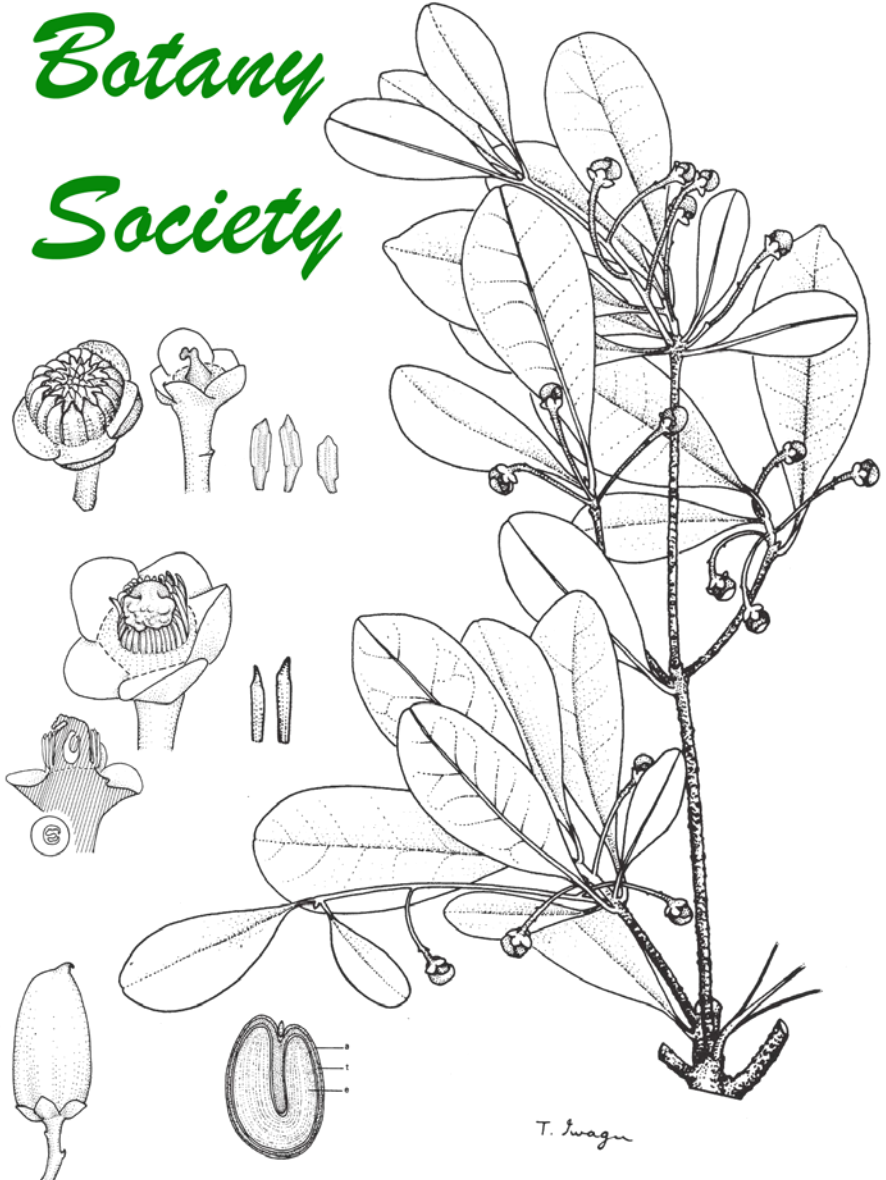


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Grant application closing dates:

Hansjörg Eichler Research Fund:
on March 14th and September 14th each year.
Australian Conservation Taxonomy Award:
in temporary abeyance

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

Publication dates of previous issue

Australas. Syst. Bot. Soc. Newslett. 157 (December 2013):
ASBS Web site: 14th Feb 2014; Printed version: 19th Feb 2014

From the President

Since the last Newsletter was published in February, rather later than desirable, there has been activity on ASBS matters on several fronts with eight applications for another round of Eichler research grants received, preparations for our conference in New Zealand in full swing, and, for my part, progressing areas that I want to work with Council to consolidate during the year.

The coming November conference

Preparations for our annual conference at Palmerston North are well under way. In this issue (p. 3), Jennifer Tate provides important information on travel and accommodation, with registration details soon to follow.

This will be the third ASBS conference in New Zealand, the first since our successful conference in Lincoln in 2010 (Newsletter 144-5) which heralded extension of our activities to embrace both our countries accompanied by a formal change of name. In 1991 we held a conference jointly with the New Zealand Botanical Society (see Newsletter 69).

Canberra meetings on ASBS business

I drove across an unusually wet Hay Plain in early March to visit Canberra while Ilse Breitwieser and Kevin Thiele were in town.

Among various ASBS matters progressed, Ilse and I sought to build on suggestions in the brief but productive forum at last year's Annual General Meeting that looked at avenues for utilising and leveraging our recently expanded funds for research and other projects. We had a productive discussion with Judy West on this. Judy has a particular awareness of politics, avenues and opportunities that helped advance our thinking and will support Council considerations. Putting the Society in touch with the Nature Conservancy Australia, which gave rise to the Australian Conservation Taxonomy Awards, is an example of that awareness.

Kevin, Ilse and I also met on the white paper on plant systematics. We included Judy in our discussions, her experience important in ways in which the white paper should be framed to high levels of Government. I anticipate that in the next issue we will be in a position to at last report on real progress in advancing production

of the underpinning documentation necessary to produce a clear and credible case for research and services in Australasian plant systematics.

It was good to hear from Alexander Schmidt-Lebuhn on how things are progressing with his new role as Convener of the Canberra Chapter. He has contributed a couple of great articles in this newsletter.

Other Canberra highlights

My three days in Canberra had other benefits, particularly those that come with renewing and forming relationships with people associated with systematics and the environment. I met up with a number of long-standing friends in the botanical world, both employed and retired. Some aren't travelling so well and on behalf of my fellow ASBS members I'd like to pass on best wishes to Laurie Adams and Lyn Craven. We were also sorry to hear that Tom Hartley has had to drop his daily Rutaceae routine at the National Herbarium since our last visit there some years ago. In the last month, since our return to Adelaide, the reality of projected cuts to the Australian Commonwealth public service has hit the headlines and it is hoped that these will have less impact on systematics, science and public service than has been evident in other centres in recent years.

Robyn, who came over later, and I spent some time around Canberra's impressive attractions. Highlights were our first experiences of the Burbidge Memorial Amphitheatre and, nearby, the recently opened Red Centre Garden with its newly planted Australian arid-zone plantings, both features of the Canberra National Botanic Garden (Fig. 1), and the new National Arboretum (Newsletter 155).

Field work

Offers of local knowledge and guidance were critical to success in the field in the south-eastern highlands in the following week. I was able to examine very localised populations of the group of late flowering annuals that make up the section *Scabrae* of *Euphrasia* in Orobanchaceae. Over the years I had made several attempts to locate potentially distinctive variants recognised from a few, largely old, collections in my 1982 Australian



Fig. 1. Australian National Botanic Gardens, Canberra, in March: left, the Nancy Burbidge Memorial Amphitheatre on the edge of the Eucalypt Lawn; right, the new Red Centre Garden with arid-zone plants *Acacia peuce* and *Calandrinia balonensis* in the foreground, a novel way of developing hummock grass rings (mid ground), and watched over in the rear by the striking Thorny Devil sculpture. Ph. B. Barker

revision in complexes surrounding *E. caudata* and *E. scabra*. Field botanists such as Neville Scarlett and John Eichler had made subsequent valuable discoveries but I had managed to since locate and examine populations of only three of several clearly distinct taxa in the region. I met for the first time New South Wales National Parks conservation ecologist Keith MacDougall and local botanist Jackie Miles for work around Kosciuszko and in the swamplands in the far southeast forests of New South Wales, and then Neville Walsh of the National Herbarium of Victoria in the Bogong High Plains area. No wonder these variants had

been so hard to find: like many rare *Euphrasia* taxa these annuals occupy small patches a few metres square, but they also flower much later than the bulk of the associated flora – even at this late time they were early or midway through flowering. I discovered distinctive diagnostic floral characters not evident in dried material. While advice of the dryness of the season indicated that it was pointless searching out other populations in Victoria and northern New South Wales, there seem enough material and evidence to diagnose and describe several new taxa.

Bill Barker

Editorial note

Contributors to our Newsletter over its four decades have occasionally raised points of controversy, though debate has been rare. Items in this issue touch on or confront issues to do with the *Code of Nomenclature* and the broad conservation arena, but particularly a concern about taxonomic practice. While the critiques

have been framed constructively and relate to published material or events in the public domain, we realise such issues will prove difficult for some. We welcome response, pro and con.

Bill and Robyn Barker

The annual ASBS conference

Update for ASBS 2014: *Next-generation Systematics* 24th –28th November

We look forward to welcoming you to the 2014 ASBS meeting at the Massey University campus in Palmerston North, New Zealand. Our theme for the meeting will be ‘*Next-generation Systematics*’, which includes approaching systematics from different perspectives, the use of new technologies, and even training the next generation of practicing systematists. We look forward to diverse presentations of systematics projects from Australasia and around the world. There will be one session of oral presentations with poster presentations during lunch breaks.

Schedule of events

- Registration and abstract submission web portal will be open soon.
- Submission date for abstracts (registration required) is 1st July 2014.

Monday, 24th November

- Registration and evening mixer at Wharerata (<http://wharerata.co.nz/>) on Massey campus.
- Post-grad/post-doc bar hop (organized by Todd McLay and Jessie Prebble).

Tuesday – Thursday, 25th-27th November

- Presentations. We are confirming keynote speakers and are pleased to announce that Dr. Heidi Meudt of Te Papa Tongarewa will give one of the plenary lectures.
- Conference dinner on Wednesday at Hotel Coachman (www.coachman.co.nz/)

Friday, 28th November

- Field trip (to be announced).

Getting there

Palmerston North is served by a regional airport with several daily flights operated by Air New Zealand (www.airnewzealand.co.nz) to/from Auckland, Wellington, and Christchurch.

Intercity coachlines (www.intercity.co.nz) operate bus service from Wellington (2 hours) and Auckland (9 hours) to Palmerston North.

KiwiRail operates the Northern Explorer train (www.kiwirailscenic.co.nz/northern-explorer/) which runs from Auckland to Wellington a few days each week. A quick check showed a southbound train on the 24th and a northbound train on the 28th – check the schedule at the link above to be sure you can catch the train in the right direction! The train passes through Tongariro National Park offering spectacular views of the central plateau volcanoes.

Massey campus

The Massey campus is situation a short-walk (20 min) from the main area of Palmerston North . Bus vouchers will be arranged for easy transport between town and campus. Car parks are available on campus for \$2 each day.

Accommodation

Fifty rooms (including breakfast) are reserved at one of the new halls of residence on campus (with shared bathrooms). A further 30-40 rooms will be reserved at local hotels that are within easy walking distance of campus.

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Australasian Systematic Botany Society Inc.

Are you unfinancial?

Unpaid Membership Fees are now overdue

These are due on January 1st each year.

The Treasurer will be emailing you re current and any back fees.

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This is also an opportunity to donate to the Research Fund

Please direct enquiries to John Clarkson our Treasurer

Articles

CSIRO summer students at the Australian National Herbarium and the Australian Tropical Herbarium

Alexander N. Schmidt-Lebuhn

The CSIRO Food, Health and Life Sciences Summer Student program offers studentships directed at second to third year university students. Its aim is to offer students the experience of conducting self-contained research projects under the supervision of CSIRO scientists, and to inspire them to pursue a career in science.

Supervisors are asked to submit project ideas several months in advance. A committee reviews proposals to make sure that they are realistic for the time frame and offer the students a sufficient degree of independence, and helps the supervisors with composing an attractive and clear summary to describe their projects. It is also a requirement that every supervisor have a back-up project in case the original one runs into technical problems.

Projects are advertised to students every year in August. From the student perspective, the program is highly competitive (in 2013/14, there were more than eight times as many applicants as projects), and acceptance into it is merit-based. Students are paid a scholarship for their participation and reimbursed for expenses incurred for travelling to their place of work, to Canberra for the last two days, and back home at the end of the program, but they have to arrange their own accommodation.

Projects run over ten weeks, from early December to early February. In addition to the research itself, the program includes public speaking and media training workshops. It ends in a full day symposium organised along the lines of a scientific conference, with students giving 15 minute presentations of their results in thematically organised sessions. In addition, the students submit a formal report some weeks after the end of their projects.

History of the program

The summer studentships actually started, on a smaller scale, in 2000/01 as an initiative of the Australian National Herbarium in Canberra. A generous donation by the Australian Pastoral Research Trust made it possible for Jeremy

Burdon, then chief of CSIRO Plant Industry, to expand the program to the whole division in 2004/05. The Grains Research & Development Corporation (GRDC) began to sponsor the summer studentships in 2006/07, to be joined by Bayer CropScience in 2010/11.

Today, they are funded jointly by the CSIRO, the GRDC and Bayer CropScience, and representatives of the two sponsors often chair sessions in the final symposium. Since the year of its expansion, 201 students from all over Australia have participated in the summer student program, in project areas as diverse as phylogenetics, species delimitation, molecular biology, plant breeding, soil science or bioinformatics, and at project sites from Perth to Brisbane and from Cairns to Adelaide.

2013/14 was a good summer for biodiversity projects

Although the Australian National Herbarium was where it all started, the past few years have only seen one or two biodiversity projects per year. That changed this summer when four of the seventeen project proposals were submitted by herbarium staff, three in Canberra (Fig. 1a) and one in Cairns (Fig. 1b).

