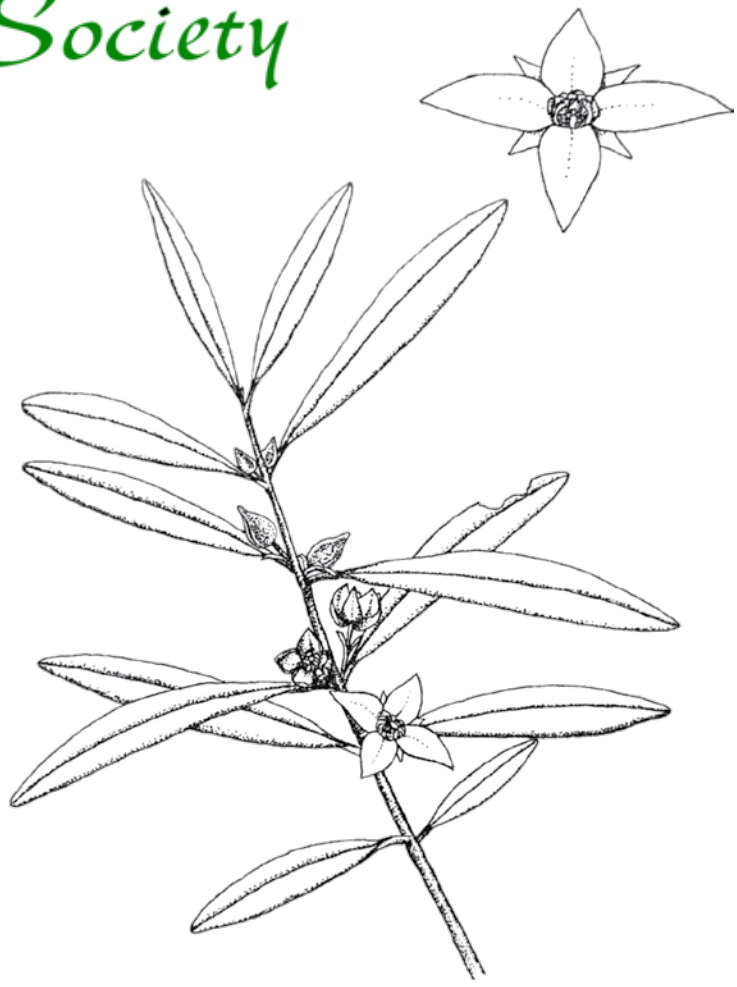
A S B S

Australian Systematic Botany Society



Newsletter

No. 139 June 2009

Price: $5.00

ISSN 1034-1218

AUSTRALIAN SYSTEMATIC BOTANY SOCIETY INCORPORATED

Council

President
Marco Duretto
Tasmanian Herbarium
Tasmanian Museum & Art Gallery
Private Bag 4
Hobart, Tas. 7001
Tel: (03) 6226 1806
Fax: (03) 6226 7865
Email: marco.duretto@tmag.tas.gov.au

Vice President
Peter Weston
National Herbarium of New South Wales
Royal Botanic Gardens Sydney
Mrs Macquaries Road
Sydney, NSW 2000
Tel: (02) 9231 8111
Fax: (02) 9251 7231
Email: Peter.Weston@rbgsyd.nsw.gov.au

Secretary
Kirsten Cowley
Australian National Herbarium
GPO Box 1600
Canberra, ACT 2601
Tel: (02) 6246 5024
Fax: (02) 6246 5249
Email: asbs_secretary@anbg.gov.au

Treasurer
Michael Bayly
School of Botany
The University of Melbourne, Vic. 3010
Tel: (03) 8344 7150
Fax: (03) 9347 5460
Email: asbs_treasurer@anbg.gov.au
or mbayly@unimelb.edu.au

Councillor
Dale Dixon
Northern Territory Herbarium
Museum & Art Gallery of the Northern Territory
PO Box 496
Palmerston, NT 0831
Tel: (08) 89994512
Fax: (08) 89994527
Email: Dale.Dixon@nt.gov.au

Councillor
Tanya Scharaschkin
School of Natural Resource Sciences
Queensland University of Technology
PO Box 2434
Brisbane, Qld 4001
Tel: (07) 3138 1395
Fax: (07) 3138 1535
Email: t.scharaschkin@qut.edu.au

Other Constitutional Bodies

Public Officer
Kirsten Cowley
Australian National Herbarium
(Contact details above)

Hansjörg Eichler Research Committee
Barbara Briggs
Rod Henderson
Betsy Jackes
Kristina Lemson
Chris Quinn
Chair: Peter Weston, Vice President (*ex officio*)
Grant applications close: 14 September 2009

Affiliate Society
Papua New Guinea Botanical Society

ASBS Website
www.anbg.gov.au/asbs
Webmaster: Murray Fagg
Centre for Plant Biodiversity Research
Australian National Herbarium
Email: Murray.Fagg@environment.gov.au

Cover Image: *Boronia jensziae* (Rutaceae), reproduced with the permission of Peter Neish (the artist) and ABRS.

Inserts/notices in ths issue

- 2009 ASBS Conference Registration Form
- Nominations for 2009–2010 ASBS Council on **PAGE 26**

Publication dates of previous issue
Austral.Syst.Bot.Soc.Newslett. 138 (March 2009 issue)

Hardcopy: 24 April 2009; ASBS Website: 6 May 2009

From the President

We have snow here in Hobart and the Autumnal display, including that of the introduced species, was excellent this year. There are a few formal Society processes included in the *Newsletter* this month: notification of the Annual General Meeting, nomination forms for the Council [a little later this year as our meeting will be held later than usual], and some news on the Hansjörg Eichler Scientific Research Fund.

The AGM will be held later than usual this year. Our constitution states that we are supposed to hold the meeting within the first five months of the Society's financial year, that is, by the end of November. Our AGM will be on 2 December (two days late!). This does mean our Public Officer has had to apply to the Office of the Regulatory Services for an extension. Fortunately this request has been approved.

Included in this *Newsletter* (page 26) are nomination forms for Council membership. Being on Council is a rewarding experience. If you are considering nomination and would like to know what is involved in being on Council, do not hesitate to contact myself or any other Council member.

The funds for the Society are not doing well due to the current global financial crisis. Not all our funds are loosing money though. Council has decided that there are sufficient funds to offer a September round of the Hansjörg Eichler Scientific Research Fund (see notice in this *Newsletter*). As you all know we did not offer a March round. We felt that it is important to support student research and the process offers students the opportunity to gain some experience in completing grant applications. We will be using interest earned and not capital to fund this round.

The website is being reviewed critically and we should have a revitalised site later this year. If you have a particular issue regarding the website or a fabulous idea, do let us know. What is missing from the website?

Brochures: ASBS brochures are available for Universities, events, conferences, etc. If you would like to have some for distribution then let our Secretary, Kirsten Cowley, know. The brochure is also available on the website.

All the best,

Marco Duretto

From the Editors

We are slowly working out a consistent workflow for production of the *Newsletter*. In this regard, copy should be sent to Russell Barrett and Peter Jobson, while book reviews or any such related matter or anything related to the distribution of the *Newsletter* should be sent to Gael Campbell-Young.

Colour images may be submitted with articles for inclusion in the web version (the greyscale version will remain on the website also).

Please note that the Nomination form for 2009–2010 ASBS Council members is included in this issue on page 26. Please either photocopy this page or cut it out from the issue. Alternatively, you can download the web version and print only that page.

Thanks for your ongoing contributions!

See you in Armidale in December! (Ebor Falls, New England Tableland, NSW. Photo: R.Barrett)

Eichler Research Fund Report

Evaluation of selected micro-morphological characters of bloodwood eucalypts (*Corymbia*, Myrtaceae) and significance for phylogenetic analyses

Carlos Parra-O.
School of Botany, The University of Melbourne, Vic., 3010
Current address:
Instituto de Ciencias Naturales, Universidad Nacional de Colombia, A. A. 7495, Bogotá, Colombia.
caparrao@unal.edu.co

Introduction

The family Myrtaceae includes 133 genera and ca. 3,900 species, mostly distributed in tropical and subtropical regions of Australia, south-east Asia, and South America (Wielgorskaya 1995; Wilson *et al*. 2001). In Australia Myrtaceae is particularly well represented, with ca. 89 genera and ca. 1,858 species (Orchard 1999). Within Australian Myrtaceae, the 'eucalypt group' represents almost half of the diversity of the family on the continent, and it is one of two large clades of Myrtaceae in the Australian region (Ladiges *et al*. 2003).

