notes: Trees healing a Nation*. FMNR, World Vision Australia. <http://fmnrhub.com.au/wp-content/uploads/2014/08/Rwanda-Technical-Notes.pdf>

Web ref. 1: <https://www.rightlivelivelihoodaward.org/2018-announcement/tony-rinaudo/>

Web ref. 2: <https://www.smh.com.au/environment/sustainability/blessed-tree-regeneration-pioneer-tony-rinaudo-gets-global-gong-20180924-p505mi.html>

Web ref. 3: <https://www.worldvision.org/about-us/media-center/world-visions-forest-maker-wins-prestigious-international-award>

Web ref. 4: <https://www.abc.net.au/radionational/programs/latenightlive/the-forest-maker/11450332> (audio download)

Plants go to war. A botanical history of World War II

By Judith Sumner

McFarland & Co. North Carolina; 2019.

ISBN: 978-1-4766-7612-8, PB, 366 pp., \$49.95US; ISBN: 978-1-4766-3540-8, ebook

<https://mcfarlandbooks.com/product/plants-go-to-war/>

As the first botanical history of World War II, *Plants Go to War* examines military history from the perspective of plant science. From victory gardens to drugs, timber, rubber, and fibers, plants supplied materials with key roles in victory. Vegetables provided the wartime diet both in North America and Europe, where vitamin-rich carrots, cabbages, and potatoes nourished millions. Chicle and cacao provided the chewing gum and chocolate bars in military rations. In England and Germany, herbs replaced pharmaceutical drugs; feverbark was in demand to treat malaria, and penicillin culture used a growth medium made from corn. Rubber was needed for gas masks and barrage balloons, while cotton and hemp provided clothing, canvas, and rope. Timber was used to manufacture

Mosquito bombers, and wood gasification and coal replaced petroleum in European vehicles. Lebensraum, the Nazi desire for agricultural land, drove Germans eastward; troops weaponized conifers with shell bursts that caused splintering. Ironically, the Nazis condemned non-native plants, but adopted useful Asian soybeans and Mediterranean herbs. Jungle warfare and camouflage required botanical knowledge, and survival manuals detailed edible plants on Pacific islands. Botanical gardens relocated valuable specimens to safe areas, and while remote locations provided opportunities for field botany, Trees surviving in Hiroshima and Nagasaki live as a symbol of rebirth after vast destruction.
[Publisher's blurb]

A generous preview of the book is available through Google books.

Food or war

By Julian Cribb

Cambridge University Press; August 2019 (Online); Oct. 3rd (print)

ISBN: 9781108712903, PB;

AUD\$18:95 (Pre-order price)

<https://doi.org/10.1017/9781108690126>

Ours is the Age of Food. Food is a central obsession in all cultures, nations, the media, and society. Our future supply of food is filled with risk, and history tells us that lack of food leads to war. But it also presents us with spectacular opportunities for fresh human creativity and technological prowess. Julian Cribb describes a new food system capable of meeting our global needs on this hot and overcrowded planet. This book is for anyone concerned about the health, safety, affordability, diversity, and sustainability of their food - and the peace of our planet. It is not just timely - its message is of the greatest urgency. Audiences include consumers, 'foodies', policy makers, researchers, cooks, chefs and farmers. Indeed, anyone who cares about their food, where it comes from and what it means for them, their children and grandchildren.
[Publisher's blurb]

An online version of this book is meant to have been available since August but apparently only through a login on the publisher's page. However preview pages of the book can be seen through Google Play or Booktopia. An interview with the author is available online (Web ref.).

Web ref. <https://www.abc.net.au/radionational/programs/latenightlive/food-fears/11523916>

A longing for wide and unknown things: the life of Alexander von Humboldt

By Maren Meinhardt

C Hurst & Co Publishers Ltd; 25 January 2018.

ISBN-13: 978-1849048903; HB; 320 pp.; 23.3 x 3.2 x 14.9 cm; 522 gm;

Price: \$AU45 – 59; RRP \$AU68.99

<https://www.hurstpublishers.com/book/longing-wide-unknown-things/>

Another biography of Alexander von Humboldt to accompany the acclaimed Andrea Wulf biography of 2015. From the reviews (Web ref. 1-3) this would appear to concentrate more on his formative years.

References

Wulf, A. (2015). *The invention of Nature: the adventures of Alexander von Humboldt, the lost hero of science*. (Knopf: New York).