Christiana McDonald-Spicer from Monash University worked on the project “How do plant populations connect?” under the supervision of Francisco Encinas-Viso. Traditionally, the genetic structure of species is usually studied using summary statistics such as the F-statistic, F_{st} ; Christiana’s project instead used population networks, a relatively new method that provides more detailed information on the spatial structure of genetic diversity and on the role of individual populations, for example in maintaining connectivity of the species. Specifically, Christiana examined the question of what influence life history traits of a plant have on network structure.

Emily Prentice from Griffith University examined the “Biogeography of the *Banksia* family (Proteaceae)” under the supervision of Joe Miller and Nunzio Knerr. Hers was



Fig. 1. Left to right: a, the three summer students of the Australian National Herbarium in Canberra on a field trip to the narrowly endemic pagoda daisy *Leucochrysum graminifolium*. Left to right: Christiana McDonald-Spicer, Emily Prentice, and Kiarrah Smith, b, the fourth summer student, Sarah Mannel (front) extracting DNA of her orchid samples in the molecular lab at the Australian Tropical Herbarium Cairns, together with her supervisor Katharina Schulte.

a continental scale spatial study of species richness, endemism and species turnover across the landscape, using specimen data from Australia's Virtual Herbarium (AVH). It supplements existing and ongoing similar work on other major groups of the Australian flora such as *Acacia*, daisies, ferns, and orchids.

Kiarrah Smith from the University of New England was the third student at the Canberra herbarium. Her project "Evolution of the paper daisy genus *Leucochrysum* (Asteraceae)", under my supervision, used a combination of molecular phylogenetics and AVH data to infer species relationships in and the ancestral biogeography of the study group, in particular to test whether the genus originated in the arid zone and diversified into the temperate south-east or vice versa.

The fourth student, Sarah Mannel from James Cook University, conducted her summer studentship at the Australian Tropical Herbarium in Cairns. Under the supervision of Katharina Schulte and Claire Micheneau (CNS), and in collaboration with Mark Clements (CANB), she studied the "Diversification and evolution of the Beard orchids", producing a first well-sampled molecular phylogeny of the genus *Calochilus*. Interestingly, this project was one of the most popular among the applicants.

Although we will likely all agree that being able to conduct research in plant systematics is a very attractive proposition all by itself, the combination of the key words "orchid" and "Cairns" may also have played a role.

In the final symposium, the four students presented their results together in the biodiversity session chaired by CSIRO biological collections leader Andrew Young. All four projects were very successful – if anything, two of the students had completed their analyses significantly earlier than anticipated.

Please tell your students!

One of the major challenges of the summer student committee is matching students' preferences with available projects. As important as every individual field of research is, the summer student program would not be very satisfying to supervisors or students if the twenty best applicants were all primarily interested in the same type of research. Because we hope that a number of herbarium projects will be advertised in the next few years, it would consequently be desirable to raise the awareness of the program among students with interest in biodiversity research. In case any readers of this contribution want to advertise the summer student projects to their students,

they should feel free to contact me for more information (alexander.schmidt-lebuhn@csiro.au).

Acknowledgements

I am grateful to long-serving former Summer

Student Committee Chair Jean Finnegan for comments on a previous version of this piece, and to Katharina Schulte for contributing Fig. 1b.

Two overseas conferences: Monocots V and AETFAT 20

Bryan Simon

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As this was going to press we heard that Bryan had been diagnosed as having acute myeloid leukaemia and had commenced treatment. We wish him a full recovery. Eds.

In August 2013 and January 2014 I was extremely fortunate having attended two international botanical conferences, Monocots V in New York and the 20th Congress of AETFAT in Stellenbosch.

Both were stimulating in the content of the oral presentations and posters. I met many old and new colleagues, with the usual exchange of ideas and information that are the cut and thrust of attending such gatherings. These are relationships that last for years after the event. At both meetings I presented the updates to the grass Scratchpads *GrassWorld* and *AusGrass2*, and their ongoing development since the presentations given at the ASBS conference in Perth in 2012. The title for the Monocots V presentation was the same as in Perth, with an update of the content, whereas the AETFAT talk was *Grasses online: Scratchpads for global, Australian and African Poaceae*, with suggestions of how the *AusGrass2* format could be adapted for Africa, either for the whole continent or for parts of it.

Probably the best way to present an overview of both meetings is to list the oral presentations under the title of the sessions and the speakers and then to tabulate the presenters of both oral and poster presentations in terms of the country where the primary author was based at the time of the publication of the abstracts.

Monocots V

Hosted by New York Botanical Garden at Fordham University, The Bronx, New York

There were 220 oral presentations and 122 posters ranging across a wide range of subjects and with participants coming from many countries, including a strong Australasian representation (Table 1).

Historical background

This was the fifth International Conference on

the comparative biology of Monocotyledons, being predated by the first Monocots conference (Kew 1993), Monocots II (Sydney 1998), Monocots III (Claremont 2003) and Monocots IV (Copenhagen 2008). As well as these monocot meetings there have been other international symposia dedicated solely to the systematics and evolution of the grasses. The first of these was at a special session of the 9th IBC in Montreal in 1959 and 27 years later in 1986 an international symposium was held at the Smithsonian Institution, Washington DC. The latter later became known as the First International Grass Symposium (Soderstrom et al. 1987), with the Second being held at the Main Botanical Gardens, Moscow in 1994 (Semikhov & Skvortsov 1996), but there were hardly any international attendees at the latter meeting. The 1998 Sydney Monocots 2/Grasses 3 conference held at the University of New South Wales was the first joint meeting of monocot and grass systematists, although publication of the conference was still separated as two books (Wilson & Morrison 2000; Jacobs & Everett 2000). Monocots 3/Grasses 4, held in Ontario, California in 2003 and hosted by Rancho Santa Ana Botanic Garden retained the formal separation of the monocots from the grasses in the program title, but the publication of the proceedings grouped the Poales in one volume and the non-Poales in another (Columbus et al 2007). In Copenhagen in 2008 the separation of monocots and grasses was retained as Monocots 4/Grasses 5 in the program but there was only one publication (Seberg et al. 2010) in which the first 22 papers dealt with non-graminoid groups and the latter 10 papers with grasses.

The conference

The conference's plenary talk *Morphological misfits in Monocots* was given by Paula Rudall. It heralded a diverse range of subjects: Alismatales (6 presentations); Arecaceae (15), Aspergales (7), Bromeliaceae (8), Character analysis (7), Cyperaceae non-Cariceae (13,

Table 1. Countries of residence of the speaker of talks and first author of posters at Monocots V.

Country	Talks	Posters
Australia	16	3
Austria	3	2
Belgium	2	1
Brazil	22	48
Canada	10	3
China	4	4
Colombia	7	5
Costa Rica	-	1
Czech Rep	3	1
Denmark	-	6
Ecuador	1	-
Ethiopia	1	-
France	6	1
Germany	11	9
India	3	3
Italy	-	1
Japan	-	2
Malaysia	1	-
Mexico	8	5
Netherlands	-	3
New Zealand	2	1
Poland	-	1
Russia	4	1
South Africa	-	3
South Korea	1	6
Spain	5	8
Sweden	-	1
Switzerland	-	2
UK	21	4
US	69	14
Venezuela	-	1
Total	220	122

including Australasian presenters Prychid and Bruhl), Cariceae (8), Contributed papers (41, including Australasians Birch, Fabillo, two papers by Ito, Briggs and Wilson), Development (6), Dioscoreaceae (10), Early Poales (10), Geophytes (6), Informatics (12, including Bruhl, Wilson and Simon), Iridaceae (3), Mycoheterotrophs (6), *Narcissus* (5), Orchidaceae (14, including Australasians Clements, Micheneau and Schulte), Paleobotany (11, including two talks from Conran), Phylogenomics (6), Poaceae (12), and Population biology (13). Australasians giving posters were Ito, Plunket, Macfarlane & Conran, and Simpson, Clements, Crayn & Schulte.

Papers on such a large and important family as Poaceae have diminished markedly over the

years. With only 12 talks in the Poaceae session, compared to the remaining 184 talks, and a further four talks on grasses in the contributed papers session (Saarela, Birch, Fabillo, Hunt) just over 8% of the talks were concerned with grasses; of the posters a similar proportion (11/122) focused on the grasses. These indicate a decrease in the attendance at the Monocot meetings of grass systematists, a similar trend also noticed in Copenhagen. In fact at both Monocots IV and Monocots V no talks were presented on the panicoid and andropogonoid grasses comprising the subfamily Panicoideae, one of the dominant groups in the tropics. Perhaps this points to a necessity of re-establishing a separate international meeting on the grasses and a dedicated effort made to focus on a more equal representation of all the clades of the grass family.

There has also been a marked shift from morphological to molecular studies, beginning in the mid 1990s (Table 2).

Two Scratchpad workshops were conducted by staff of the Natural History Museum, London, one for beginners and one for experienced users and were organised by Lawrence Livermore. I attended both, as I had experience with Scratchpads Version 1 but not SP2. Only SP2 was covered in the workshops, so that confusion that I personally had to cope with in converting from SP1 to SP2, was not experienced by other participants.

There were tours of both the William Steer Herbarium and Library and the Pfizer Lab at the New York Botanical Garden.

In addition both the Caricaceae Working Group and the Cyperaceae Working Group were able to meet during the course of the week.

The campus of Fordham University was a good venue for the conference, especially in its geographical proximity to the New York Botanical Garden, where the role of organizing the meeting was centred under the very able direction of Dennis and Jan Stevenson and their committees. However, the venues of the lecture theatres for each session – McGinley Center, Keating Hall (Fig. 1a), O'Hare Hall, and the Walsh Family Library (Fig. 1b) – were somewhat remote from each other in terms of cross-commuting between sessions. There were also the usual social events that included

Table 2. The proportion of morphological data, molecular data and mixed data used in presenting phylogenies at previous meetings

	% Morphological only	% Molecular only	% Mixed data	Unknown
Kew (1993)	75	18	7	0
Sydney (1997)	18	58	21	3
Rancho Santa Ana (2003)	4	70	20	6
Copenhagen (2007)	0	88	12	0

a welcome reception, an excellent mixer and conference banquet (Fig. 1c) at the New York Botanical Garden and a closing barbeque. Meals were also shared between colleagues at the many restaurants of the colourful Bronx neighbourhood, providing a complete contrast from the tranquil setting of the Fordham campus.

The closing address by Ole Seberg (Natural History Museum of Denmark) raised some points that are surely worth reflecting on.

He noted that of the 8,740,000 Eukaryotic species predicted on Earth, only 1,233,500 have been catalogued. The respective figures for Plantae are 298,000/215,644 and Animalia 7,700,000/953,434. So botanists are doing relatively well.



Fig.1. Monocots V Conference, anti-clockwise from left. a, Maria Vorontsova, Mary Barkworth, Pam Simon at the conference dinner; b, Keating Hall, Fordham University; c, Walsh Family Library.

Quotes from him concerning collections:

There are those today – and their numbers are growing – who see the herbarium as an economic millstone and an intellectual dinosaur in the modern scheme of science. The Truth, however, is that the herbarium is beginning to be tapped for a whole new generation of scientific and public questions.

Shetler, S.G. (1969).

Proc. Biol. Soc. Wash. 82: 687-758.

Collections are the most threatened resource of all, e.g. some university herbaria have been “mothballed” or de-accessioned, while some collections have not been properly conserved and curated, resulting in deterioration of the specimens and a decrease in value of the associated information.

Marhold, K. & Stuessy, T. (2013).

Taxon 62: 4-20

Of the 20% of flowering plants that are undescribed, 47-66% of these are already in herbaria. [The speaker]

And further:

The ICBN (now the ICNAPF) is only in its most mundane form science and may be

indeed becoming a burden to science. [The speaker]

Knowledge is a big subject. Ignorance is bigger. And more interesting.

Firestein, S. (2012). *Ignorance. How it drives science*. Oxford University Press.

Monocots VI will be held at the Federal University of Rio Grande do Norte (UFRN), Natal, Brazil in 2018.

20th AETFAT Conference 2014

Held at Stellenbosch, South Africa

This was another large conference, with 280 oral presentations and 198 posters.

Historical background

AETFAT (Association pour l'Etude Taxonomique de la Flora d'Afrique Tropicale or Association for the Taxonomic Study of the Flora of Tropical Africa) was set up in December 1950 by 21 botanists at Kew after a Belgian and two British botanists (Leonard, Exel and Milne-Redhead) had earlier that year met to discuss taxonomic problems in the genus *Clematopsis* (Rammeloo 2000). AETFAT proposed seven main objectives to improve cooperation between botanists interested in the taxonomy of tropical African plants. The association has grown in size since those days and what started as a group of European and US-based botanists working on African plants has grown to an organisation where a majority of members are now based in Africa. Conferences have been held regularly every 3 or 4 years since the first in Brussels in 1951 (Table 3).

As seen from the list the first nine conferences were held in Europe. The first to be held in Africa was the tenth meeting in Pretoria. Now, 10 meetings later, AETFAT has met in South Africa again. Between the two South African meetings, there were three in Europe, one in the U.S. and five in other African centres, resulting in more and more African participants.

Proceedings have usually been published within a couple of years of the conferences (listed at Web ref. 1). The proceedings volumes have varied in size from 135 pages (11 contributions) from the first Brussels meeting to 1512 pages (131 contributions) from the Zomba conference (Rammeloo 2000). The issue concerning the recognition of paraphyletic taxa, first published in an AETFAT publication (Brummitt 1996),

has led to a plethora of papers, both supporting and negating the philosophy, by Brummitt and others. The proceedings from the Madagascar congress have only recently been published (Beau, Dessein & Robbrecht 2013) and at this stage it is unknown whether those of AETFAT 20 will be published.