The 'eucalypt group' (tribe Eucalypteae *sensu* Wilson *et al*. 2005) is monophyletic but there continues to be vigorous debate surrounding the monophyly and relationships of the bloodwood eucalypts (*Corymbia* Hill & Johnson) and hence their classification and rank. The bloodwoods have been treated as subgenera or series within *Eucalyptus* in various taxonomic treatments (Pryor & Johnson 1971; Chippendale 1988; Brooker 2000). In 1995, Hill & Johnson placed the bloodwood eucalypts in a new genus, *Corymbia*. They presented a study based on morphology, and concluded that *Corymbia* is monophyletic. They recognized 113 species for the genus, dividing it into seven sections: *Fundoria* (one species), *Apteria* (one species), *Rufaria* ('red bloodwoods', 67 species), *Ochraria* ('yellow bloodwoods', 12 species), *Cadagaria* (one species), *Politaria* ('spotted gums', four species) and *Blakearia* ('ghost gums' or 'paper-fruited bloodwoods', 27 species). One of the important conclusions of the Hill & Johnson (1995) phylogenetic analysis was that these bloodwood eucalypts form a monophyletic group with *Angophora* (as also found by Ladiges *et al*. 1995), one unambiguous synapomorphy being distinctive cap cells on bristle glands (see Ladiges & Humphries 1983; Ladiges 1984).

Since Hill & Johnson's (1995) work several phylogenetic studies, mostly based on molecular data and using small datasets (Udovicic *et al*. 1995; Udovicic & Ladiges 2000; Steane *et al*. 1999, 2002; Wilson *et al*. 2001; Whittock *et al*. 2003), have agreed or disagreed with their proposal and the nature (i.e. monophyly or paraphyly) of *Corymbia*. The main objective of this study is to address the question of the monophyly of *Corymbia* and relationships of subgroups within *Corymbia*, based on the analysis of molecular data and selected morphological characters. In this report I present results from an evaluation of selected micro-morphological characters (seed surface morphology and trichomes on seedlings) that were studied to find synapomorphies for (and among the groups of) *Corymbia*. These and other morphological characters were combined with a molecular data set based on ETS + ITS sequences for phylogenetic analysis of the *Rufaria* + *Apteria* clade found within *Corymbia* (Parra-O., 2009).

Methods

Seeds were obtained from field collections and seed banks at Currency Creek Arboretum (CCA), South Australia (see Nicolle 2003) and Mt Annan Botanic Garden, New South Wales. Seeds were studied using Scanning Electron Microscopy (SEM). All samples were mounted on aluminium stubs using double-sided carbon tabs. These samples were coated with gold using an Edward's S150B Sputter Coater. Samples were observed under a Phillips XL30 Field Emission Scanning Electron Microscope at the School of Botany, University of Melbourne. Other batches of seeds were grown initially in Petri dishes on moist filter paper, inside a growth cabinet with a day/night

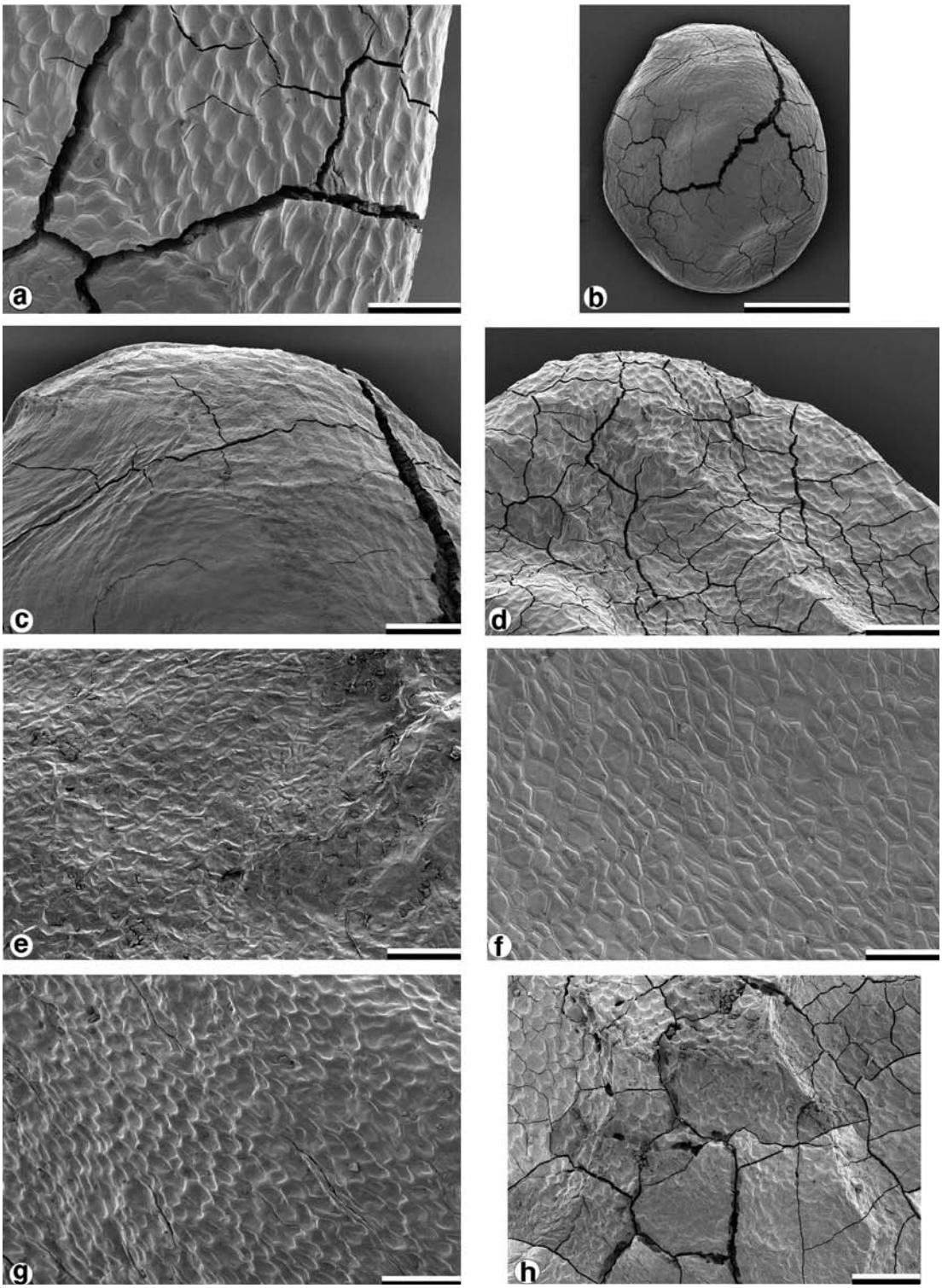


Figure. 1. General view of seed and detail of seed coat; all seeds shown in dorsal view except for a and h (ventral view). (a) *Corymbia bunites*, (b), (c) *C. torrelliana*, (d) *C. citriodora*, (e) *C. tessellaris*, (f) *C. calophylla*, (g) *C. zygophylla*, (h) *C. eximia*. Scale bar for a: 100 µm; scale bar for b: 1 mm; scale bar for c-h: 200 µm.

cycle of 14/10 hours and a temperature between 25°C (day) and 22°C (night). When cotyledonary leaves emerged, seedlings were transferred to plastic pots and grown under greenhouse conditions. Voucher specimens of seedlings were made and deposited in the herbarium of the University of Melbourne (MELU). Trichomes on different organs of seedlings were studied under SEM, following the protocols as above and scored in terms of presence/absence and abundance. These characters were added to a dataset of other morphological characters combined with a dataset based on ETS + ITS sequences for the clade found within *Corymbia* (Parra-O. 2009).

Results

Seed coat characters

The seed coat of *Corymbia* is composed of epidermal cells of different shapes (round or elliptic), with irregular or regular walls. Sometimes when cells have regular walls, they appear slightly rhomboid or pentahedric. Such variations were observed in a single seed (Fig. 1a) and are not exclusive to any taxonomic section or particular species. Some species have almost completely smooth seed coats (Fig. 1b), where only a few epidermal cells are evident in some areas (Fig. 1c).

Seedling hairs and bristle glands

In general, adult organs of *Corymbia* species are glabrous and lack both bristle glands (raised oil glands; Ladiges 1984) and hairs, although some neotenous species in section *Rufaria* with juvenile foliage in the crown of the tree retain these trichomes, mostly on vegetative parts. Within the studied sample, the shape and type of bristle glands and single-celled hairs are uniform in general, with some variation depending on the size and age of the seedling. In some bloodwood species hairs are absent on the petiole of the cotyledon leaf and hypocotyl in the seedling at early stages (character 1, Fig. 2).