Web ref. 1: <https://literaryreview.co.uk/he-never-sat-an-exam>

Web ref. 2: <https://www.the-tls.co.uk/articles/public/talking-alexander-von-humboldt-science-polymath/>

Web ref. 3: <https://www.scottishreviewofbooks.org/2018/08/humbolts-gift/>

Superbugs: the race to stop an epidemic.

By Matt McCarthy

Scribe; June 2019

ISBN (13): 9781925713244; PB; 304 pp; RRP: \$32.99AU; Kindle edn c. \$16.00

<https://scribepublications.com.au/books-authors/books/superbugs>

From the muddy trenches of the First World War, where Alexander Fleming searched for a cure for soldiers with infected wounds, to breakthroughs in antibiotics and antifungals today that could revolutionise how infections are treated, McCarthy takes the reader on a roller-coaster ride through the history — and future — of medicine. [Publisher's blurb p.p.]

An interview with the author can be heard on the Web (Web ref.) and preview pages are available through Amazon.

Web ref. <https://www.npr.org/2019/06/02/729120288/-superbugs-book-chronicles-rise-of-antibiotic-resistant-pathogens>

Welcome to Country: a travel guide to Indigenous Australia

By Marcia Langton

Hardie Grant; May 2018

ISBN 9781741175431; HB; 240 pp;

RRP \$39.99AU

Welcome to Country schools edition

By Marcia Langton

Hardie Grant Travel; Sep. 24th 2019

ISBN: 9781741176667; PB; 224 pp;

RRP \$29.99AU

https://www.hardiegrant.com/au/publishing/bookfinder/book/marcia-langton_-welcome-to-country-schools-edition-by-marcia-langton/9781741176667

Here are two books by Professor Marcia Langton. The first, published last year, is aimed at those who wish to learn more about Australia's first people and how and where they might intersect with them in each of the states.

Marcia Langton's *Welcome to Country* is a completely new and inclusive guidebook to Indigenous Australia and the Torres Strait Islands. In its pages, respected elder and author Professor Marcia Langton answers questions such as what does 'country' mean to Indigenous people. A detailed introduction covers such topics as Indigenous languages and customs, history, native title, art and dance, storytelling, and cultural awareness and etiquette for visitors. This is followed by a directory of Indigenous tourism experiences, organised into state and territory sections, covering galleries and festivals, communities that are open to visitors, tours and performances. [Publisher's blurb]

The second book, just released, is a schools edition and attempts to provide factual information about Indigenous culture where previously that which did exist was often incorrect.

'Australia is alive with the long history of the Aboriginal and Torres Strait Islander people, our cultures and our stories. My generation of Aboriginal people want young Australians to be taught more about our history and culture than we were. I have met very few Australians who learned anything in school about Aboriginal and Torres Strait Islander people. Many have told me that if they were taught anything at all, it was incorrect and often racist. In fact, many Australians think that the only 'real' Aboriginal people are those who live in the deserts. This idea is based on two centuries

of racist views that were wrong and should have no place in modern Australia.’ – Professor Marcia Langton

The chapters cover prehistory, post-colonial history, language, kinship, knowledge, art, performance, storytelling, Native Title, the Stolen Generations, making a rightful place for First Australians and looking to the future for Indigenous Australia. This book is for the new Australian generations and works towards rectifying the wrongs of this country’s past. [Publisher’s blurb]

While there are yet to be reviews of the book (released on September 24), the teacher’s notes which can be downloaded from the book’s website are an incredible resource just on their own, and they will also give some insight into what is included in the book.

Australians are not alone in misinterpreting the history of their indigenous people and attempts are likewise being made in America to address this same topic with the Smithsonian’s National Museum of the American Indian national education initiative launched in 2018 (Web ref. 5).

Web references

- 1: <https://www.abc.net.au/news/2018-06-19/marcia-langton-welcome-to-country-indigenous-travel-guide/9871546>
- 2: <https://www.smh.com.au/entertainment/the-noise-of-a-few-can-outroar-support-of-thousands-lunch-with-marcia-langton-20180706-h12cku.html>
- 3: <https://australia-explained.com.au/books/welcome-to-country/>
- 4: <https://www.booksandpublishing.com.au/articles/2018/04/03/104962/welcome-to-country-a-travel-guide-to-indigenous-australia/>
- 5: <https://www.smithsonianmag.com/smithsonian-institution/inside-new-effort-change-what-schools-teach-about-native-american-history-180973166/>

For the younger reader

Young Dark Emu. A truer History
By Bruce Pascoe

Magabala Books; June 2019
ISBN: 9781925360844; HB, 80 pp.;
240 X240 mm; \$24.99

www.magabala.com/young-dark-emu.html

A retelling of the author’s *Dark Emu* for younger readers.