I first joined AETFAT soon after my first botanical position as Systematic Botanist at the National Herbarium of Rhodesia (Zimbabwe) in 1965, but retained membership since moving to Australia in 1974. The only other AETFAT congress I have attended was AETFAT 7 in Munich in 1970; so it was a wonderful experience to re-unite with the AETFAT "family" after a 44 year gap, during which time I have had much more to do with ASBS. It was fortuitous that I heard about AETFAT 20 from Maria Vorontsova when in Moscow last year (Simon 2014). Thinking of combining a trip to this meeting with a visit to relatives in South Africa, I immediately sent off the abstract of the talk I gave on the Scratchpads for grasses.

An interesting feature of AETFAT is that there is no membership fee. It is the responsibility of the Secretary General to raise funds from wherever he can!

This was probably the largest AETFAT congress ever held and it was certainly one of the best organised conferences I have ever had the benefit of participating in. The whole southern African region has undergone a transformation of botanical activity and interest since SABONET (the Southern African Botanical Diversity Network) which, funded by international agencies, operated from 1996 to 2005. Linking all botanists from the countries south of the Democratic Republic of the Congo and Tanzania, this body has left a legacy of good will and cooperation that has been greatly beneficial to AETFAT. This cooperation has flowed on to Madagascar. Its flora has been much ignored until recently, but its botanists are now so very active – through liaison with the Missouri and Kew botanic gardens – that they presented the second highest number of contributions at AETFAT 20 (Table 4) and also assisted in the organization of the congress.

As part of its service to members AETFAT has annually published literature indexes and information bulletins. However, well before the days of online botanical search engines,

the *AETFAT Index* ceased publication in 1976 when the *Kew Record of Taxonomic Literature* was considered adequate for the purpose of keeping track of new African taxa. The *AETFAT Bulletin* was published apparently to its issue 47 of 2003 and contained the same sort of information as the *ASBS Newsletter*. There seems a need to resuscitate it, especially with the demise of SABONET in 2005.

From its initial role as a working forum for flora writers based in Europe, AETFAT has, as the years have passed, branched out to many other fields of scientific investigation of African plants.

The conference

The scientific program for AETFAT 20 comprised presentations in 16 different sessions with five running concurrently, probably the largest AETFAT meeting ever. The Music Conservatory of Stellenbosch University was a marvellous venue to stage the meeting, with all the lecture halls and refreshment areas within easy and quick access, a really vital factor when so many interesting talks and posters being presented.

There were five plenary talks at AETFAT 20: Beentje spoke on *A very personal view of plant taxonomy in Africa*; Bond, *Beyond climate: the enigmatic past, present and future of African grasslands*; Dagne, *Unique bioresources from*

Ethiopia with applications of food, medicine and narcotics; Taberlet, *DNA metabarcoding and biodiversity assessment*; and Linder, *The evolution of African plant diversity*. The sessions of oral presentations, given on Monday, Tuesday, Thursday and Friday, encompassed: Afro-alpine (14 presentations), Arid flora (7), Asperigales (16), Ethnobotany (31), (E)floras (19, including mine), Flora and conservation of specific areas (6), Forest utilization (3), South African ecology and floristics (3), Southern temperate (16, including Western Australian Laco Mucina), Rainforest (12), Conservation (18), Grasslands (12), Biogeography (23), Plant-animal (22, including Nsor and Chapman from New Zealand), Systematics (44), and Mycology (28). Many countries were represented, but there were few from Australasia (Table 4). I have the book of abstracts should anybody wish to dig deeper for any of the presentations.

Wednesday during the conference was dedicated to six field trips. My wife and I went on the trip to the Jonkershoek Nature Reserve to observe the unique fynbos vegetation (Fig. 4a), followed by a wine tasting at one of the very picturesque wine farms in the Valley (Fig. 4b). Other trips went to Table Mountain, which we had visited independently the week before (Fig. 4c), the penguin colony at Boulders Beach, Kirstenbosch Botanical Gardens and Bettys Bay Nature Reserves. The AETFAT banquet was held in the Moyo restaurant at Kirstenbosch, preceded by entertainment by traditional xylophone and bongo drums (Fig. 4d).

Although it was not possible to attend all the presentations at AETFAT 20 of interest to me, I can make a list of some of the salient points from those that I was able to attend:

- *Acacia* belongs to Africa, because the type is from Africa. Taxonomy is no place for politics!
- Of the African floras, *Flora of West Tropical Africa* and *Flora of Tropical East Africa* are complete, *Flora Zambesiaca* is 85% complete, *Flore de l'Afrique Centrale* 60% and *Flora of Southern Africa* only 13% complete.
- Southern Africa, on the other hand, has a far higher representation of local floras, handbooks and e-taxonomy projects than any other region.

Table 3. AETFAT conferences

1 (1951) Brussels, Belgium
2 (1953) Oxford, U.K.
3 (1957) Paris, France
4 (1960) Lisbon & Coimbra, Portugal
5 (1963) Genoa- Firenze, Italy
6 (1966) Uppsala, Sweden
7 (1970) Munich, Germany
8 (1974) Geneva, Switzerland
9 (1978) Las Palmas, Grand Canary Island
10 (1982) Pretoria, South Africa
11 (1985) St Louis, U.S.A.
12 (1988) Hamburg, Germany
13 (1991) Zomba, Malawi
14 (1994) Wageningen, The Netherlands
15 (1997) Harare, Zimbabwe
16 (2000) Meise, Belgium (50 th anniversary)
17 (2003) Addis Ababa, Ethiopia Taxonomy and ecology of African Plants (Gazanfar & Bentjie)
18 (2007) Yaoundé, Cameroun
19 (2010) Antananarivo, Madagascar
20 (2014) Stellenbosch, South Africa

- The African Plant Database (APD) is an active collaborative project between herbaria in Switzerland (G), South Africa (SANBI) and the United States (MO).
- From the APD the proportion of synonyms in relation to all names are 57% for both Tropical and Southern Africa, 42% for Madagascar and 69% for North Africa.
- A world Flora online is targeted for 2020 (Web ref. 2).
- Grassy biomes form the most extensive vegetation in Africa. Africa has the most extensive C4 grasslands in the world (Australia has the second most extensive).
- As C4 grasslands evolved in response to low CO₂, will they disappear as CO₂ increases?
- *Flora of Tropical East Africa* was first estimated to take 15 years to complete. It has taken 55 years.
- The *Flore d'Afrique Centrale* will be finished in 15 years.
- One in four plants in South Africa is in need of conservation. It has 5% of the world's plant diversity.
- The elephant population of the Kruger National Park is so large that it has a deleterious effect on the vegetation. Culling is required for maintenance of botanical diversity.
- Baobab trees live to 1800 years.

There were three post-conference tours of 7-10 days to other parts of South Africa (the Eastern Cape, the Kwazulu Natal Drakensberg and Lesotho, and highlands of Mpumalanga Province and the Kruger National Park). We had no time for these but were fortunate to make an overnight stay at the Dinokeng Game Reserve north of Pretoria. This little known and recently established park is conveniently placed near the largest population centre of the country and has most of the other iconic African game species (Fig. 4 e-f), including “the big five”. In addition to viewing some spectacular wild life, it was a pleasure to see and photograph the C4 African grasslands in such a healthy condition. Amongst the grasses I saw some old friends (Figs. 4 g-i).

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Table 4. Countries represented at 20th AETFAT Conference

Country	Talks	Posters
Australia	2	-
Belgium	13	5
Benin	12	10
Botswana	-	1
Burkina Faso	4	2
Burundi	-	1
Canada	-	2
Cameroun	16	14
Czech Rep	1	1
Denmark	-	3
DRC	2	5
Ethiopia	5	1
France	11	3
Gabon	1	1
Germany	20	5
Ghana	-	1
Guinea	-	1
Ivory Coast	1	3
Kenya	4	2
Madagascar	13	28
Malawi	-	1
Mozambique	-	1
Namibia	-	4
Netherlands	8	2
Nigeria	5	10
New Zealand	2	1
Norway	5	1
Rwanda	2	-
South Africa	93	53
Senegal	3	2
Sierra Leone	1	1
Spain	-	1
Switzerland	12	3
Sweden	5	2
Tanzania	-	1
Togo	1	5
Uganda	1	1
UK	10	20
USA	17	6
Zambia	-	1
Zimbabwe	1	1
Total	280	198



Fig. 4. Clockwise from top left: a, Jonkershoek Nature Reserve field trip; b, Winery near Stellenbosch; c, View from summit of Table Mountain, looking north to city; d, Traditional entertainment, AETFAT banquet; e-i, At the Dinokeng Game Reserve: e, White Rhino, ; f, Kudu Bull; g, *Loudetia flavida*, russet grass; h, *Urelytrum agropyroides*, centipede grass; i, *Hyperthelia dissoluta*, thatching grass.

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Web ref. 2. www.missouribotanicalgarden.org/plant-science/plant-science/world-flora-online.aspx

Points of view

Orchid taxonomy in Australia needs to lift its game

Kevin Thiele
WA Herbarium

Orchidaceae is one of the most important families in Australia: it is the third largest by species (after Fabaceae and Myrtaceae), is of considerable interest from an evolutionary and ecological perspective, occurs in almost all habitats, includes many conservation-listed taxa, and is almost uniquely popular with many members of the general public. These make it particularly important that the taxonomy and systematics of orchids, as with all other taxonomic groups in Australia, be dealt with carefully and with scientific rigour.

I contend in this paper that orchid taxonomy in Australia needs to lift its game and to publish orchid taxonomic papers with more rigour and closer conformance to accepted scientific best practice than is sometimes the case at present. I use examples from Western Australia and the Western Australian Herbarium here, but discussions with other herbaria indicate that these issues are common to other states as well.

Orchids are particularly important in Western Australia and for the WA Herbarium, given the very high diversity of orchids in the southwest and the large number of these that are rare and threatened. We frequently make the argument at the Herbarium that taxonomy is a critical underpinning science for a wide range of other disciplines including ecology, conservation planning, environmental assessment, restoration and land management. This claim rests on a basis that taxonomy is rigorous, scientific, defensible and effective; it will be undermined by taxonomy that is not.

Recently, we have been dealing in Western Australia with a number of new taxa published in *Australian Orchid Review*, a bimonthly commercial magazine for orchid enthusiasts.

The majority of articles in *Australian Orchid Review* deal with issues to do with the cultivation of orchids, topics of general interest to orchid growers and enthusiasts, and orchidaceous travelogue-style articles. However, the issues for 2013-2014 carry a number of taxonomic papers dealing with new species and species complexes in *Diuris* (Jones & French 2013a,b,c; French & Brockman 2014).

Effective publication of names under the *International Code of Nomenclature for Algae, Fungi and Plants* (McNeill *et al.* 2011) is not precluded by publication in popular magazines; indeed, in the 19th Century this was not uncommon. However, although these publications are nomenclaturally effective, I am concerned that they are taxonomically wanting and do not conform to modern best practice in taxonomy and systematics.

In any herbarium such as ours, we need to ensure that all accepted taxa comprise concepts that are meaningful for the range of purposes to which taxonomy is put. Turning a name into a concept means more than publishing the name in a manner that is effective under the *Code*. It requires that the taxon is adequately described, so that it can become a concept in the minds of others as well as in the minds of the authors. Given that taxonomic concepts are scientific hypotheses, enough detail is needed for others to judge the merits of the hypotheses presented; only with this can we accurately represent taxonomy as a science worthy of serious attention (and funding).

For all these purposes, very clear and careful statements are needed as to the range and pattern of variation in the taxa being described, and precise statements as to the differences

between the taxon and others. In most taxonomic treatments this is effected by having a key to taxa, and extensive notes (when necessary) describing affinities and differences in sufficient detail to enable the taxa to be uniquely diagnosable. It also helps enormously for herbarium curation purposes for a range of specimens to be cited, to help assign specimens unambiguously.

The papers in *Australian Orchid Review* fall short in these respects. In every case, there is a section titled *Recognition* and another titled *Similar species*. However, these are often inadequate for the purposes outlined above. For example, the *Recognition* section for *Diuris hazeliae* (Jones & French 2013a) says:

Characterised by large bright yellow flowers with some reddish markings in the labellum, broad petal laminae and a large labellum with broad lateral lobes and a widely flared midlobe.

Unfortunately, this is an adequate (brief) description of a large number of *Diuris* species, including most others in the *D. corymbosa* complex in which *D. hazeliae* belongs.

Notes provided under *Similar species* are equally vague and imprecise:

Diuris hazeliae is probably closest to *D. corymbosa* which has smaller flowers with the laminae of the petals relatively elongated and narrow. It also has a smaller labellum than *D. corymbosa*.

However, *D. hazeliae* is just one of 11 species recently segregated within its complex. How exactly does it differ from the others? We are left with few clues. The use of imprecise terms and lack of measurements greatly reduces the utility of these purportedly diagnostic descriptions. Close comparison of the full descriptions helps little, as all described characters significantly overlap between taxa, and in this case a careful comparison between *D. hazeliae* and its putatively closest relative *D. corymbosa* cannot be done because *D. corymbosa sens. str.* has not been recircumscribed in any of the papers that have erected segregates from it.

All the papers mentioned in this article lack keys. Without a key to the 11 species in the *D. corymbosa* complex or the 7 species in the *D. laxiflora* complex (Jones & French 2013b), or even a table of differences or precise and unambiguous measurements,

identification becomes extremely difficult or even impossible.