Although it was sometimes difficult to quantify the abundance of bristle glands, classification as a binary character ('scarce' vs 'abundant') was clear. For example in the first internode of the studied species of section *Rufaria,* the 'scarce' condition refers to bristle glands between 2–6(–7) per mm^2 (e.g. *C. brachycarpa*, *C. ligans*), whereas in the 'abundant' state there are at least 10 bristle glands per mm^2 (e.g. *C. cadophora*, *C. intermedia*); in the latter state up to 25 bristle glands per mm^2 occur in the first internode of some species (e.g. *C. haematoxylon*). Usually in taxa that have been scored as 'scarce', bristle glands are less than 0.2 mm long (e.g. *C. terminalis*). In other taxa, the length of the bristle glands averages up to 0.4 mm at the first internode. In some taxa there are additional bristle glands in the first internode that reach 0.5–0.7 mm long. This size of bristle gland occurs only in the first internode of the species of *Rufaria* studied, but not in the cotyledon petioles or in the hypocotyl. These variations in the abundance and length of the bristle glands were coded as two separate characters: bristle glands in the first internode abundant or scarce (character 2, Fig. 2), and long bristle glands on the first internode of the seedling absent or present (character 3, Fig. 2).

Discussion

Morphology of the seed coat is almost uniform across sections of *Corymbia* and does not provide informative characters for phylogenetic analysis. Hill & Johnson (1995) described differences in the ornamentation of seed coat as being 'regular' (for *Corymbia* sections *Blakearia*, *Cadagaria*, *Ochraria* and *Politaria*) or 'partly irregular' (for *Corymbia* sections *Apteria*, *Fundoria* and *Rufaria*). These differences were not evident in the SEM study made here. It is also difficult to assign the character 'regular', scored by Hill & Johnson (1995) for all species of sections *Blakearia*, *Cadagaria*, *Ochraria* and *Politaria*; my samples showed evidence of 'partly irregular' seed coats in species of *Blakearia* and *Politaria* (Fig. 1 d, e).

Similarly, not all the seed coats from the species of section *Rufaria* exhibit a 'partly irregular' pattern; species studied here (i.e. *C. brachycarpa*) show patterns that are recognized as 'regular' (Fig. 1 f). Both of these conditions can be found in a single seed (i.e. *C. zygophylla*; Fig. 1 g) and I suggest that this character could be linked to the presence of folds or depressions in the surface of the seeds. In areas near to folds or depressions, especially on the ventral surface of the seed, the seed coat appears irregular in shape due to the irregular

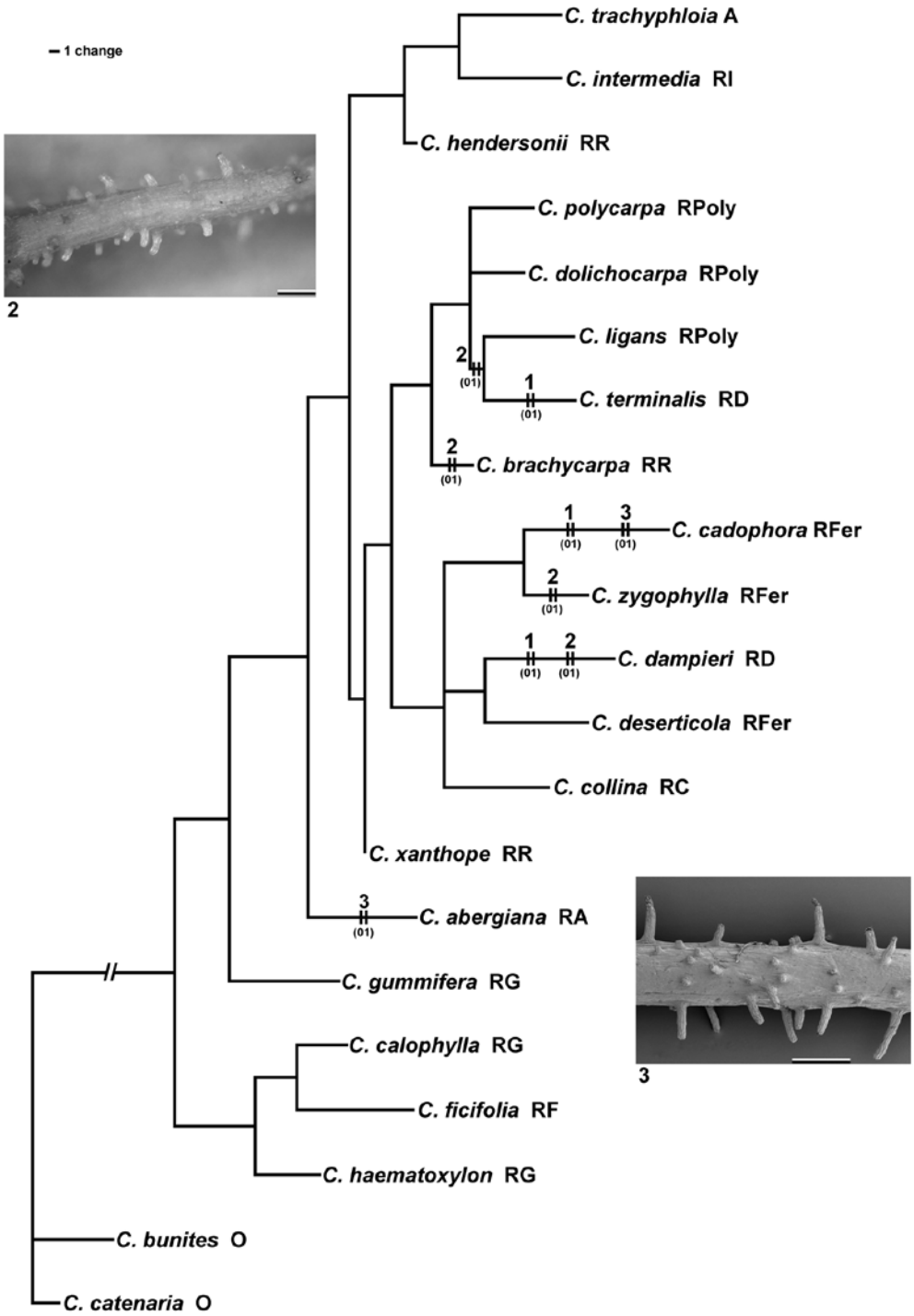


Figure 2. One of the 72 most parsimonious trees obtained in the combined analysis of morphological characters and ETS + ITS data of the *Rufaria* + *Apteria* clade (unpublished data), showing character state changes of seedling hairs and bristle glands (see description under results). Abundant bristle glands in the first internode of the seedling (character 2; scale bar = 0.5 mm) and the presence of long bristle glands on the first internode (character 3; scale bar = 500 µm) are illustrated. *Corymbia bunites* and *C. catenaria* are functional outgroups from the yellow bloodwood clade (*Blakearia* + *Cadagaria* + *Ochraria* + *Politaria*).

surface (Fig. 1 h), rather than being irregular *per se*. This feature can be found in all *Corymbia* seed coats, more obviously in some than others and is independent of sectional classification.

Additionally, Hill & Johnson (1995) considered that the seed coat of section *Rufaria* is smoother than that of other sections. I observed that the seed coat of *C. torrelliana* (monotypic section *Cadagaria*) is as smooth as that found in species of section *Rufaria*. Therefore the presence of a smoother seed coat is not exclusive to the red bloodwoods.

The presence and distribution of hairs and bristle glands were more variable and useful for the phylogenetic analyses of the *Rufaria* + *Apteria* clade (Fig. 2), but not for the *Blakearia* + *Cadagaria* + *Ochraria* + *Politaria* clade. However these characters are homoplasious, with a number of parallelisms. In Fig. 2, the three characters mentioned in the results (see above) were mapped onto a phylogeny of the *Rufaria* + *Apteria* clade, where it is evident that most of them have evolved independently several times.

Acknowledgements

I would like to thank the Australian Systematic Botany Society for awarding me the Hansjörg Eichler Research Award. I am grateful to The University of Melbourne for an International Postgraduate Scholarship and to my supervisors, Professor Pauline Ladiges and Associate Professor Andrew Drinnan for all their help and support during the development of this research.