Using the accounts of early European explorers, colonists and farmers, Bruce Pascoe compellingly argues for a reconsideration of the hunter-gatherer label for

pre-colonial Aboriginal Australians. He allows the reader to see Australia as it was before Europeans arrived – a land of cultivated farming areas, productive fisheries, permanent homes, and an understanding of the environment and its natural resources that supported thriving villages across the continent. *Young Dark Emu - A Truer History* asks young readers to consider a different version of Australia’s history pre-European colonisation. [Publisher’s blurb].

While you are on the Publisher’s website take a look at some of the other books listed for some different perspectives and backgrounds.

Web ref. <https://www.weekendnotes.com/young-dark-emu-book-review/>

Rockhopping

By Trace Balla

Allen & Unwin Australia; 2016
ISBN: 9781760112349; HB; 80 pp;
RRP: \$AU24.99

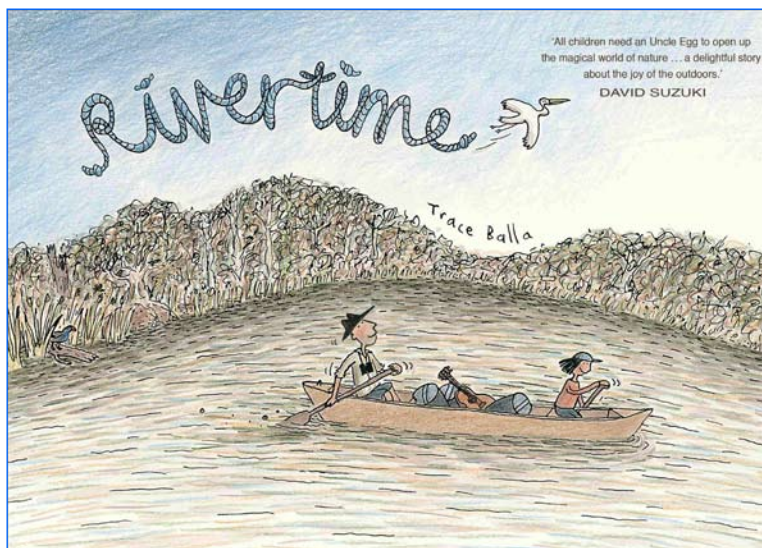
Rivertime

By Trace Balla

Allen & Unwin Australia; 2014
ISBN: 9781743316337; HB; 80 pp;
RRP: \$AU24.99

<https://www.allenandunwin.com/authors/b/trace-balla>

Both of these picture books are delightfully illustrated and both have deservedly earned their share of awards for literature for younger children. You can join Clancy and Uncle Egg, his bird-watching uncle, on a rambling, rockhopping adventure in Gariwerd (the Grampians) to find the source of the Glenelg River (Web refs 1, 2) or join them on a paddling trip on the Glenelg River. In both cases the reader is immersed in the natural world and also in the indigenous culture of the area and it is not only 8–12 year olds who will be fascinated by the stories and their cartoon illustrations. Better still, on the inside covers of both books, there are drawings of all of the animals, plants and fungi featured together with their common names and these are shown in their natural habitat in the pictures constituting the story. There are notes for teachers and downloadable activities associated with both books and these give further insight into what they contain as do the web references below. An incredible amount of work and research is captured in these deceptively simple books.



In many cases, our ecosystems and species were already under threat from other human-associated causes – like land clearing, over-harvesting, and invasive feral animals and weeds. **Climate change is adding to this litany of woes, in some cases providing what might be the last straw for species and systems already under grave stress.** [Publisher's blurb and highlighting].

Web references

- 1: <https://blog.boomerangbooks.com.au/tag/trace-balla> (Review of Rockhopping)
- 2: <http://readingtime.com.au/rockhopping/>
- 3: <https://abbotsfordconvent.com.au/blog/in-conversation-with-author-illustrator-trace-balla>

Downloadables

This is what climate change looks like
By Professor Lesley Hughes,
Dr Annika Dean, Professor Will Steffen
& Dr Martin Rice.

Climate Council of Australia; 2019;

ISBN: 978-0-6486793-0-1 (print);

ISBN: 978-0-6486793-1-8 (digital),

48 pp.

<https://www.climatecouncil.org.au/resources/ecosystems-report/>

A new report has been released by Australia's Climate Council, "an independent, crowd-funded organisation providing quality information on climate change to the Australian public."