Another important way in which a taxon concept can be established is through *Specimens cited* lists. Specimens are cited in Jones & French (2013a, b) and French & Brockman (2014); unfortunately for the WA Herbarium, all but two of the cited specimens are from CANB, despite the fact that all of the taxa are endemic in Western Australia. This makes curation of our collection extremely difficult. Jones & French (2013c), a paper erecting four new species and recircumscribing *D. laxiflora*, cites no specimens at all, from any herbarium, except the types.

I do not suggest here that the taxa dealt with in these papers lack taxonomic merit; they may or they may not. The problem is that it is almost impossible, from the information given, for a competent botanist to assess their merits, to form a reasonable concept of the taxa without a great deal of difficulty, or even to identify specimens.

As the scientific editor of a taxonomic journal (*Nuytsia*), I can confidently say that all the papers discussed here, published in *Australian Orchid Review*, would not have been acceptable in their current form if they had been submitted to *Nuytsia*. Revision would have been requested to bring the papers into conformance with standard practice, including provision of keys where necessary and appropriate, more detailed notes on variation throughout the ranges of the described taxa, more complete descriptions of critical features, comparisons with all other taxa that could be confused with the new ones, and at least some attempt at a justification as to their taxonomic merits, rather than mere assertions that they are different.

This is not to say that all other taxonomic papers are perfect, and taxonomy as a whole needs to be constantly aware of poor practice in the publication of new taxa. A critic of this note would, I'm sure, be able to find published papers in other taxonomic groups that are wanting in one or more respects. However, the vast bulk of taxonomic papers are published in peer-reviewed journals, and peer review, despite its own imperfections, at least provides some scientific oversight of new publications.

Professional taxonomists and herbarium staff

play a critical role as custodians and upholders of good scientific practice in our discipline. To the extent that we do not take this custodianship seriously, we run the risk of undermining the foundations of taxonomy by not adhering to rigorous scientific standards worthy of our discipline, a serious problem in a time when the foundations are being undermined anyway by funding cuts and staff shortages. I do not go so far as to suggest that all papers or new taxa published in un-refereed journals should be rejected; as usual, we will do our best to assess them and make judgments as to the taxonomic merits of the taxa described. However, I suggest that in future we should seriously consider rejecting taxa described in papers that do not meet minimum and sensible taxonomic standards, as a way of enforcing improvements in practice.

All taxonomists need to be vigilant in maintaining high standards in our discipline, and at times may need to lift their game. For some time now, a common practice has arisen in Australian orchid taxonomy to publish papers without peer review; I'm aware of no other taxonomic group in which this is so widely practiced. I believe this trend should be vigorously opposed – peer review is justifiably regarded throughout science as a critical standard which maintains best practice;

indeed, in many disciplines papers published without peer review would be widely ignored. If such practice becomes entrenched and more widespread, in orchids or any other taxonomic group, it will be to the detriment of taxonomy and of our discipline as a whole.

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In support of concern about poor taxonomic standards

Robyn Barker, Bill Barker & Michelle Waycott
State Herbarium of South Australia

Kevin raises a problem that extends over a significant portion of our taxonomic publications and we support his call. Editors of popular magazines perhaps have an excuse for not being aware of basic standards of taxonomic science which usually surround the publishing of taxonomic novelties and the absence of a refereeing process removes another of the safeguards traditionally associated with scientific publication. But the problem is wider than publication within popular magazines and the specific case of the Orchidaceae. The robustness of taxonomic works in refereed journals has been also sometimes compromised as taxonomic practices become more pressured by outside influences including time and funding constraints. In addition, training and

awareness of good taxonomic practice is declining with more generalised undergraduate science teaching and at the postgraduate level the emphasis on new technologies and the generation of phylogenetic data, a worthy goal in itself but often failing to provide sufficient experience in bringing taxonomic problems to a full, publishable resolution.

Ideally new taxa should have comprehensive descriptions (not word-limited as usually found in floras), clear diagnoses or keys separating them from their closest relatives and comprehensive synonymies including all synonyms and previous misapplications. Such information generally needs to be drawn from as many relevant herbarium collections as possible, including types, from across the range

of the taxon and its relatives, and the specimens which formed the basis of such a study need to be annotated and cited in the publication. Type specimens should be deposited in the institutions cited (avoiding potentially transient herbaria) and if possible should be duplicated in the herbaria of those states in which the taxon occurs. Loan material needs to be annotated before its return. Such long-standing practices provide the avenue for ensuring correct long-term application of our taxonomic concepts in the herbarium and field.

There are many reasons why these practices may not have been applied, amongst them:

- New taxa are described by botanists or plant enthusiasts with only peripheral contact with herbaria and systematists aware of the above ideals for publication requirements and curatorial processes.
- Descriptions are made from observations made solely at a regional level, without an appreciation of the need to make observations on specimens from across the range of species complexes. Indeed too often such work is based purely on collections and observations made by the individual without recourse to herbarium collections and their annotations at all.
- The use of phrase names, proposed as a way of recognizing new taxa which have not undergone a comprehensive analysis outlined above, or those which are still in manuscript form, has led to their proliferation in the non-taxonomic literature. This has given the impression that it is easy to raise new taxa without adequate justification and without the critical conformation to standards and the processes of review. This adds considerably to the burden of census keepers who have to try and reconcile these names. Phrase names are often of a regional nature and many of them disappear when taxa are studied across their geographical range.
- Many journals now accept that only a selection of specimens need to be cited. This has probably arisen from demands to limit pages owing to publication costs and/or the convenience for the author in not having to compile them. This issue should now be moot with the advent of readily accessible supplementary publication that does not fill printed pages. However, in a practical

sense, if specimens have not been assessed from a particular herbarium during study then someone within that herbarium has to interpret the study, possibly without any reference material or more than a cursory knowledge of the group. Staff are a poor surrogate for taxonomic authors who, as part of good taxonomic procedure, should ensure their classifications accommodate all available scientific collections.

- Some loan specimens are returned without annotation. Not only does this raise the possibility that they have been little used in the revision, but again, application to a herbarium's collections requires a staff member to interpret another's work. The reasons for this include the increasing number of staff in herbaria on short- to mid-term contracts, work pressures, retirement, illness or death.
- The emphasis for systematics works to be completed on 'project' timescales or as a small part of other projects, typically three years maximum and of limited taxon scope. This leads to an emphasis on small taxonomic projects at the expense of projects that resolve the big picture.
- The often limited quality and quantity of referee's comments on manuscripts and where valid comments are not necessarily followed by the author (or the editor) cutting corners to get works published quickly.

These points are less applicable to well trained, experienced taxonomists specialising in particular groups. However, the level of training that students gain in taxonomic skills and, in particular, the practical application of taxonomic description is limited. This is in part due to the exploration of other aspects, in particular the use of modern methods of analysis such as molecular phylogenetics. Concurrently, there are many university degrees that now teach a very generalised undergraduate program where basic taxonomy is a very small component of their training.

Can we resume our emphasis on robust approaches to revising the taxonomy of groups? As a plant systematics community we can do this, but not without effort. We could influence the quality of taxonomic training through teaching content, supervision

and mentorship emphasizing the achievable ideals outlined above. We could draw up and call for adoption of taxonomic standards for referees and adherence to them not only in our own systematics publications, herbaria and information systems but also in areas such as biodiversity policy, documentation, assessment and research. Are established review procedures, such as those for generating a consensus vascular plant taxonomy as in the Australian Plant Census, adequate? We are in a position as never before to promote and undertake such robust revisional “big picture” works, with the availability on-line of immense amounts of taxonomic data and information, including information from numerous and ever growing techniques, the latest, Next Generation Sequencing, adding millions of DNA sequences

rapidly and cheaply to augment datasets.

Awareness and acceptance of taxonomic change is now widespread and readily communicable. If we want our work to be adopted we must ensure our taxonomic concepts match the reality reflected not only in a worker’s observations of field and laboratory collections, but also in the existing, often rich resource of the collections already present in herbaria. And we must bear in mind the needs of the users of our concepts and make them as easy and practical as possible to interpret. Otherwise we run the risk of our work being ignored or our names sunk into synonymy. Should we be working smarter in these times? Surely we should be working towards the highest possible standards that lead to robust taxonomies!

Issues from the Internet

Holotypes not being deposited in cited herbarium

When describing a new species, if you fail to give the name of the institution in which the holotype is to be found, then the species is invalid. However, if the institution is cited in the protologue but the holotype is not deposited there, there are no nomenclatural consequences. This is a concern raised by three Indian botanists (Bandyopadhyay et al., 2014) who have found from a survey of new taxa published in *Rheedea* that up to 25% of holotypes were not available in the institution cited mainly because the authors had failed to lodge them.

Reference

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Conservation achievements under threat

On 12th April 2014, Bob Debus, long serving state Labor environment minister in NSW, now retired, expressed his concern for the present state of nature conservation in Australia in the new weekly, *The Saturday Paper*.

The structures of Nature Conservation in Australia, built over more than a generation, are suffering an onslaught that has barely been reported.

Originally titled “Bulldozing the conservation debate” in the print media, the title has unfortunately been politicised to “Abbott government’s offensive against nature conservation” in the digital issue which is all that is accessible for the full text (Web ref.).

Web. ref. www.thesaturdaypaper.com.au/opinion/topic/2014/04/12/abbott-governments-offensive-against-nature-conservation/1397224800#.U0tKUZ3SXcs

News

Unsigned articles are compiled by Robyn Barker

News from the West

There have been some significant changes at the Western Australian Herbarium over the past few months. Long-standing staff members Nicholas Lander, Sue Carroll, Ray Cranfield and Phil Spencer have all retired, and Alex Chapman has taken voluntary redundancy.

Jim Sharp has been appointed to the position of Director General of the Department of Parks and Wildlife, with Margaret Byrne as the Director of a combined Science and Conservation Division (which includes the Herbarium).

The Western Australian Conservation Science Centre (which houses the Herbarium) has been recently renamed the Keiran McNamara

Conservation Science Centre. Keiran strongly supported science whilst he was Director General of the Department of Environment and Conservation (and previously the Department of Conservation and Land Management) from 2001–2013. His support of strategic taxonomic research on Western Australia's most at risk species was also honoured last year with the naming of the rare Pilbara endemic *Cochlospermum macnamarae* (Bixaceae).

Juliet Wege
Western Australian Herbarium

Bruce Maslin to SE Asia

In early July Bruce Maslin of the Western Australian Herbarium is heading to South East Asia for a year.

Bruce will be based in Saigon (Ho Chi Minh City) which he will use as a base for continuing his revision of SE Asian *Acacia* sens. lat. (i.e. *Acacia* sens. str., *Senegalia* and *Vachellia*). He is hoping to visit a range of Asian herbaria, including Calcutta and a couple in China, as well as revisiting others in SE Asia.

We are trying to persuade him to become the ASBS "reporter" in the region and to bring us tales from an area we rarely hear from.

Fig. 1. Cecile Gueidan of the Australian National Herbarium



Cecile Gueidan, a new Canberra appointment

Dr Cecile Gueidan recently commenced at the Australian National Herbarium (CANB/CBG) (Fig. 1).

Born in the Alsace region of France, Cecile graduated with a Master in Biology from the Université Louis Pasteur in Strasbourg in 1998. She went on to obtain a DEA (~honours) in Systematics at the Muséum National d'Histoire Naturelle in Paris in 1999 before taking up postgraduate studies at Duke University in the United States under the supervision of Francois Lutzoni, an expert in the evolution of symbioses. She obtained her Ph.D. in Systematic Biology in 2007. Subsequently, she has worked as a postdoc at the CBS-KNAW Fungal Biodiversity Centre in Utrecht and as a researcher at the Natural History Museum in London.

Cecile's research has so far focused on lichens, especially in the family Verrucariaceae, and on rock-inhabiting fungi, but also included work on fungal opportunistic pathogens. It is methodologically diverse, ranging from species discovery and alpha-taxonomy to higher level systematics and dated molecular phylogenies elucidating the evolution of lifestyles in different groups of fungi. She has published numerous peer-reviewed scientific articles and was awarded the Elias Magnus Fries medal of the International Mycological Association as an outstanding European early career mycologist.

With her recent arrival in Australia, Cecile is now looking forward to working with the significant collections of native lichens at CANB/CBG, which are housed in the cryptogam section of the herbarium on the grounds of the Australian National Botanic Garden. She is also interested in the biology and reproduction of lichens from biological soil crusts, a microbial- and cryptogam-dominated ecosystem which plays a major role in protecting soils against erosion in arid areas such as the Australian interior.

Alexander N. Schmidt-Lebuhn

Publicising plants

Tim Entwisle has been busy keeping plants in front of the community with two opinion pieces, the first published in *The Australian* on March 12th on the loss of identity of botany in universities and the second in the Australian

edition of *The Guardian* on March 13th on the need for taxonomists and the difficulties they are facing. Both articles are available through Tim's blog (Web ref. 1) but accessing *The Guardian* article through their pages (Web ref. 2) gives access to the comments that it attracted, some interesting, some pedantic and some just anti. But they are also a measure of how taxonomists are viewed by the community.

References

Web ref. 1: <http://talkingplants.blogspot.com.au/2014/03/botany-integrated-into-program-of-life.html>

Web ref. 2: www.theguardian.com/commentisfree/2014/mar/13/lets-sing-the-praises-of-taxonomists-who-help-us-make-sense-of-our-world

Taxonomist Appreciation Day

And from one of those comments in response to Tim's above piece in *The Guardian* came access to a site called *Small Pond Science: Research in a Teaching Institution*, and the proposal by author Terry McGlynn, a Californian ant ecologist, for a 'Taxonomist Appreciation Day' on March 19th (Web ref.). Terry also came up with a slogan "Our appreciation for taxonomists is beyond description". Other blogs on this American site address issues commonly encountered by university teachers, issues such as "Our expert advice remains unheeded". If you feel that you are not getting through to your students, this will make you feel better!