References

Brooker, M.I.H. 2000. A new classification of genus *Eucalyptus* L'Hér. (Myrtaceae). *Australian Systematic Botany* 13: 79–148.

Chippendale, G.M. 1988. *Flora of Australia*. Volume 19, Myrtaceae, *Eucalyptus*, *Angophora*. Australian Government Publishing Service. Canberra.

Hill, K.D. & L.A.S. Johnson. 1995. Systematic studies in the eucalypts 7. A revision of the bloodwoods, genus *Corymbia* (Myrtaceae). *Telopea* 6: 185–504.

Ladiges, P.Y. 1984. A comparative study of trichomes in *Angophora* Cav. and *Eucalyptus* L'Hér.—a question of homology. *Australian Journal of Botany* 32: 561–574.

Ladiges, P.Y. & C.J. Humphries. 1983. A cladistic study of *Arillastrum*, *Angophora* and *Eucalyptus* (Myrtaceae). *Botanical Journal of the Linnean Society* 87: 105–134.

Ladiges, P.Y., F. Udovicic & A.N. Drinnan. 1995. Eucalypt phylogeny—molecules and morphology. *Australian Systematic Botany* 8: 483–497.

Ladiges, P.Y., F. Udovicic & G. Nelson. 2003. Australian biogeographic connections and the phylogeny of large genera in the plant family Myrtaceae. *Journal of Biogeography* 30: 989–998.

Nicolle, D. 2003. *Currency Creek Arboretum (CCA) Eucalypt Research*. Volume 2. D. Nicolle. Adelaide.

Orchard, A.E. 1999. Introduction. Pp. 1–9. In: Orchard, A.E. & H.S. Thompson (eds). *Flora of Australia*. Volume 1. Second Edition. ABRS/CSIRO. Canberra.

Parra-O., C.A. 2009. A phylogenetic analysis of the bloodwood eucalypts (Myrtaceae). PhD thesis. School of Botany, The University of Melbourne. Melbourne.

Pryor, L.D. & L.A.S. Johnson. 1971. *A Classification of the Eucalypts*. Australian National University Press. Canberra.

Steane, D.A., D. Nicolle, G.E. McKinnon, R.E. Vaillancourt & B.M. Potts. 1999. ITS-sequence data resolve higher-level relationships among the eucalypts. *Molecular Phylogenetics and Evolution* 12: 215–228.

Steane, D.A., D. Nicolle, G.E. McKinnon, R.E. Vaillancourt & B.M. Potts. 2002. Higher-level relationships among the eucalypts are resolved by ITS-sequence data. *Australian Systematic Botany* 15: 49–62.

Udovicic, F. & P.Y. Ladiges. 2000. Informativeness of nuclear and chloroplast DNA regions and the phylogeny of the eucalypts and related genera (Myrtaceae). *Kew Bulletin* 55: 633–645.

Udovicic, F., G.I. McFadden & P.Y. Ladiges. 1995. Phylogeny of *Eucalyptus* and *Angophora* based on 5S rDNA spacer sequence data. *Molecular Phylogenetics and Evolution* 4: 247–256.

Wielgorskaya, T. 1995. *Dictionary of generic names of seed plants*. Columbia University Press. New York.

Wilson, P.G., M.M. O'Brien, P.A. Gadek & C.J. Quinn. 2001. Myrtaceae revisited: A reassessment of infrafamilial groups. *American Journal of Botany* 88: 2013–2025.

Wilson, P.G., M.M. O'Brien, M.M. Heslewood & C.J. Quinn. 2005. Relationships within Myrtaceae *sensu lato* based on a *mat*K phylogeny. *Plant Systematics and Evolution* 25: 3–19.

Whittock, S., D.A. Steane, R.E. Vaillancourt & B.M. Potts. 2003. Molecular evidence shows that the tropical boxes (*Eucalyptus* subgenus *Minutifructus*) are over-ranked. *Transactions of the Royal Society of South Australia* 127: 27–32.

LOOKING FOR THE EXACT PUBLICATION DATE OF A JOURNAL ISSUE?

Check out the Bishop Museum website which currently lists publication dates for many journals, with more being added regularly!

http://hbs.bishopmuseum.org/dating/

Article

Macrophotography: another reason to choose Canon...

(an article for all Nikon users)

Russell Barrett
Kings Park & Botanic Garden

Having received a number of queries as to the utility of Canon's MP-E65 1–5× macro lens for plant photography, I figured a general article may be of interest to those looking for ideas on what camera system to invest in, or those just looking for an excuse to buy new equipment...

I was looking for an improvement on the depth of field offered by microphotographs through a light microscope for imaging fine details such as indumentum type and seed surface morphology when I came across the MP-E65 in a book promoting Canon's lens range (Canon 2004). The setup I now have is illustrated below (Fig. 1).

Your average camera store is unlikely to have this lens sitting on the shelf (I went to a large specialist store that only aquired them on special order and rarely at that), so you will probably have to decide if you want one without actually seeing it first. Hopefully this review will help. There are a few general reviews available on the internet (Web refs 1–2), mostly referring to novelty uses of the lense, but few focusing on natural history.

The lens

The Canon MP-E65 f/2.8 1–5× photo macro lens (hereafter MP-E65) is unique among single lense reflex (SLR) camera lenses and is effectively a set of bellows built into a lens. The advantage of this is that the lens then becomes portable and can even be hand-held, though best not to try this after a strong coffee! With a maximum working distance of 100 mm and a minimum of 40 mm, it is truly a dedicated macro lens.

In terms of replacing microscope-mounted cameras, most of which are of low resolution with very shallow depth of field, for subjects larger than about 1 mm, this is much improved with the MP-E65. On a full frame digital sensor (36 × 24 mm), the full 5× magnification offers a field of view of 7.2 × 4.8 mm, with the resolution then determined by the camera body used (up to 21.1 MP for the Canon EOS 5D II). A 21.1 MP camera with a field of view of 7.4 mm equates to a final image of 5616 x 3744 pixels (almost 20,000 DPI) at 5×! Alternatively, the lens can be used on cameras with smaller sensors, the magnification using a 22.5 × 15 mm sensor becoming 8×, offering a field of view of 4.5 × 3 mm. The Canon EOS 50D offers 15.1 MP, thus effectively providing a final image at 4752 x 3168 pixels (over 27,000 DPI) at 5×!

Figure 1. Portable desktop setup for macrophotography with the Canon MP-E65 lens.

There is no focus adjustment, only continuous magnification adjustment from 1–5×, so to obtain a set magnification it is necessary to set the lens accordingly, then move the camera into the required position. If you have steady hands, this is quite possible hand-held, and very versatile for field use, otherwise, you will probably require a Macro Slide Rail mounted on a tripod to allow easy adjustment of focus (Fig. 2).

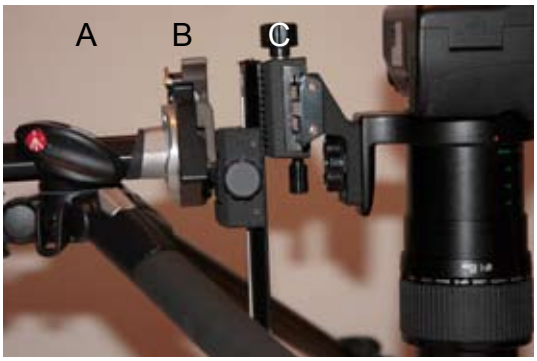


Figure 2. A macro slide rail (C) mounted directly onto a tripod, in this case, a Manfrotto 190X PRO B (A), attached using a Manfrotto Quick Change Rectangular Plate Adapter 200PL (B).

Mounting on a tripod

Bearing in mind that you will almost certainly want to use a macro slide rail for focussing, rather than having to move your tripod by the minutest increments to achieve a sharp image, careful consideration needs to be given to your choice of tripod, and whether to use a standard tripod head, or go for a solid mount as shown in Fig. 2. If you want to be able to take photos vertically, say on a bench-top, or of minute ground-hugging plants, the narrow focal range of the MP-E65 requires that your tripod can provide a firm foundation while being close to the ground.