The word "unprecedented" has been in regular use lately. As predictions about climate change increasingly become observations, we are witnessing firsthand the impacts of more frequent and severe weather events. These events are playing havoc with our health, our agricultural systems, our communities and our economy. But they are also having devastating impacts on our natural ecosystems and unique wildlife.

The Climate Council's new report highlights recent examples of these impacts.

This 48 page report consists primarily of graphic images showing what we are losing, or have lost, already. Some of the images are confronting and certainly bear out the adage that a picture is worth a thousand words. The report has prompted articles in the press and magazines (e.g. Web refs 1, 2). The Climate Council's report should be read in conjunction with the 2015 publications by the Academy of Science (Web ref. 3) and the Australian Government's CSIRO and the Bureau of Meteorology Technical Report (Web ref. 4).

Web references

- 1: <https://www.theguardian.com/australia-news/gallery/2019/sep/17/this-is-what-climate-change-looks-like-in-australia-in-pictures> OMIT??
- 2: <https://www.australiangeographic.com.au/topics/science-environment/2019/09/this-is-what-climate-change-looks-like-in-australia/>
- 3: <https://www.science.org.au/education/immunisation-climate-change-genetic-modification/science-climate-change>
- 4: https://www.climatechangeinaustralia.gov.au/media/ccia/2.1.6/cms_page_media/168/CCIA_2015_NRM_TechnicalReport_WEB.pdf

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Contacting major Australasian herbaria and systematics institutions

AD tel: (+618)/(08) 8222 9307 fax: (+618)/(08) 8222 9353 www.environment.sa.gov.au/Science/Science_research/State_Herbarium	HO tel: (+613)/(03) 6226 2635 fax: (+613)/(03) 6226 7865 www.tmag.tas.gov.au/collections_and_research/tasmanian_herbarium	MEL tel: (+613)/(03) 9252 2300 fax: (+613)/(03) 9252 2350 www.rbg.vic.gov.au/science/herbarium-and-resources	NSW tel: (+612)/(02) 9231 8111 email: feedback@rbgsyd.nsw.gov.au www.rbgsyd.nsw.gov.au
CANB tel: (+612)/(02) 6246 5084 fax: (+612)/(02) 6246 5249 www.anbg.gov.au/cpbr/herbarium	BRI tel: (+617)/(07) 3896 9321 fax: (+617)/(07) 3896 9624 www.qld.gov.au/environment/plants-animals/plants/herbarium/	CNS tel: (+617)/(07) 4232 1837 www.ath.org.au/enquiry@ath.org.au	PERTH tel: (+618)/(08) 9219 8000 fax: (+618)/(08) 9334 0327 http://dbca.wa.gov.au/plants-and-animals/wa-herbarium
NT tel: (+618)/(08) 8951 8791 fax: (+618)/(08) 8951 8790 https://nt.gov.au/environment/native-plants/native-plants-and-nt-herbarium	DNA tel: (+618)/(08) 8999 4516 fax: (+618)/(08) 8999 4527 https://nt.gov.au/environment/native-plants/native-plants-and-nt-herbarium	AK tel: (+649)/(9) 306 7060 www.aucklandmuseum.com/collections-research/	CHR tel: (+643)/(3) 321 9999 fax: (+643)/(3) 321 9997 www.landcareresearch.co.nz
WELT tel: (+644)/(4) 381 7261 fax: (+644)/(4) 381 7070 http://collections.tepapa.govt.nz/	Australian University Herbaria CHAH representative: Frank Hemmings University of New South Wales email: f.hemmings@unsw.edu.au	ABRS tel: (+612)/(02) 6250 9417 fax: (+612)/(02) 6250 9555 email: abrs@environment.gov.au www.environment.gov.au/science/abrs	Council of Heads of Australasian Herbaria (CHAH) Chair: John Huisman (PERTH) email: john.huisman@dbca.wa.gov.au www.chah.gov.au

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. Members are entitled to attend general 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 (www.asbs.org.au), 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 Treasurer. All changes of address should be sent directly to the Treasurer as well.

ASBS publications

Australasian Systematic Botany Society Newsletter

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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, and 144. Here is the chance to complete your set.

Cost: Free

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

No longer available

Australasian Systematic Botany Society Newsletter

The Newsletter keeps ASBS 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.

Every effort is taken to distribute the Newsletter quarterly; delays or rare combined issues are attributable usually to the availability of the Editors who act in a voluntary capacity rather than to lack of copy. As soon as possible after compilation of each issue a searchable pdf version (in full colour) is placed on the Society web site and announced to members by email, and printed copy (in grey scale) is produced and distributed to members who have requested it.

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The Editors

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