Web ref. <http://smallpondscience.com/2013/03/19/its-taxonomist-appreciation-day/>

Darwin briefs

Donna Lewis has been back one day a week (from maternity leave) since the start of the year and Nic Cuff (ex Department of Land Resource Management Land and Vegetation Unit) is back filling until mid year.

'Visitor season' has started with Chris Martine (Manning Herbarium, Biology Department, Bucknell University) and Richard Jobson (NSW) currently in the Top End.

Ian Cowie

Tasmanian botanists in Blitzes

You can read about what the Tasmanian botanists have been doing as part of Bush Blitz surveys, one to the Tasmanian Land



Fig. 2. Gintaras Kantvilas on the Bush Blitz survey in a questionable pose. Ph. Matt Baker

Conservancy's Five Rivers property and the adjacent Gowan Brae property in the Central Highlands and a second to sample the flora of the nature reserves of Flinders Island. (Fig. 2).

References

Web ref. 1. www.tmag.tas.gov.au/whats_on/newsselect/2014/articles/a_bountiful_bush_blitz

Web ref. 2. www.tmag.tas.gov.au/whats_on/newsselect/2014/articles/flinders_island_blitzed

Dylan Burge takes up residence in San Francisco

Dylan Burge, formerly a graduate student in Biology at Duke University, and more recently a roving post-doctoral fellow, is known in a number of research centres in Australia. He first visited Australia as a US National Science Foundation graduate student fellow in 2008, when he worked with Bill Barker on the evolution of nickel hyperaccumulation in *Stackhousia*. In 2011 Dylan returned to Australia under the auspices of an International Research Fellowship Program Grant from the US National Science Foundation. During the course of this work he continued to study *Stackhousia* with Bill Barker, as well as Maurizio Rossetto at the Royal Botanic Garden, Sydney. In 2012 he returned to North America to complete his fellowship with Loren Rieseberg at the University of British Columbia in Canada. In 2013 Dylan began a post-doctoral fellowship at the California Academy of Sciences in San Francisco, and in March this year took up an Assistant Curatorship at the California Academy of Sciences in San Francisco, where he will pursue studies on the hyper-diverse flora of western North America.

Walk to save a species

A group from the Royal Botanic Garden, Sydney are walking 123km from Mangrove Mountain, Central Coast, New South Wales, to the Blue Mountains Botanic Garden, Mount Tomah during Easter to raise money for endangered native plant species found along the walk route. The original aim was to raise \$6000 for three species, *Tetradlea glandulosa*, *Persoonia acerosa* and a *Zieria* species, with the fundraising target representing the cost for collecting voucher specimens and lodging seeds in Royal Botanic Gardens Sydney's Australian PlantBank. However the target was reached before the walk was undertaken and so there will be some surplus funds for further work for the cause. To hear Trevor Wilson being interviewed on Radio National before the walk or for further details see the links below.

References

www.everydayhero.com.au/event/saveaspecies2014
www.abc.net.au/radionational/programs/breakfast/wild-walk-to-save-native-plants/5393538
www.rbgsyd.nsw.gov.au/foundationandfriends/Donate_now/meet_the_team

Flora of China completed

The completion of the *Flora of China*, a joint project by the Chinese Academy of Sciences and Missouri Botanical Garden, was celebrated in September 2013. This milestone was marked with a celebratory conference which reviewed the progress made while at the same time looking to the future. On-line access is available to the Abstracts (Web ref. 1) and to the *Flora of China* itself (Web refs. 2, 3).

References

Web ref. 1. <http://foc.eflora.cn/Celebration/59>.
Web ref. 2. <http://foc.eflora.cn/>
Web ref. 3. <http://flora.huh.harvard.edu/china/index.html>

Problems with tumble-weed

Prolonged drought with intervals of untimely rain has caused an explosion of tumbleweeds in southeastern Colorado, parts of New Mexico and in Texas. Tangled clusters of tumbleweeds, some reaching as high as 10 feet are blocking roads and drains and gathering against buildings, sometimes making it difficult for residents to access or leave their homes or drive cars. And of course they are a fire hazard. Despite the images of tumbleweeds

promulgated by American westerns, they are not native there. They were only introduced into the United States in the 1870s and are part of the same *Salsola kali* complex which we have here in southern Australia. There are up to six taxa recognised in the USA, all of them on their noxious weed list, while we have a similar number of taxa in Australia, most recently (Chinnock 2010) referred to *S. australis*, but composed of a number of informal subspecies. This is a group in need of global study to resolve their taxonomy.

References

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Smith, L., Hrusa, G., Gaskin, J.F., Bruckart, W.L., Berner, D.K., Cristofaro, M. 2010. Six Species of *Salsola* tumbleweeds (Russian thistle) in the Western USA and Prospects for their Control. *Weed Science Society of America Meeting Abstracts*. www.cal-ipc.org/symposia/archive/pdf/Ayres%20poster%2005.pdf

New Director of Science at Kew

In November 2013 Professor Kathy Willis took up the new post as the Director of Science at Kew. For the first time, the three major science departments of HLAA (Herbarium, Library, Art & Archives), Jodrell Laboratory and Seed Conservation will be brought together in a single science directorate.

Kathy brings a wealth of experience to this role and will be an internal and external ambassador for Kew's science and conservation work, raising its global profile and enhancing its scientific reputation as a centre of excellence for plant and fungal science. Her first major task will be to work with staff to develop and implement the science strategy, and this will form the basis for taking Kew's science forward in new and innovative ways, without losing expertise in the important areas of research and curation. Another major aim of Kathy's is to raise the quality, impact and creativity of public engagement with plant and fungal science. This will allow us to greatly enhance the visitor experience and promote a greater public understanding of Kew's work and its relevance to the big environmental challenges of our time. Kathy will work closely with the other members of the Executive Board, and we were delighted to welcome Richard Barley as Director of Horticulture in August of this year. The

senior team was completed on November 14th when Gaynor Coley took up her position as Director of Public Programmes. Collaboration between these three key roles of the Executive Board will bring exciting new times for Kew's science and greater synergy between science, horticulture and public engagement.

[From the Director's words in Kew Scientist, Issue 43, Autumn 2013
www.kew.org/kewscientist/7540_KewScientist_43_web.pdf]

Kew to cut one in six jobs

Despite the announcement above and a 29% increase in visitor numbers last year, Kew Gardens is facing the axing of 120–125 jobs in the areas of science and public engagement; this out of total staff of 750. The cuts come as a result of a 5 million pound deficit in this year's budget with more cuts to follow in the future.

According to the GMB Union the "majority of cuts are for people in specialist careers measured in decades of experience so Kew will lose dedicated, expert staff, and whole areas of work are likely to be halted." That seems to be a clear statement that systematists will be amongst those targeted.

An online petition calling on the British Government to reverse Kew's ongoing funding cuts had reached more than 64,000 signatures by 21st April; it can be found at

References

http://bit.ly/save_kew
www.independent.co.uk/news/uk/home-news/protest-at-kew-gardens-endangered-jobs-and-funds-reaches-50000--and-growing-9271486.html
www.theguardian.com/science/political-science/2014/apr/11/scientists-unions-greens-kew-gardens

Kew's giant fungal sculptures

If you came across these in the garden you probably would think you had been on the magic mushrooms. See the images and background to this amazing exhibition of giant woven willow sculptures of British edible mushrooms by Tom Hare; they were on display in the gardens from September until November last year. Looking at his portfolio makes one wonder what he could do with Australian native plants.

References

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<http://inhabitat.com/amazing-steel-and-willow-mushroom-sculptures-sprout-in-londons-kew-gardens/>
www.kew.org/video-galleries/galleries/Tom-Hare-fungi-sculptures.htm?isThumbnailView=1

Food for thought

Triaging species

Have we been doing it all wrong for the last 50 years? For those of you who missed "Australia may have to 'triage' unique species" when it aired on the ABC on 19th March, the transcript is available on the web (Web ref.). Should we have to choose between which species should be saved and which left to go extinct as advocated by David Bowman and Corey Bradshaw? Should we be looking at key species rather than threatened species?

Web ref. www.abc.net.au/lateline/content/2014/s3967500.htm

Herbarium specimen use

For those interested in papers using herbarium specimens as a basis for non taxonomic work, and the list is long, here is one by a Canadian plant ecologist analysing 382 studies using

collections in herbaria to document biogeographical and environmental changes. As might be expected many of the studies have only occurred in the last 10 years, the number of specimens studied was much higher from those herbaria whose specimens have been databased and most of the studies involved vascular plants, but with a small percentage also making use of bryophyte, lichen, algal and fungal collections. The author further states that "herbarium specimens might provide in the near future exciting additional spatio-temporal insights that are currently unimaginable."

Reference

Claude Lavoie (2013) Biological collections in an ever changing world: Herbaria as tools for biogeographical and environmental studies. *Perspectives in Plant Ecology, Evolution and Systematics* 15: 68-76. wgbs.ces.iisc.ernet.in/biodiversity/sahyadri_enews/newsletter/issue41/bibliography/biological_collections.PDF

Obituary

Dr Elizabeth Brown

15th November 1956 – 17th November 2013

Dr Elizabeth Brown (Research Bryologist, Scientific Editor *Telopea*) worked at the National Herbarium of New South Wales, Royal Botanic Gardens and Domain Trust for almost 24 years. She made major scientific contributions to research in bryology (especially with respect to the systematics of liverworts) and Ericaceae and was highly respected internationally. She formed many collaborations and trained many students and early career researchers. Her leadership of the editorial committee of the Trust's scientific journal *Telopea* has contributed significantly to its status as a highly respected journal. Elizabeth was passionate about bryological research and the Trust and gave her time and support, without hesitation, to issues within and outside the herbarium.

Elizabeth was Treasurer of ASBS from 1999 to 2001, and she contributed significantly to the organisation of the 2013 joint ASBS/SASB conference *Systematics Without Borders*.

She will be sorely missed.

Currently the Trust is working towards publishing a celebratory volume of *Telopea* honouring Elizabeth which will be published through 2014. We would like to acknowledge her contributions to systematic botany and to celebrate her achievements. If you would like to contribute to this volume please contact Scientific Editor Barry Conn (Barry.Conn@rbgsyd.nsw.gov.au).



The first paper for this volume (Murray and Conn 2014) celebrates her life and scientific achievements and I direct everyone there for a full account of Elizabeth's work.

Reference

Murray LJ, Conn BJ (2014) Elizabeth Anne Brown 15 November 1956-17 November 2013. *Telopea* 17: 1-10. DOI - DOI: <http://dx.doi.org/10.7751/telopea20147465>

Marco Duretto
National Herbarium of New South Wales
Royal Botanic Gardens and Domain Trust

From Taxacom

No access to Geneva collection

The staff and part of the collections of the phanerogamic herbarium at Geneva (G) will be moving to a renovated building in the coming months (phase 2/3). As a consequence we will not be able to accommodate any further scientific visitors before the end of June. Those of you who have recently submitted requests for loans or scans should also be aware that there might be some delay in their processing.

Laurent Gautier, Head Curator - Phanerogams (G)

Insights into changes in the Code since its inception

This culmination of eight years work by Paul van Rijkvorsel of Utrecht offers the various editions of the *International Code of Nomenclature* as web files enabling linking both within an edition and between editions.

Web ref. www.iapt-taxon.org/historic

Book reviews

An illustrated guide to the world's southern temperate seagrasses

John Huisman

Western Australian Herbarium and Murdoch University

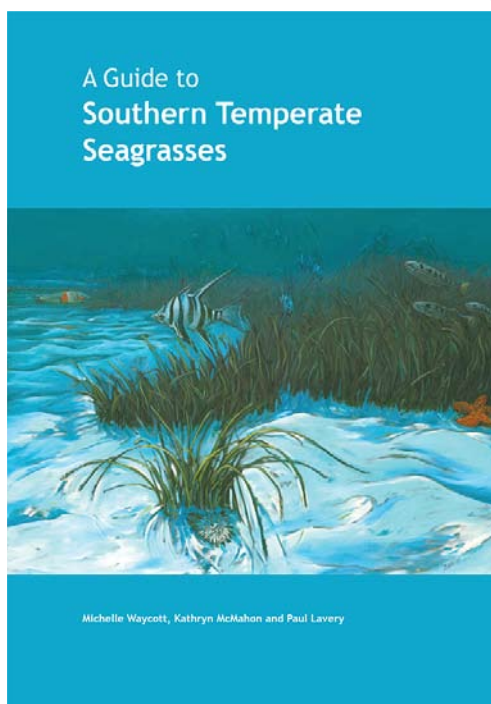
A Guide to Southern Temperate Seagrasses. By Michelle Waycott, Kathryn McMahon, Paul Lavery. CSIRO Publishing, Collingwood, Victoria. 2013. 112 pp. ISBN: 9781486300150. RRP AUD \$ 29.95 postage within Australia and New Zealand included (paperback) www.publish.csiro.au/pid/7124.htm

One of my early working-life memories is of the 1994 conference of the Australasian Society for Phycology and Aquatic Botany, which was held amongst the quokkas on beautiful Rottnest Island in Western Australia. Having attended several of the society's previous meetings, I was anticipating the usual mix of papers, hoping for a strong showing of algal taxonomy, my prime interest then and now. This was not to be. During the two days of the conference, algal taxonomy was represented by all of four short papers (one of them mine, the others by my alma mater cronies). Seagrasses, however, occupied an entire day! If this wasn't enough to satisfy the angiosperm junkies, following the meeting proper there was a workshop dedicated to them. I mention this not to relive my disappointment at taxonomy's poor showing, but to highlight that the seagrasses, probably Australia-wide but certainly in Western Australia, are the subject of considerable interest and scientific research. Looking back at my conference notes to rekindle those memories, I was pleased to see that the lead author of the present book was the winner of the student prize for her paper

on genetic variation in the seagrass *Posidonia australis*. I hope that \$125 was well-spent, Michelle!