For this purpose, I found the Manfrotto 190X PRO B tripod to be ideal, especially as the central 'spine' of the tripod can be mounted laterally, allowing for the vertical attachment of your camera, as shown in Figs 1–2. With the camera body, MP-E65 lens, Macro-Twin Lite MT-24EX (MT-24EX) flash and Macro Slide Rail, you can be mounting around 4 kg on the tripod, so it needs to be firm and held as close as possible to the centre of the tripod frame to avoid over-balancing. For vertical use, using a separate tripod head can have the disadvantage of increasing the distance of the rig from the tripod centre, increasing leverage and stress on the tripod head itself, which will need to be rated to hold about 5 kg. A head with good support and the ability to hold the camera truly vertically would be a suitable alternative to the tripod and mount system described here. Numerous options are available, but such tripod heads can be quite pricy and should be chosen with care. Those who want to use this lens mounted on a tripod in the field will want to consider the range of situations they are likely to use their gear in (and how long it takes to adjust) in choosing a suitable head.

One minor downside to the components I have illustrated here is that the Manfrotto Plate Adapter did not immediately fit directly onto the head of the tripod, and I have not located a suitable alternative. The problem was that the base plate on the tripod was too broad, the locking ring on the Plate Adapter overlapping by about 1 mm. I resolved this issue in a couple of minutes with a file, but I should think Manfrotto may take issue with this approach if you ever need to make a warranty claim... There are probably other equivalent units available that do not have this issue. Another alternative would be to use a broad washer between the units so that they can be tightened without the locking ring hitting the base plate.

Getting enough light

The greatest challenge with most photography is getting the right amount of light in the right place. With the MP-E65, there are a few more issues than normal. The first of these is that at high magnifications, the lens is so close to the subject that there is often little light available to focus with, and where the depth of field is minimal, correct focus is critical. Canon's MT-24EX comes with a useful focussing light, however be mindful that this is on a short timer and you may need to set it several times to get the right focus. For desktop photography, a useful addition is a small electrical 'crabs' arms' stand (Fig. 3) holding an LED torch of some description. In this case, I have chosen a multiple LED unit designed to be clipped onto a cap. A remote switch (or using the timer) is also essential to prevent camera shake.

Use of a flash is usually essential since it is rare that you will have enough light, especially when

Figure 3. Electrical 'crabs' arms' stand holding LED focussing light. Top: Side view. Bottom: Front view.

using an aperture of f8–f16 as is normal for natural history subjects. Canon states that both their Macro Ring Lite MR-14EX and Macro-Twin Lite MT-24EX flashes are suitable for this lens, both attaching to the built-in mounting ring on all Canon macro lenses (the downside being the difficulty in attaching these flashes to non-Canon macros, or non-macro lenses). In practice, the MT-24EX is probably far more useful as it is more adjustable, particularly regarding the angle at which the units can be turned to face the subject at close range. The less expensive Sigma equivalent ring flash, the EM-140 DG is suitable only in the range of 1–3× as the mounting ring positions the flash unit further forward from the lens, preventing enough light reaching the subject at greater magnifications.

Another challenge with such a small focal point for the lens (and not being able to zoom out for perspective) is actually finding your subject of interest. For hand-held photography, there is no immediate way around this challenge other than practice and patience. When used vertically in a desktop environment, it is quite useful to position the unit below an overhead light. This then provides a reflection of the light through the lens via the viewfinder, resulting in a small dot of light indicating the field of view (Fig. 4).

Focussing can still be a challenge, and two more options are available to assist this. The first is

Figure 4. Small light dot shining on a *Polygala* seed, indicating field of view for positioning your material.

built in to the later model Canon DSLR bodies, and this is the ability to lock up the mirror, and use real-time viewing on the LCD monitor in the camera to focus, the live image being able to be zoomed-in so that the fine level focus can be verified before capturing the image. The second option and depending on the set-up you choose, possibly more useful, is a magnifying eyepiece, which fits over the top of the existing eyepiece, with some units having a 90º bend so as to present an image at 90º to the LCD panel which on most models does not move.

The total setup

So what have I ended up with in my 'final' kit?

- Canon EOS 5D and 40D digital SLR bodies;
- Canon MP-E65 Macro lens;
- Canon Macro-Twin Lite MT-24EX flash;
- Generic Macro Slide Rail;
- Manfrotto 190X PRO B tripod with Manfrotto Quick Change Rectangular Plate Adapter 200PL; and
- Canon Remote Switch RS-80N3 (Figs 5–6).

Figure 5. Final set-up on bench.

Figure 6. Front view of set-up above sample plate.

Not a cheap option, a set-up of this kind will likely cost upwards of $5,000 for the full kit, depending on which options are chosen, however if you are already a Canon user and have some of the equipment, the additional equipment you require may be considered a more reasonable expense.

The results – is it worth it?

Having purchased the lens unseen in 2007, I have been very happy with its performance from the start. Photographs taken hand-held in the field or of herbarium specimens have been used in describing new species of *Lepidosperma* (Barrett 2007) and *Tilletia* (Barrett *et al*. 2009), quickly and accurately illustrating features which would have been difficult to reproduce as line drawings.

I mostly use the lens hand-held, with manual camera settings and automatic metering. As standard, I use an aperture of f16 and shutter speed of 1/250th sec. (maximum flash-sync. speed) to maximise depth of field and minimise hand-shake. Canon specifications for f16 gives a depth of field of 2.240 mm at 1×, decreasing to 0.269 mm at 5×, though in my experience, a greater depth of field is sufficiently crisp to provide publication quality images (Figs 7–15).

The total unit is quite weighty and quickly becomes tiring on the arms. I have had problems obtaining correct metering when the lens is used with the Sigma ring flash, an incorrect reading being returned if the subject does not fill most of the frame, regardless of the metering method used. The Canon MT-24EX seems to be far more reliable in this regard and the extra money is probably well worth it. In a minor concession to Nikon users, it would have been nice if the Canon Twin Lite used wireless technology to increase its versatility, but everything has room for improvement... The MP-E65 meets the aims I started with and more. In all, the lens is highly recommended.

Figure 7. *Aldrovandra vesiculosa* flower. Flower about 7 mm across.

Figure 8. Distinctive 'blackberry' shaped glands on the petiole of *Drosera hartmeyerorum*. Leaf lamina about 1.5 mm across.

Figure 9. Dew drops captured in a tiny spider web on a moss sward on a granite outcrop. Frame 12 mm across.

Figure 10. A pair of tiny nectar-robbing flies on the flower of a *Stylidium* sp. (they were too small to trigger the column). Corolla about 5 mm across.

Figure 11. Leaf of *Oldenlandia spermacocoides* from a herbarium specimen. Frame 5 mm across.

Figure 12. Cerebriform seeds of *Oldenlandia spermacocoides*. Seeds 0.9 mm long.

Figure 13. Seed of a *Spermacoce* sp. showing fine reticulation on the testa and long ventral groove. Seed 1.6 mm long.

Figure 14. Flower of *Caladenia cairnsiana*. Frame 18 mm high.

Figure 15. Seed of a *Polygala* sp. showing distinctive indumentum features. Seed 2.6 mm long. This seed is just visible as a tiny dot in figures 3, 4 and 6.

References

Barrett, M.D., Barrett, R.L., Shivas, R.G. & McTaggart, A.R. 2009. *Tilletia micrairae*. *Fungal Planet 33*. *Persoonia* 22: 170–171.

Barrett, R.L. 2007. New species of *Lepidosperma* (Cyperaceae) associated with banded ironstone in southern Western Australia. *Nuytsia* 17: 37–60.

Canon 2004. 'EF lens work III: the eyes of EOS.' 5th edn. (Canon Inc.: Tokyo)

Web ref. 1. http://www.vividlight.com/articles/2914.htm

Web ref. 2. http://photo.net/canon/mp-e-65

2009 ASBS Conference Update

"Systematic botany: from science to society"

including a workshop on

"National accreditation of providers of biological identification"

1–3 December 2009, University of New England, Armidale, NSW

Invitation

The organising committee extends a particular invitation to all members of the Australian Systematic Botany Society to the 2009 ASBS conference at UNE, Armidale, NSW.

Armidale is one of Australia's oldest regional cities (1865), and is set in biodiverse north-eastern NSW. The University of New England, with a history of systematic botany dating from at least 1945, a strong focus on environmental science and an active teaching and research herbarium, is a logical host for the 2009 conference.

Scope

The theme of the conference, 'Systematic botany: from science to society' is broad and inclusive. We hope to see plenty of contributions highlighting discovery, analysis and synthesis in plant diversity research and its impact on society. We especially encourage students to present the findings of their research. We are pleased to have as keynote speaker Peter Stevens, Professor of Biology, University of Missouri, St Louis; Curator, Missouri Botanical Garden; and author of the Angiosperm Phylogeny Website.

On Wednesday afternoon, included in the conference registration, will be a workshop discussion on "National accreditation of providers of biological identification". We hope to have representatives from all 'stakeholders' present leading to robust discussion. This topic naturally extends to broader issues of quality assurance in identification, the critical role of vouchers, herbaria (and museums) and identification and planning tools (e.g. FloraBase, PlantNET, AVH, Atlas of Living Australia, 'Barcode of Life'), and the corresponding need for taxonomic botany positions in State and National Herbaria.

Registration and call for abstracts

We have engaged the UNE Conference Company to handle registration (http://www.une.edu.au/campus/confco/). By the time you get this newsletter, a link to online registration for the ASBS 2009 conference will be ready (see http://www.anbg.gov.au/asbs/conferences/2009-UNE for the link), which will enable secure online registration and payment for the conference. Others may choose to use the A4 paper insert in this issue of the *Newsletter*, to fax or mail their registration. **Early registration ends 1 September 2009**; Standard registration ends 31 October 2009.

We welcome submission of abstracts for talks and posters, and guidelines will be online from http://www.anbg.gov.au/asbs/conferences/2009-UNE and in the conference insert in this issue. Deadline for submission of abstracts: **30 September 2009**

Accommodation

Accommodation on campus within 100 m of the conference venue is available at Mary White College (MWC). Mary White College is located on the campus of the University of New England. It provides serviced, single study bedrooms with telephone and tea/coffee making facilities and shared bathrooms. The tariff of $75.00 per night includes a full cooked breakfast. Booking for MWC must be made on the registration form or online when registering. A limited number of ensuite rooms at MWC are available—for price and availability of rooms with ensuite, email UNE Conference Company at confco@une.edu.au.

There are many options for off-campus accommodation ranging from hotels and motels in Armidale to camping in nearby National Parks! To compare and book accommodation in Armidale see http://www.armidaletourism.com.au/.

More?

Arrive in time for the Conference Welcome (with complementary drinks and nibbles) and registration, Monday 4–6 pm, 30 November at Booloominbah on campus and have the chance to look around this historic homestead building (www.une.edu.au/uneweb/unehist.html).

On Wednesday 2 December, after the Workshop and the ASBS AGM, join us for a special pre-dinner experience followed by the conference dinner.

Don't miss the field trip on Friday, 4 December with Ian Telford, Jeremy Bruhl and others on a great day out in New England visiting a diversity of plant communities including Gondwanan and endemic flora.

Jeremy Bruhl for organising committee.

Photo: J. Bruhl

SPECIAL ANNOUNCEMENT
AUSTRALIAN SYSTEMATIC BOTANY
New Editors

CSIRO PUBLISHING is pleased to announce the launch of *Australian Systematic Botany* as a (botanical) community-run journal. The recent growth in profile and impact factor (this year over 0.981) and the strengthening of the journal's scope provide an exciting platform for **ASB's** future development.

To lead the development we are seeking to appoint a dynamic **Editor-in-Chief** who is able to elucidate a vision for **ASB** that positions te journal in the top ten plant systematic science journals internationally. We will also appoint a team of **Associate Editors** who will manage the peer review and manuscript commissioning for the journal, under the guidance of the **Editor-in-Chief**.

The **Editor-in-Chief** is anticipated to be a high-profile botanist and taxonomist at the senior level of their field, with broad interests and international networks. An energetic, enthusiastic person, the Editor-in-Chief is willing to persuade their colleagues and peers to join them in their vision for **ASB**. The role is expected to be approximately one day per week.

The **Associate Editors** are expected to be leading figures in the field and are aware of the very latest developments in their own and related areas. **Associate Editors** will manage the peer review process, identifying the best referees for papers in their field, and making publishing decisions based on those referees' reports. **Associate Editors** will also be expected to invite reviews and original research articles for **ASB** from scientists working in 'topical areas' of research.

Honoraria, travel allowance and editorial support will be provided for these roles. Further details of these important new roles can be found on the ASB website. Go to: http://www.publish.csiro.au/nid/150/aid/12817.htm

Applications should be directed to:

Dr Chris Anderson, Journals Publisher, Agriculture & Plant Sciences, **CSIRO Publishing**

Email: chris.anderson@csiro.au

A short CV should be included with a covering letter explaining why the applicant wishes to take on this role. Applicants for the **Editor-in-Chief** role should include a statement that encapsulates their vision for the longer-term development for **ASB**. They should indicate whether they also wish to be considered for the **Associate Editor** roles.

ABRS Report

Staffing

We welcome Grant Heino, a member of the Department's graduate program, who will be with us until August, working on the grants program and the ABRS Eureka Prize for Young Species Discoverer.

Budget

The ABRS National Taxonomy Research Grant Program was approved in the Federal Budget without change.

ABRS Grants Program

The ABRS Advisory Committee met from 31 March to 2 April to assess grant applications for 2009–2010. Grant recommendations were subsequently approved by the Minister and a full list can be found at:

http://www.environment.gov.au/biodiversity/abrs/funding-and-research/research-grants/awarded-rg.html

and

http://www.environment.gov.au/biodiversity/abrs/funding-and-research/capacity-grants/awarded-cbg.html

Student travel bursaries and PhD research supplements will also have been awarded by the time this newsletter goes to press, so visit the ABRS website for the details.

Remember that the next grant round will be called in late August 2009, and applicants are advised to consider possible avenues for matching funding now. Cash co-funding from any source will be considered and potential applicants should note that the salary of a principal investigator is included in the definition of cash co-funding.

The Australian Botanical Liaison Officer

There will be no ABLO for 2009–2010. After struggling to fill the position for a number of years, ABRS and the Advisory Committee have elected to review the position as it is currently structured and explore alternatives. In the interim, ABRS has decided to advertise two short-term overseas research fellowships that will take a similar form to Churchill Fellowships. These will be advertised as part of the August grant round. ABRS expects to announce a decision on ABLO towards the end of this year after consulting with Kew and the Council of Heads of Australian Herbaria.

Recent Publication

Flora of Australia volume 57, published 21 April 2009.

Volume 57 is the fifth volume of the *Flora of Australia* which documents the lichens. Complete or partial accounts of 21 families are provided, including 77 genera and 654 species and infra-specific taxa. One genus and 26 species are described as new to science and 36 new combinations are made.

Available from CSIRO Publishing for $180 (hardcover) or $140 (paperback).

Queen's Birthday Honours List 2009

Two of the Australian Biological Resources Study's Honorary Associates have been recognised in the 2009 Queen's Birthday Honours list.

Dr Alison McCusker has received a Medal of the Order of Australia (OAM) for *service to science through the cataloguing of Australian flora.*

Alison served as Founding Director of ABRS during the establishment of the *Flora of Australia* project and was responsible for establishing a national editorial committee. She has been an Associate with ABRS since 1994, providing assistance with the publication of the *Flora of Australia.*

Alison prepared the *State of the World's Plant Genetic Resources* report for the United Nations Food and Agriculture Organisation in 1995. She was also Assistant Secretary to the Department of Environment, Sport and Territories in 1994; Branch Head of the Environment Policy Division from 1984–1994; Deputy Director of the Consultative Group on International Agricultural Research Centre in Rome (now Biodiversity International) from 1987–1994 together with the International Plant Genetic Resources Institute.

Dr Richard Schodde has received a Medal of the Order of Australia (OAM) for *service to science, particularly in the field of ornithology*.

The award acknowledges his lifetime of work in ornithology which has involved foundation work in describing and cataloguing the taxa of Australian birds, and also his involvement in the development of the Australian National Wildlife Collection (ANWC) at CSIRO. He is acknowledged for his contribution, from faunal surveys, to the establishment of Kakadu National Park, and to world heritage listing for the Wet Tropics *World Heritage* area in north-eastern Queensland. Dick continues to pursue his work on bird systematics and biogeography as an Honorary Associate at ABRS and as an Honorary Research Fellow at ANWC.

Cameron Slatyer and Annette Wilson

ABLO Report

ABLO for 2009–2010

Readers will have noted the announcement from ABRS in the last *Newsletter* that the ABLO position will be vacant in 2009–2010. I have decided to stay on at Kew for an extra two months (September–October) beyond my official appointment, and the Keeper has kindly agreed to me continuing to occupy the ABLO office and use the ABLO log-on and email facility. I will therefore be available as (unofficial and voluntary) ABLO for a few weeks should anyone have any last minute requests. However, please note that I will away from Kew for part of this period, so I would appreciate it if requests could be kept to a minimum, and involve K collections only.