This book is the second seagrass guide by the core team of Michelle Waycott (University of Adelaide and SA State Herbarium) and Kathryn McMahon (Edith Cowan University, WA), the first being *A Guide to Tropical Seagrasses of the Indo-West Pacific*, co-authored with Jane

Mellors, Ainsley Calladine and Diana Kleine and published by James Cook University in 2004. The popularity of that book inspired this volume, on this occasion co-authored with Paul Lavery of Edith Cowan University. If you have seen the earlier book you will know what to expect, as the layout is identical, the two clearly designed to be a pair. This volume is stand-alone, however, so by necessity there is some repetition in the introductory sections and species treatments. Both books feature easy to use keys guided by icons, concise and easily understood descriptions, some lovely watercolour



paintings (this time by Perth artist Elizabeth Rippey), and the unusual use of semi opaque paper for a couple of pages of illustrations, allowing the underlying page to be seen. This last feature was prominent in the earlier volume and worked well, giving it a creative appeal not often seen in guide books, so it is pleasing to see it retained here. Introductory sections describe various aspects of seagrasses, including their taxonomy and evolution, habitats and distribution, faunal associations, and human interactions. This latter section contains the impressive statistic that the

monetary benefit humans derive from seagrass meadows is in the order of \$15,000 to \$20,000 per hectare per year. It also includes an image of a sign erected on a Perth beach, declaring that, due to its instability, seagrass wrack “may be dangerous”. As if we in the west don’t have enough dangerous ocean inhabitants to worry about, we now have to add seagrass to the list!

The taxonomic arrangement presented here is current, but such is the state of seagrass taxonomy that several difficult groups remain unresolved. These are in the genera *Halophila*, *Posidonia* and *Zostera*, where several of the described species show morphological overlap (making identification difficult) and similarly cannot be distinguished by molecular methods. Reading between the lines, the authors would appear not to recognise these species, but for this book present them as ‘complexes’, with the supposedly characteristic features of each of the included species also described. Essentially the reader is presented with a ‘split or lump’ choice, and what you decide to do is up to you. Further research is currently underway by this team of authors and others, so hopefully by the time a revised edition is needed the taxonomy will have been settled. Depending on how you count them, 21-35 species are treated, the range due to the ‘species’ included in the complexes that are not described fully, and those in *Lepilaena* which are only briefly mentioned.

In combination with the icons and paintings, underwater photography is used throughout the book. These are mostly of good quality, but unfortunately on a few occasions something seems to have gone awry in the printing. This is particularly noticeable in the *Posidonia ostenfeldii* ‘complex’ (pages 62-65), where

several of the images appear washed-out or have a bluish colour cast. Initially I suspected a fault with my copy, but I’ve since examined others and the problem is common to all. A few other images fall into the ‘serviceable’ rather than ‘stunning’ category (e.g. *Thalassodendron ciliatum* on p. 52), which, while not detracting from the utility of the book, is perhaps a lost opportunity to present the seagrasses in their best light.

Seagrasses worldwide are a relatively small group with only 72 species known, of which exactly half are found in Australia. As noted in the Preface (p. 5), this book started as a guide to the southern Australian species, but it was realized that adding the New Zealand, southern African and South American species “wouldn’t expand things dramatically”. Australia, as I well and truly learnt on that fateful day back in 1994, is the frontrunner in seagrass diversity. Relative to other marine plants this diversity might be small, but it is inversely proportional to their ecological importance, with seagrass beds in Australia some of the largest in the world and supporting entire ecosystems. Unfortunately they are also sensitive to environmental degradation and once gone are difficult (if not impossible) to restore. As well as simplifying the identification process, guide books such as this are invaluable in exposing the seagrasses to a wider audience and raising awareness of their ecological importance. The target audience includes research scientists, students and teachers of biology and environmental sciences, environmental consultants, environmental monitoring agencies and amateur naturalists. At only \$29.95, this book is a bargain and should be affordable to all.

A standard text on the ecology of temperate Australian reefs

John Huisman

Western Australian Herbarium and Murdoch University

Ecology of Australian Temperate Reefs.

Edited by Scoresby Shepherd & Graham Edgar.

CSIRO Publishing, Collingwood,

Victoria. 2013. 520 pp. ISBN:

9781486300099. RRP AUD \$130.00

(hardback). Also available as an eBook

www.publish.csiro.au/pid/6525.htm

Anyone with even a passing interest in the Australian marine environment and its ecology will certainly be familiar with the names Scoresby Shepherd and Graham Edgar, the editors (or perhaps more accurately, authors; more on that later) of this book. Scoresby has been a fixture of Australian marine ecology since before many of us were born, his love of underwater science precipitated by, as he

described in 1997 to the Australian Marine Science Association when receiving that society's Silver Jubilee Award, "a memorable event in 1955, - the day that I first fastened an aqualung to my back and wallowed sensuously among seagrasses and fish for an hour and then emerged "with a sense sublime... of something far more deeply infused..." To many readers of this newsletter the idea of "wallowing sensuously among seagrasses and fish" might seem slightly alien, but as someone who has indulged in just such an activity on numerous occasions (certainly the wallowing, perhaps not quite sensuously), I can empathize with Scoresby and can highly recommend the experience. Scoresby, who 'retired' (if you can call it that) in 2000, is currently an Honorary Fellow at SARDI [South Australian Research and Development Institute], and has written over 130 papers and edited six books. He was appointed Officer of the Order of Australia in 2006. Graham Edgar is perhaps best known for his books *Australian Marine Life* (1997, revised in 2000, second edition 2008, 2012), which drew on his encyclopaedic knowledge and vast collection of underwater images depicting the plants and animals of temperate Australia, and *Australian Marine Habitats* (2001), both of which won the Whitley Award of the Royal Zoological Society of NSW. Graham has over 100 journal papers to his credit and is the recipient of numerous accolades. With regard to experience and expertise, it would be hard to find a more suitable pairing to produce a book on temperate Australia's marine ecology.

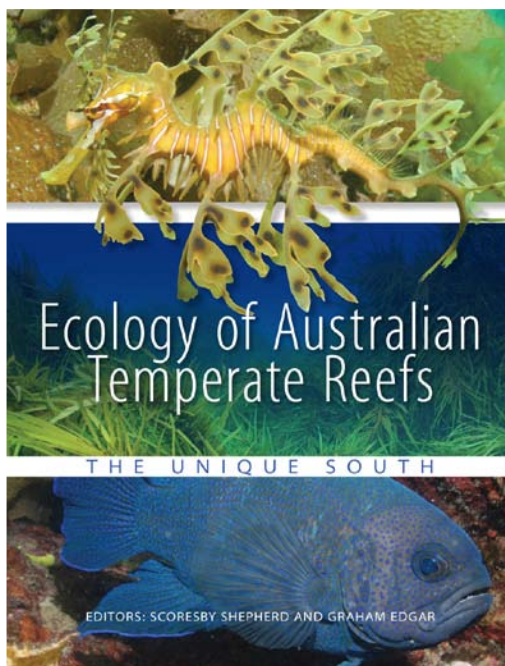
This book presents a detailed description of the ecology of temperate Australian reefs, essentially encompassing the coastline from the Houtman Abrolhos in Western Australia

eastward around southern Australia to Sydney. Early chapters describe the geological history, historical climate change, oceanography and biodiversity, these essentially providing the backdrop for the following chapters where the ecology of taxonomic groups (and often important single species) is dealt with, starting with the primary producers (mostly the algae, the seagrasses are regarded as largely soft

bottom rather than reef biota), before progressing through the invertebrates and vertebrates. The concluding section deals with marine ecosystems and their conservation. As described in the preface, the book primarily has a 'reductionist' approach to the ecology of the various groups, progressing from general ecological processes to examples drawn from individual studies. The 'holistic' approach (or the 'big picture' if you prefer), is restricted to the final chapters. The content is not wholly ecological, including as it does the occasional descriptions of morphology and life

histories, but where these appear they are always in service of a fuller understanding of an organism's ecology. For example, one cannot hope to understand the ecology of the giant kelp *Macrocystis* without knowledge of its life history, wherein the giant sporophyte alternates with a microscopic gametophyte. The sporophyte, we are told on p. 80, releases an impressive "billions" of zoospores throughout the year.

In their words, the authors have illustrated their accounts with current theory, and avoided the fashionable as it quickly becomes dated. They have also avoided interpretation, letting the accounts speak for themselves, and at no point pass judgement on the individual studies that underpin much of the book's content. The potentially controversial sections describing climate change and conservation



(particularly the value of Marine Protected Areas or sanctuaries) are evidence-based and convincing, leaving no doubt as to where the author's sentiments lie.

My appreciation of this book is based strictly on my standing as a member of the target audience, viz. "biologists, undergraduates, and those interested and concerned with reef life and its natural history". While I studied ecology as an undergraduate, my hard-core ecologist pals will remind me that I'm not an ecologist. Given that qualification (or lack of), I found this book to be extremely informative, well written and presented, and predict it will be a standard text for its target audience for many years to come. Of course my appreciation of the book is also coloured by my background as a taxonomist, something I undoubtedly share with most readers of this newsletter. From that perspective I have a couple of minor complaints. Taxa are listed as in the original studies with no updating of names to reflect recent changes. This is probably understandable in an ecological treatment, but younger readers might not be familiar with, for example, *Rhodymenia australis* (p. 140), which was renamed *Rhodymenia sonderi* by Paul Silva in 1996, then transferred to a resurrected genus as *Halopeltis australis* by Gary Saunders in 2010. *Sargassum decurrens* (p. 95) is now in *Sargassopsis*. The invasive *Caulerpa racemosa* f. *cylindracea* (p. 132) was raised to *C. racemosa* var. *cylindracea* by Verlaque et al. in 2003, and Belton et al. (2013, obviously too recent for this book, but given here for information) have reinstated the taxon to its original species status as *Caulerpa cylindracea*. How important you regard these name changes obviously depends on your

individual bias. For most readers of the book they will be irrelevant, and even to me as a taxonomist they are only of minor significance in the context of this book.

Regarding my earlier mention of the book's authorship, it is credited as being edited by Scoresby and Graham, but the Acknowledgements state "unless otherwise noted, all material has been written by the main author SA Shepherd with comments and additional material by GJ Edgar". Several contributors are credited in the introductory section and as authors of some sections, these in most cases in combination with Scoresby. All other sections are not credited separately and their authorship is presumably Shepherd & Edgar. Again, it's probably only the taxonomist in me that sees this as a concern, but the book might present some difficulty to bibliographers tasked with teasing out credit for individual sections.

Under the category of 'things that don't align with my taste': The use of colour is restricted to a series of 62 colour plates on pages xvii-xxxii. These are mostly of good quality and depict many of the taxa described in the text. However, most of the pages include only four plates, with large expanses of white. I would have preferred a slightly different arrangement with the photos enlarged to fill the space, or with a greater number plates more economically arranged.

In summary, this is a well written, informative book, one that will clearly satisfy the target audience and many more. At \$130 (\$80 for the ebook), it's also reasonably priced. I suspect it will end up on the reading lists of many university courses.

An authoritative biography of Willi Hennig

Pauline Ladiges and Gareth Nelson
School of Botany, The University of Melbourne

From Taxonomy to Phylogenetics – Life and Work of Willi Hennig. By Michael Schmitt. Brill, Leiden. (2013). 208 pp. ISBN: 9789004219281. RRP EUR €96 (USD \$132) (hardback) www.brill.com/taxonomy-phylogenetics-life-and-work-willi-hennig

Michael Schmitt presents an authoritative biography of Willi Hennig (20.4.1913 –

5.11.1976) — from his childhood as a gifted student, family life in Germany and study of insects before, during and after World War II, to his sudden death at the age of 63. Publication of this book in 2013 marked the 100-year anniversary of Hennig's birth, and is dedicated to wife Irma and his three sons: Wolfgang, Bernd and Gerd Hennig.

The biographic content (chapters 1-3, totalling

108 pages) is remarkably detailed, based on information from many people and institutions ‘hidden either in public or private archives, or in their memories’. The book provides historical insight into the development of Hennig’s revolutionary contribution to phylogenetic systematics (‘cladistics’), which had an impact and reach far beyond his specific field of entomology and dipteran taxonomy. Insight is provided into Hennig’s shy personality (‘the shy revolutioniser’), the German scientific community, his friends and colleagues, the circumstances of working as an entomologist in the German army, and later after the war working at the Duetsches Entomologisches Institut (DEI) and the impact of the Berlin wall on his movements between west and east Berlin.

Chapter 4 presents Willi Hennig the Taxonomist. Hennig’s early papers (on snakes and lizards as well as flies) are detailed as evidence of his early ability to solve challenging taxonomic and nomenclatural problems. Schmitt also argues that the general scientific importance of Hennig’s ‘countless description of new Diptera species’ were largely embedded in more comprehensive questions and indicate his principle ‘to treat taxonomic topics not isolated from other, more generalised aspects as biogeography or phylogeny’ (p. 111).