Visits to other herbaria

We have visited OXF on two more occasions and completed a survey of most of the Australian material, looking for Cunningham collections. We found nearly 600 sheets, somewhat more than stated in the literature. We have also made 2 visits to CGE on the same quest, and discovered over 750 sheets, both in the main and in the Lindley collections. We have now looked at most of the major Australian families there, but will be visiting CGE again on 15 and 16 July to finish this survey. On 14 and 15 May we visited the Musee d'Histoire Naturelle in Paris (P), recording about 800 sheets for my on-going research projects. It should be noted that P will also be moving to an APG systematic re-arrangement of its collections shortly, although the process has not started yet. I understand that the rearrangement will begin later this year (?August). On all of the above visits we have also managed to address a number of enquiries from Australian and New Zealand botanists to the ABLO. On 4 and 5 June I will be visiting Edinburgh Herbarium (E), mainly to work on my own research projects. I have tentative plans to visit Florence Herbarium (FI) during my 'unofficial' ABLO phase in September–October, and will attempt to address a number of existing outstanding requests for material there. I can probably still schedule a small number of additional tasks there if required. As previously mentioned, BM Herbarium is still closed for relocation, and only very urgent requests for photos etc. are being accepted. However, it seems that the transfer may be essentially complete by about August, and I may have access to their collections again after that time. All requests to me for information about BM collections are being stockpiled, with a view to action towards the end of my appointment.

One of the benefits of the ABLO position is the ability to attend lectures and meetings that would otherwise be out of reach and to see taxonomy from a new (European) perspective. Two recent lectures/discussions have been of particular interest.

What's in a Name? Taxonomy in Crisis

I attended a meeting hosted by the Science Communication section of the British Library on the evening of 17 March, which was heavily oversubscribed with attendees. Perhaps 150 were present. The meeting began with a keynote address from Prof. Rod Page, Professor of Taxonomy at Glasgow University, followed by questions/statements from the audience and discussion. The issues discussed covered familiar territory: the crumbling foundations of taxonomy, web delivery and the Googlisation of taxonomy, the ageing taxonomic work force and open access publication. Problems noted included the serious harm done to taxonomy as a science and career by the Science

Citation Index, new web-delivery tools in which the bulk of the funding goes to developing the electronic infrastructure, with taxonomists expected to provide the time- and effort-costly content for nothing, over-selling of initiatives like barcoding of life, the woeful standard of much web-delivered taxonomic information, the lack of tertiary training in core taxonomic skills, and the massive mismatch between user demands (descriptions, keys, floras etc.) and the kind of taxonomy now getting the majority of the funding (molecular phylogeny). This last was a particular concern for the large number of developing-world taxonomists present. Open Access publication was thought to be a pseudo-solution for access to information—someone has to pay for the costs of publication, either the author through page charges or the user through pay-to-view, neither of which is affordable in developing countries. Few suggested solutions were offered.

Biodiversity in a Changing World

We attended a lecture with this title at the Linnean Society of London on 16 April. The lecture was the Second Annual Biodiversity Policy Lecture, hosted jointly by the Linnean Society and the Systematics Association. It was given by Prof. John Beddington, Chief Scientific Advisor to the British Government and Head of the Government Office for Science. The rather pessimistic lecture covered the interrelated issues of climate change, food and water and energy security. It was pointed out that with unavoidable increases in human global population and likely increases in per capita spending power, by 2030 there was likely to be a 30% increase in demand for food (from a shrinking arable area), a 30% increase in demand for fresh water and a 50% increase in demand for energy. The implications for biodiversity in many parts of the world are consequently dire. During questions following the lecture Prof. Beddington indicated that while there was Government appreciation of the importance of maintaining biodiversity, statements such as that from the CBD about reversing the rate of loss by 2010, had not and were not likely to be achieved.

Tony Orchard
ABLO 2008–09

News

Western Australian Herbarium (PERTH) – Building Update

The Western Australian Herbarium will be moving to new premises as part of a Biodiversity Science Centre in May 2010. The building will be a state-of-the-art complex with improved facilities for the collection, staff and visitors. This will inevitably cause a disruption to our normal services.

This advice is to inform you that the inward and outward loans program, exchange program, image, scanning and identification requests will close on 31 December 2009. Requests lodged before this date will be honoured. From this date urgent requests will be considered on a case-by-case basis, as servicing the request will depend on the size and accessibility of the collections at that time.

The collection will remain open to visitors until 15 March 2010.

It is anticipated that all programs including visitor access will reopen by 5 July 2010.

The usual caveat applies: with any building project there is always scope for delay, so there may be changes in the dates. Updates will be provided when available.

If you require further information, don't hesitate to contact the Collections Manager, Karina Knight.
Karina.Knight@dec.wa.gov.au
or on (08) 9334 0500.

Yes, the building is actually taking shape! We look forward to moving in and seeing you there. (Photo: R.Barrett)

ASBS Inc. Business

Hansjörg Eichler Research Fund

The global financial crisis has taken a heavy toll on managed investments, including those held by the Hansjörg Eichler Research Fund. Consequently, ASBS Council decided to cancel the round of applications scheduled for March 2009. Council now considers that the Fund can afford to offer one grant of up to $2000 (or multiple grants totalling $2000) in the September 2009 round. Application guidelines and form are available from the Society's website (www.anbg.gov.au/asbs). The closing date for applications is 14 September 2009.

Archives set of issues of the *Newsletter*

As members of the Society will be aware from recent issues of the *Newsletter* (no. 135, pp. 1–2 and no. 137, p. 1), the archives of the Society are being housed in the Library of the Royal Botanic Gardens Melbourne. Included in those archives is a set of the issues of the *Newsletter*. Thanks to the generosity of several members, that set is nearly complete. There are, however, some issues missing: no.s 1–18 and no.s 31–62. If you think you might have copies of these issues hiding at the back of bookshelves or forgotten in a box in the garage and no longer wish to keep them, please consider donating them to the archives and helping to fill the gaps. Issues can be sent to my attention at the address below. I can also be contacted at:

helen.cohn@rbg.vic.gov.au.

Helen M. Cohn
Library Manager
Royal Botanic Gardens Melbourne
Private Bag 2000
South Yarra, Vic. 3141

Council Nominations 2009–2010 and AGM 2009

Australian Systematic Botany Society Inc.

Nominations for 2009–2010 ASBS Council

Nominations for all positions on the 2009–2010 Council are now called.

Nomination forms have been included on page 26 of this *Newsletter*.

Please note:
Marco Duretto will complete his six-year term as a member of Council at the 2009 AGM and so he will be unable to stand for re-election.
Our Secretary, Kirsten Cowley, is not seeking re-election to Council.

Nominations must be in the hands of the Secretary by Friday, 25 September 2009.

Australian Systematic Botany Society Inc.

Annual General Meeting 2009

The Annual General Meeting of the Australian Systematic Botany Society will be held in Armidale during the ASBS Conference.

Venue: Biological Sciences Lecture Theatre (S003), University of New England, Armidale NSW.

Time: Wednesday, 2 December 2009, 4.45 pm

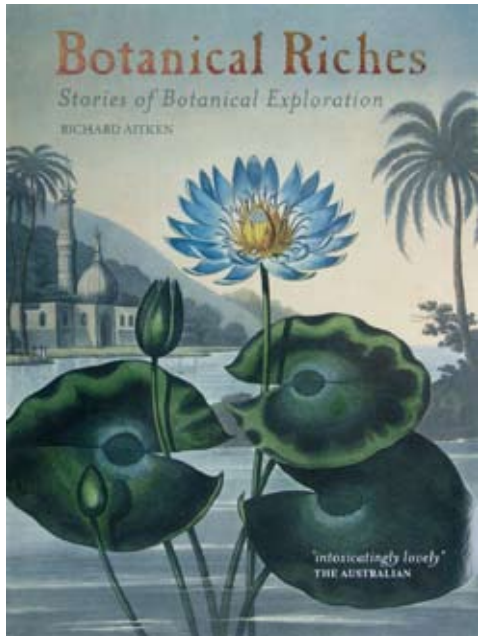
Book reviews

Botanical Riches: Stories of Botanical Exploration

Rosemary Purdie
c/- Centre for Plant Biodiversity Research, Canberra

***Botanical Riches: Stories of Botanical Exploration*, by Richard Aitken, 2008 edition, The Miegunyah Press, Carlton, Vic. RRP: $49.99.**

The movement of plants by people around the globe provides the focus of this fascinating, lavishly illustrated book by Richard Aitken, an architect, curator and historian based in Melbourne. It covers the period over which historical records relating to plant movements are available—a huge time span. To accommodate this, Aitken has structured the book into four time-bound parts: From the Dawn of Time to the 1450s (Part I), from the 1450s to the 1750s (Part II), the 1750s to the 1900s (Part III) and a final brief Part IV on the 1900s and beyond. Each part is then subdivided into chapters mainly on the basis of global geography.