Chapter 5, Willi Hennig the Systematist, provides a most insightful analysis of the conceptual basis for his method of phylogenetic systematics. Schmitt discusses the possible influence of earlier authors such as Daniele Rosa, 1918 (Box 6 p. 121), influences of colleagues (such as Klaus Günther), to the maturing of his method during war times, when he wrote his fundamental manuscript (*Grundzüge Einer Theorie Der Phylogenetischen Systematik*,

Berlin 1950) while a prisoner of war in British captivity.

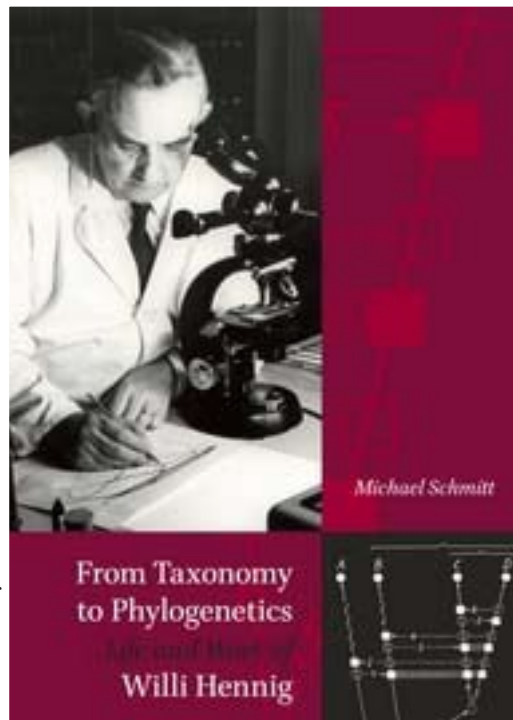
Nearly twenty years ago Colin Patterson wrote a fair summary: ‘What we all learned from Hennig back in those early days boiled down to just one thing, what relationship means. No one had put it plainly before.’ For Hennig ‘phylogenetic relationship has the character of genealogical relationships [which] are something entirely different from similarity’. Distinguishing relationship from similarity was Hennig’s lasting achievement in systematics.

Chapter 6 is a short account of Hennig the Philosopher: his invoking the method of reciprocal illumination; discussing whether species are individuals or classes; considering ‘laws and regularities in evolution, which could yield tools for character polarisation’ (p. 164); and ‘his emphasis on the power of systematics to provide explanations’ (p.165).

Chapters 7 and 8 in short summarise the legacy, dubbed the ‘Hennigian Revolution’, of Willi Hennig — ‘A Man of Order. Hennig’s contribution is ‘a framework of clear terms and concepts that... reduce subjectivity and arbitrariness in biological systematics’ — the necessity to make explicit statements of relationship in ‘the form of A is more closely related to B than either is to C’.

The book is attractive to persons interested in systematics and its history, and we recommend it highly.

The back cover of the book describes the author, entomologist Prof. Dr Michael Schmitt, who currently researches and teaches at the University of Greifswald, and who is undoubtedly THE expert on the life of Willi Hennig and his scientific contributions.



Consolidating classical taxonomy and phylogenetics by discarding the latter

Alexander N. Schmidt-Lebuhn
CSIRO Plant Industry, Canberra

***A Framework for Post-Phylogenetic Systematics. By Richard H. Zander. Zetetic Publications, St. Louis, CreateSpace Independent Publishing Platform, 2013. 214 pp. ISBN: 978-1492220404. RRP USD \$19.98 (paperback).
wwwcreatespace.com/4411732***

Richard Zander is one of the most vocal contemporary critics of phylogenetic systematics in botany. *A Framework for Post-Phylogenetic Systematics* constitutes his most comprehensive attempt to present his criticism of what he considers to be the current practice of phylogenetics and to present his preferred method of classification. He indicates the self-published work evolved out of one or potentially several manuscripts submitted unsuccessfully to various journals.

The book covers an enormous amount of material in a very dense writing style, too much for this short review to do it justice. It is nicely designed and well stocked with figures and example cases illustrating his main arguments.

What appears to trouble Zander most about phylogenetic systematics is that supraspecific taxa may not be treated as ancestral. However, despite the centrality of this issue the book does not explore the pros and cons of such a practice in any depth, and the author apparently assumes his own position to be self-evident. This leaves the reader to wonder why they should consider one extant group of organisms to be the ancestor of another extant group of organisms even though they exist contemporaneously and their actual common ancestors lived millions of years ago. A justification is perhaps implicit in Zander's obviously sincere conviction that postulating ancestor-descendant relationships at the same taxonomic level is what macroevolution is about.

Closely related to this view is his rejection of Willi Hennig's concept of pseudoextinction, under which ancestral species occupy exactly one internode on the tree of life, subsequently replaced by two descendent species even if one

of them is morphologically indistinguishable from the ancestor. The book comes back to this issue again and again yet its treatment is not very comprehensive either. It would have been helpful had arguments for the internodal species concept also been discussed, and had the distinction between Hennig's pseudoextinction as a purely definitional convenience and Zander's pseudoextinction as another name for anagenesis been acknowledged. One might also wonder why this concept is given so much attention considering it is barely applied in contemporary phylogenetic practice. There are even cladists who happily use Zander's preferred view of species as paraphyletic groups of internodes on a phylogeny (Kornet & McAllister, 2005).

The book has a tendency to equivocate between species and supraspecific taxa. Phylogenetic systematics and all terms ending in '-phyly' can necessarily apply only to items that have a tree-like relationship with each other and thus cannot be used within the reticulating genealogical networks of sexually reproducing species, but here species are often treated as just another taxon. Conversely, Hennig's pseudoextinction applies only to species, but the book repeatedly quotes colleagues arguing against it to support the unrelated stance that supraspecific taxa should also be considered as ancestral to others.

Apart from phylogenetic systematics, Zander is also opposed to molecular phylogenetics. Indeed at the beginning of his book he explicitly defends his choice of conflating the cladist school of systematics and the use of molecular markers into "phylogenetics". He argues that when morphological and molecular results are congruent, the latter do not provide additional support for the former, and when the two disagree, the latter are always wrong (pp. 21-22). Zander's distrust of molecular phylogenetics appears to be partly based on his belief that the loss of ancestral haplotype diversity through lineage sorting (which he calls "implicit paraphyly") makes the inference of species trees impossible. In other words, we

can learn about species relationships from a gene tree only to the degree that the gene copies from each species are non-monophyletic. This is an interesting perspective considering that such a situation is most commonly considered to make the inference of relationships harder instead of easier, a problem to be solved with species tree methods (Nakhleh, 2013).

Most of the book is dedicated to presenting the Framework itself, Zander's own method of classification. It is organised into six "elements" which can be summarised as follows:

1. Intuitive classical taxonomy is defended as scientific because it is a "heuristic", and as superior to phylogenetics because it uses more specimens per species. Any and all taxonomic changes ever made to make taxa monophyletic need to be reversed (p. 27).

2. Because parsimony analyses of morphological characters can (supposedly) be misled by speciation through budding, they cannot be trusted to correctly infer species relationships (pp. 41, 49). They should be manipulated by manually re-weighting characters until their results agree with traditional classifications (p. 43). This produces a "natural key".

3. For the reasons discussed previously, molecular phylogenies cannot show relationships between taxa either, only sequence evolution.

4. Morphological and molecular trees are compared: "Taxa low in the morphological tree but high in the molecular tree are theoretically ancestral taxa of all lineages in between."

5. The molecular tree is "evaluated against" the morphology-based "natural key" with a "Bayes Solution": The classical taxonomist intuitively support values ("coarse priors") for each hypothesised group as priors for Bayes'

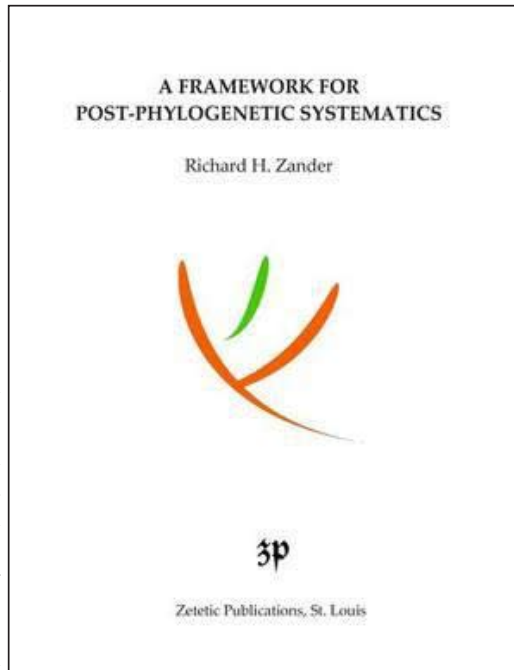
formula and uses the molecular clade support values as the additional evidence to calculate Bayesian posterior probability values (pp. 85-91). A table provided in the book helpfully demonstrates the result of this procedure; any group assigned an intuitive prior probability of at least 0.95 will be supported by the "Bayes Solution" even if its support in the molecular analysis was as low as 0.55.

Internal nodes of the phylogeny are then assigned to extant taxa ("superoptimization"), with "Dollo evaluation" helping to decide

which is a progenitor and which a descendant. This makes a tree "even more parsimonious" because it "minimizes unnamable [sic], unobservable, unexplorable superfluous entities".

6. Taxa are given Linnaean ranks.

It follows that under the Framework the topology of the tree of life is to be inferred entirely through the personal judgement of classical taxonomists. Consequently, the book will not convince many phylogeneticists, and the author admits that he does not expect it to do so.



But sadly, even those who are, for whatever reasons, inclined to agree with his rejection of phylogenetic systematics may find the Framework frustrating. Its argumentation is repetitive and unstructured, and readability is hindered by needlessly convoluted sentences and an over-indulgence in arcane and technical jargon.

The last point deserves elaboration. Zander uses many established terms in ways that we might call non-traditional and frequently invents his own terms. When faced with the choice between a simple word and one that few of his readers will be familiar with he invariably uses the latter. For example, the book is described not as self-published but as published "as samizdat", and a chapter does not have a summary but it has a "précis". Entire sentences may read as

follows: “Aerts et al. (2010) demonstrated a go-no go theorem involving quantum-style analysis for dealing with manifest data based in part on hidden variables, and Aerts (2009) discussed the well-structured mechanics of the double layer of human thought that figures in the balance between logic and Gestalt apprehensions of reality, basing heuristics on entirely rational processes.”

With this choice of style, Zander may have done himself a disservice and made the communication of his ideas unnecessarily difficult. It is not to be expected that many young systematists will, as he hopes, give

contemporary phylogenetics a pass to take up his approach and build on it, not least because they may find the book impenetrable.

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A new checklist of mosses of Peninsular Malaysia and Singapore

Niels Klazenga
Royal Botanic Gardens Melbourne

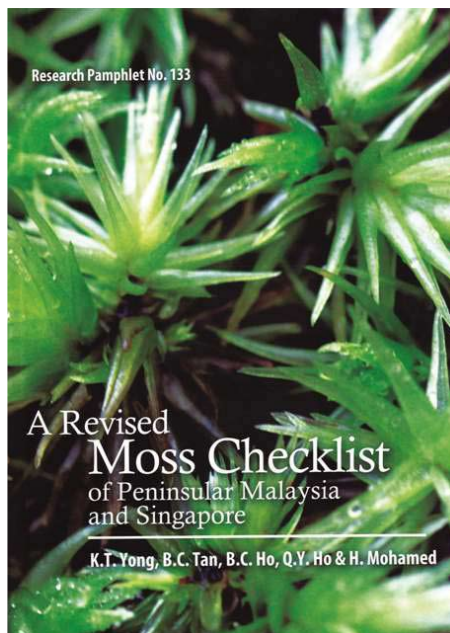
A Revised Moss Checklist of Peninsular Malaysia and Singapore.

By K.T. Yong, B.C. Tan, B.C. Ho, Q.Y. Ho and H. Mohamed.

Research Pamphlet no. 133. Forest Research Institute Malaysia, Kepong (Malaysia) 2013. 152 pp. ISBN 978-967-5221-99-6. RRP USD \$36 (hardback) www.frim.gov.my/?page_id=519

This work is a product of almost 25 years of bryological exploration and research in Peninsular Malaysia and Singapore since the previous checklist (Mohamed and Tan 1988). The area comprising Peninsular Malaysia and Singapore is home to 512 species of mosses, roughly comparable to 435 taxa reported from the Australian Wet Tropics (AVH 2014), with which it shares many taxa. This checklist contains the latest scientific information and was produced in order to provide government planners with the tools to properly manage this group of plants in a sustainable way and to guide conservation programs in Malaysia and Singapore. It also

serves as an important bibliographic reference for botanists in Malaysia and, because many moss species are widespread, in neighbouring countries.



The book contains synonymy for all species and infraspecific taxa, as well as state distributions and references to published reports. It also has notes on identifications that have changed and have led to taxa being excluded. In the front of the book is a map, which gives the numbers of species and infraspecific taxa recorded from each state, and in the back are 11 pages with excellent photos of a selection of the moss taxa that are treated in the book and the habitats in which they occur, giving the reader a quick idea

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New books

Cataloguing Tasmanian mosses

An Illustrated Catalogue of Tasmanian Mosses, Part 1. By **R. D. Seppelt, S. J. Jarman, L. H. Cave & P. J. Dalton.** *Tasmanian Museum & Art Gallery, 2013. ISBN 4187002812, 9784187002811. 98 pp, spirally bound. Price \$20.*

The Catalogue is to be published in several parts, with the selection of species largely determined by convenience but with members of families or genera in the same volume as far as practicable. The species are arranged alphabetically according to genus/species

From the preface.

In Part 1 of *An Illustrated Catalogue of Tasmanian Mosses*, 37 of Tasmania's mosses are meticulously illustrated with pen-and-ink drawings of shoots, organs and cells, mostly as viewed with a microscope or hand lens. The drawings combine scientific accuracy with artistry and, although intended for use with taxonomic descriptions of species already published in other works, each drawing comprises an artwork in its own right. The drawings are accompanied by a distribution map and altitude graph that summarise the occurrence of each species in Tasmania. Part 1 also includes an introduction to Tasmania's moss flora, a brief history of collectors and collections, and an outline of the families and genera present. [Publisher's blurb]

<http://shop.tmag.tas.gov.au/store/viewItem.shop?idProduct=254>

Baudin's scientists in Sydney
Baudin, Napoleon and the Exploration of Australia. Empires in Perspective: 21. By **Nicole Starbuck.** *Pickering & Chatto, London. May 2013. Hardback, 208pp, 234x156mm. ISBN 1848932104. Price: £60/\$US99. Also available for purchase as an ebook; price unknown.*

This is the first in-depth study of the sojourn in Sydney made by Nicolas Baudin's scientific expedition to Australia in 1802. Starbuck focuses on the reconstruction of the voyage during the expedition's stay in colonial Sydney and how this sheds new light on our understanding of French society, politics and

science in the era of Bonaparte. Aspects examined include Baudin's leadership skills, life on board the ship, colonial encounters with Aborigines and the nature of Anglo-French rivalry during the period. While previous histories have viewed Baudin's time in Sydney as little more than an opportunity for the French to recuperate after their journey, Starbuck presents it as a pivotal moment in French history, intellectual thought and imperialism. [Publisher's blurb]

www.pickeringchatto.com/titles/1436-9781848932104-baudin-napoleon-and-the-exploration-of-australia

New biogeography of Australasia

Biogeography of Australasia: A Molecular Analysis. By **Michael J. Heads.** *Cambridge University Press. November 2013. ISBN 13: 9781107041028; ISBN 10: 1107041023 Hardback, 503 pp. Price AUD\$175*

Over the last decade, molecular studies carried out on the Australasian biota have revealed a new world of organic structure that exists from submicroscopic to continental scale. Furthermore, in studies of global biogeography and evolution, DNA sequencing has shown that many large groups, such as flowering plants, passerine birds and squamates, have their basal components in this area. Using examples ranging from kangaroos and platypuses to kiwis and birds of paradise, the book examines the patterns of distribution and evolution of Australasian biodiversity and explains them with reference to tectonic and climatic change in the region. The surprising results from molecular biogeography demonstrate that an understanding of evolution in Australasia is essential for understanding the development of modern life on Earth. [Publisher's blurb]

The table of contents is reproduced here and parts of the book can be viewed on the publisher's website or through Google books, but no review was found at this time.

Preface; Acknowledgements; Abbreviations; 1. The spatial component of evolution; 2. Evolution in time; 3. Global affinities of Australasian groups; 4. Biogeography of

Australia; 5. The Tasman-Coral Sea region: a centre of high biodiversity; 6. Distribution in and around the Tasman region; 7. Biogeography of New Zealand; 8. Biogeography of New Caledonia; 9. Biogeography of New Guinea and neighbouring islands; 10. Biogeography of the Philippines; 11. Conclusions; Glossary; References; Index.

Photographic guide to NZ seaweeds

New Zealand seaweeds: an illustrated guide. *By Wendy Nelson. Te Papa Press, Wellington. November 2013. Octavo, paperback, 312 pp., 500+ colour photographs, illustrations, map. ISBN: 978-0-9876688-1-3. AU\$70.00; NZ\$79.99*

New Zealand Seaweeds is the first photographic identification guide to New Zealand's unique marine algae. It covers 150 genera and 250 key species with each species entry including up-to-date information on nomenclature, type locality, morphology, habitat, distribution and notes on identification and key characteristics.

The guide contains over 500 illustrations, with each entry illustrated by either underwater or coastal photographs, supplemented by herbarium scans, microscopic photographs or reproductions of celebrated botanical artist Nancy Adams' paintings from the original *Seaweeds of New Zealand: An illustrated guide*.

Informative introductory chapters and breakout boxes introduce New Zealand's seaweeds, giving an overview of the country's aquatic flora and its unique features, information about the coastal environment, macroalgal ecology, distribution and introduced/invasive species, plus material on the uses of macroalgae (particularly in New Zealand by Māori) and the widespread commercial applications of these diverse plants. [Adapted from the publisher's blurb]. A review was found on-line (Web ref.)

Web ref. <http://sciblogs.co.nz/scibooks/fine-first-photographic-guide-to-new-zealand-seaweeds/>

Seaweeds and the community

Seaweeds: edible, available and sustainable. *By Ole G. Mouritsen University of Chicago Press, Chicago; June 2013. Quarto, laminated*

boards, 304 pp., colour photographs, illustrations, line drawings. ISBN: 9780226044361 (softcover) US\$35.00; ISBN: ISBN: 9780226044538 (e-book) US\$21.00

With the ever-growing popularity of sushi restaurants across the world seaweed is becoming a substantial part of our total food intake. Danish scientist Ole G. Mouritsen, drawing on his fascination with and enthusiasm for Japanese cuisine, champions seaweed as a staple food while explaining its biology, ecology, cultural history, and gastronomy. Mouritsen takes readers on a comprehensive tour of seaweed, describing how people of different cultures have utilised them since prehistoric times for a whole array of purposes - as food and fodder, for the production of salt, in medicine and cosmetics, as fertilizer, in construction, and for a number of industrial end uses, to name just a few. He reveals the vast abundance of minerals, trace elements, proteins, vitamins, dietary fibre, and polyunsaturated fatty acids found in seaweeds, and provides instructions and recipes on preparing a variety of dishes that incorporate raw and processed seaweeds. Approaching the subject from not only a gastronomic but also a scientific point of view, Mouritsen sets out to examine the past and present uses of this sustainable resource, keeping in mind how it could be exploited for the future. [Adapted from the publisher's blurb]. The website of the book has further information and links to reviews.

<http://seaweedbook.net/>

Bamboo in all its guises

Bamboo. *By Susanne Lucas. Reaktion Books, London. November 2013. Octavo, laminated boards, 184 pp., 95 colour photographs. ISBN: 9781780232010. £16.00.*

Bamboo has an unparalleled history; it is very old, and at the same time very new. Numerous species of bamboo are distributed widely throughout the world, and bamboo is utilized by hundreds of millions of people in a great number of ways. As well as being used in food, clothing and shelter, it is believed that the first books were written on bamboo, and there is evidence that more than 5,000 years ago it was shaped by humans into mu-

sical instruments as well as the framework of housing. Bamboo also occurs in the creation beliefs of cultures across the globe.

Bamboo plays a vital role in the survival of many animals and ecosystems as well as having unique characteristics that offer potential solutions to modern ecological dilemmas – it grows extremely quickly, for example, making it an easily renewable resource. With the advent of modern research and technologies, the use of bamboo has increased dramatically – it competes with hardwoods as home flooring and can be found in the skins of aircraft and concrete reinforcements. This book draws on a vast array of sources to build a complete picture of bamboo in both history and our modern world. [Publisher's blurb]

Companion to the now completed *Flora of China*

Plants of China - A Companion to the Flora of China. By Hong Deyuan & Stephen Blackmore. September 2013. Science Press, Beijing. Hardcover; 488 pp; 185X260 mm; 1.8 kg; ISBN: 9787030385741.

This may be difficult to acquire and there is quite a waiting time judging from the two sites indicated here. Prices quoted also show some variation.

When the *Flora of China* was first conceived in 1979 and formally agreed upon in 1988, it was always intended that there would be an introductory volume providing an overview, not only of the *Flora of China*, but also of the plants of China generally. *Plants of China* is not a formal part of the *Flora* but summarises in an accessible way the state of knowledge of the plants of China. It will be useful as a guide to China's plants from the various points of view summarized in its chapters. In contrast to the floristic volumes, which have been co-authored jointly by Chinese and non-Chinese scientists, plants of China has been written in the main by Chinese authors, all of whom are leaders in their fields. It covers ecology, plant geography, the uses of plants, and many other important features of the nation's plants that could not be treated in detail in the *Flora*. Much of the information in the volume has not previously been published outside China, and it has certainly never been brought together in

this way.

[Adapted from information provided on the websites].

www.hceis.com/home/book_view.aspx?id=11969
www.nhbs.com/plants_of_china_tefno_194208.html

Archibald Menzies in Albany in 1791

Groves, E.W. (2013). Archibald Menzies's visit to King George Sound, Western Australia, September–October 1791. *Archives of Natural History* 40: 139-148. DOI 10.3366/anh.2013.0143

A paper of interest for those involved with Archibald Menzies collections of plants from Australia.

This paper is by Eric Groves, one of the contributor's to the publication of Robert Brown's diary. It gives a daily account of the visit by Archibald Menzies, naval surgeon and botanist on the Vancouver Expedition (1791–1795), to King George Sound, Western Australia, from 29 September to 11 October 1791 and includes a list of the herbarium specimens extant in various British herbaria.

William John Wills's diary

Starvation in a Land of Plenty: Wills' diary of the fateful Burke & Wills Expedition. By Michael Cathcart. National Library of Australia, October 2013. 224 pp; ISBN 9780642277909. Price \$39.99

When Robert O'Hara Burke and William John Wills set out on their fateful journey with the Victorian Exploring Expedition, Wills brought with him a diary in which to record his experiences. His entries would go on to help historians understand the circumstances that led to the tragic end of the expedition. Today, the diary is held by the National Library of Australia and forms the foundation of *Starvation in a Land of Plenty*.

Between 23 April and 28 June 1861, Wills documented the torments and disappointments that led to his and Burke's destruction. Surprising to many, though, Wills was not the second-in-command but, rather, the party's 'surveyor, astronomical and meteorological observer'. His resulting misfortune and the words he left behind have transformed the young English surveyor

into both an Australian martyr and hero. Combined with images from the Library's collection, this poignant and telling publication draws on Wills' at times matter-of-fact account of his fatal weeks, revealing him to have been a man of great dignity and bravery. [Publisher's blurb]

A review is available on-line (Web ref.), but this wonderfully illustrated book deserves a review from a botanist's perspective.

Web ref. www.canberratimes.com.au/entertainment/books/tribute-to-an-astute-observer-20131129-2yfub.html

Curating non-specimen material

Curating Biocultural Collections: a handbook. *Edited by Jan Salick, Katie Konchar and Mark Nesbitt. Kew Publishing, in association with Missouri Botanical Garden Press, Available May 2014. 250pp: 253x190mm; 100 colour photographs. Paperback. ISBN 9781842464984. Price €30.00 or \$US50*

The first major curation manual for biocultural collections, filling a long standing and real need. Chapters cover curation of material collections including herbarium, ethnobotanical, paleo- ethnobotanical, xylarium, ethnographic, ethnobiological products, DNA, horticultural, and seed collections; the curation of related reference collections including databases, books and archives, photographs and images, linguistic and audio information, and ethnographic information. The authors use real-life case studies and a carefully-chosen bibliography, with many references to online resources. This book demonstrates the central importance of such collections for research, and draws on a wide range of expertise and case studies to show how they should be cared for. Throughout there is a strong emphasis on meeting the needs of collection users, and for ethical and equitable engagement with source communities. [Publisher's blurb].

Publication is imminent if it has not already happened. Copies of four of the chapters of this book, 1, 8, 20 and 22, are already available on the web at and each of the chapters has the contents pages for the volume attached.

Web ref. www.ancientgrains.org/mark_papers.html

A past diversity of fruits

Imitation of life: a visual catalogue of the nineteenth century fruit models at the Santos Museum of Economic Botany in the Adelaide botanic Garden: a collection of papier mache models made by Heinrich Arnoldi & Co., Gotha, Germany (1856-1899). *By Tony Kanellos. Board of the Botanic Gardens and State Herbarium: Adelaide. ISBN: 9780980702163. RRP \$69*

"...a book about the ghosts of apples and pears. Dead ones. Types long gone" is the start of a review by entertaining Adelaide wine writer Philip White on his blog page (Web ref. 1).

The book was produced as a means of cataloguing the 360 replicas of fruit varieties that remain of an original 456 delivered to the Adelaide Botanic Gardens between 1856 and 1899. They served 3 purposes at the time, the first as an example of all of the varieties then being grown in Germany, the second as a reference ensuring that correct varietal names were being applied in South Australia and the third as examples of varieties that might not yet be represented in the colony. Now they reflect the loss of considerable diversity and our acceptance of fruit bred primarily for a supermarket shelf life. It is quite scary that despite their being some 7500 cultivars of apples and 3000 of pear, we are now reduced in Australia to just 12 types of apple and 8 types of pear in supermarkets and if you visit other countries many of the same varieties seen in our markets will also be on sale there.

Perhaps some of the names appearing in the book, such as various Gravensteiners and Pippins, will be familiar to our older members and they might even prompt people to investigate some of these older varieties which organisations like the Heritage Fruits Society (Web ref. 2) are trying to maintain.

Appropriately the launch of the book was by David Mabblerley, co-author of the 2006 book *The story of the Apple*.

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Web ref. 1. <http://drinkster.blogspot.com/2013/11/imitation-of-life-visual-catalogue.html>

Web ref. 2. (www.heritagefruitsociety.org.au/).

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

Australian Systematic Botany Society Newsletter No. 53

Systematic Status of Large Flowering Plant Genera

Edited by Helen Hewson, 1987

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

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

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

Peacock Publications, ASBS & ANZAAS, 1982

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

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

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

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

History of Systematic Botany in Australasia (book)

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AUSTRALASIAN SYSTEMATIC BOTANY SOCIETY INCORPORATED

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

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

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

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

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