Part I covers the ancient civilisations of Mesopotamia, Egypt, India, Mesoamerica and the Andes, the Mediterranean, and Cathay and beyond in today's China (chapters 2–7) before the influence of the rise of Islam in the Arabian Peninsula and of the Renaissance in Europe are examined (chapters 8–9). Aitken paints a mini-cultural plant history of humans, from the first personal uses of plants (for food, beverages, shelter, stimulants, medicines etc.), to their use in trade and barter (as surpluses arose with human settlement and agriculture), to their use in gardens and ornamental horticulture (as people prospered and plants took on religious or other cultural symbolism).

The reader is given a sense of when plants were first domesticated in various civilisations and the types of plants this involved. One also glimpses how plants were already being transported by people—ranging from commercial trade to being brought back by kings after successful conquests of other countries.

Aitken completes Part I with an outline of the emergence of an expanding horticultural use of plants, the flow of ideas between countries on garden design, and the increasing knowledge about plants for medicinal and ornamental purposes leading to early attempts to classify and describe them. In Europe, these advances in knowledge and the development of the printing press in the mid 15th century created a demand for printed botanical books ('herbals'). This Renaissance period also "unleashed botany as an independent discipline".

Part II of the book traces "the great age of exploration" made possible by advances in boat technology that saw increased maritime exploration and subsequent colonisation of lands by the Portuguese, Spaniards, English and Dutch. These activities increased the movement of plants between countries, as new types were sought for food, traded as commodities, or returned to fuel the growing demand for ornamental garden plants in Europe.

Aitken examines the movement of plants arising from the exploration of the Americas, Asia Minor (the Turkey, Egypt, Syria area), Asia and southern Africa (chapters 11–15). He gives an

overview of the range of plants brought back to Europe (and often also introduced by the colonial powers to their new colonies), the ongoing exchange of knowledge about garden design and the development of new cultivars. He traces the growth of plant-dependent 'industries'—the 'birth' of books consisting mostly of flower illustrations (florilegia), the rise of professional flower growers (florists), the publication of regional floras—and the increased emphasis on plant classification which was revolutionised with the publication of Linnaeus' binomial classification system in the mid 18th century.

In Part III, Aitken traces the wave of exploration and movement of plants from the mid 18th century to the end of the 19th century. The early part saw application of the Linnaean system of nomenclature bring a new scientific focus to botany and colonial powers linking the advancement of sciences such as botany with their economic and political objectives. He covers exploration and plant collecting in Australia, southern Africa, India and the East Indies, North America, Central and South America, and China and Japan (chapters 18–24). The range of new plants taken back from these countries to Europe is outlined, as are the "highly specialised manias" for new ornamental garden plants, the demand for novel taxa fuelled by the increasing skills of plant breeders and the improved technology for keeping plants alive indoors.

The 'conquest' of the last 'frontier' for new plants, the mountainous areas of China, is outlined in Part IV (chapter 25) together with a brief look at the future of plant exploration. Two examples of the discovery of "livings fossils"—the dawn redwood (*Metasequoia glyptostroboides*) in China in 1941 and the Wollemi pine (*Wollemia nobilis*) in Australia in 1994—and their subsequent cultivation bring Aitken to his final message, a hope that more new plants remain to be located, identified and appreciated.

Botanical Riches has many threads running through its sweeping story:

a history of exploration and colonisation, fuelled by national rivalries and animosities and the resultant history of exchange of plants between continents;

a concise historical Who's Who of major plant collectors, including amateur naturalists, professional botanists, expatriate merchants, and people employed by governments, botanical gardens, nurseries, horticultural societies or by benefactors ranging from kings to affluent private individuals, as well as covering many key illustrators and botanists;

the evolution of plant classification and of botanical publications, from an early focus on medicinals, to regional floras based on the new Linnaean system of classification, to florilegia and illustrated botanical magazines for garden enthusiasts, to 20th century specialist botanical books;

the evolution of botanic gardens, from places systematically growing medicinal plants, to depots for the transport of new plants between countries or to support the development of agriculture and horticulture within new colonies, to the scientific study and description of plants and the publication of this information;

how exploration and colonisation of countries fuelled 'fads' in plants cultivated in European gardens which in turn lead to the search for 'rarer' species to meet the "insatiable taste for novelty"; and

how changes in technology—from greenhouses, to stovehouses, to hothouses heated with piped steam or hot water—improved the capacity for enthusiasts to cultivate plants.

Along the way, the reader is also given a glimpse of things like the improvements in technology for the transport of live plants between continents and climates, the role of diplomacy and "imperial favour" in getting people into 'restricted' countries to collect plants, and the thrill of collecting in strange places and of discovering new species.

This book is very easy to read and I think best appreciated by being dipped into and out of over time. Each chapter is short—about 2–3 pages of text with an equivalent space devoted to lavish images each with its own mini-story caption, some of which are absolute gems. One of my favourites illustrates the trials of publishing botanical books: in the caption accompanying an image of one Georg Rumpf, author of *Herbarium Amboinensis*,

we learn that he worked on the manuscript from 1653 to 1670 before going blind; that his wife continued to work on the book until she was killed in an earthquake four years later; that the original illustrations were destroyed by fire in 1687; that the ship carrying the manuscript from Ambon back to the Netherlands was destroyed by the French in 1692; and that the replacement copy that eventually reached the Netherlands in 1696–1697 then languished in an archive for 30 years until finally edited and published between 1741 and 1755!

The book provides a litany of plants, with Latin names provided for most of those mentioned. I picked up no typographic errors (I don't think it was because I was so engrossed in 'the read'). The end sections provide, on a chapter by chapter basis, the sources of all illustrations, and an annotated list of the books Aitken drew on thus giving an entry point for those wanting more detail. A "Select bibliography" lists other books that provide overviews of various topics touched on, for those wanting more general information. Finally, the index covers all the plants (common names and scientific names) and people mentioned, but omits any place names—my only quibble with the book.

The inside back cover of *Botanical Riches*, below the bio of the author, tags the book as "Gardening/ Garden History". It is so much more than that and definitely worth a read by anyone with a general interest in plants, botany or the human history of either, told from a European perspective.

Field Guide to the Orchids of the Australian Capital Territory

Robert Bates
c/- Adelaide Herbarium, Department of Environment & Heritage

***Field Guide to the Orchids of the Australian Capital Territory* by David L. Jones with Jean Egan (digital enhancement of line drawings) and Tony Wood (principal photographer). National Parks Association of the ACT, available at GPO Box 544, Canberra ACT 2601. www.npaact.org.au. RRP: $ $38.50.**

This, the first complete guide to the orchids of the ACT, was published in 2008 and as the title suggests is an ideal field guide size as it can be carried in a coat pocket.

The quality and detail of the photographs and line drawings is superb, making identification of all 121 species relatively simple. The brilliant 3D cover picture of the local endemic spider orchid *Arachnorchis actensis* is a startling feature.

The botanically accurate drawings are by David Jones himself. David has produced numerous books on Australian orchids culminating in his *Native Orchids of Australia* published in 2006 with illustrations of all Australian species known at the time.

Amazingly the *Field Guide to Orchids of the Australian Capital Territor*y includes more than twenty species apparently not known in 2006. David Jones has published all of these in the last three years!

The generic names used are the recent segregate genera of Clements, Jones and others and no mention is made of their synonyms, which makes quite clear the author's intention of rejecting all the 'old generic names' used by Australian herbaria and most national parks systems, other than the ACT apparently.

The introductory section includes a foreword by President of the National Parks Association of the ACT, Christine Goonrey and many easy-to-read paragraphs dealing with aspects of orchid biology and ecology ranging from pollination to effects of fire and drought.

Each species is treated in alphabetical order with a two-page spread provided for each, with colour images, drawings and notes on recognition, size, flowering time, habit and distribution both in the ACT and elsewhere. A simple glossary and a very clear index complete the book and it is great to see all three contributors pictured together on the back cover.

As a South Australian it was interesting to note how many species recognised here do not have SA listed in their distribution in the field guide, indicating that there may be many changes to South Australian species' names in the next few years. Given that Jones has published about twenty five new species for the ACT since 2006 one is led to believe that at least fifty new South Australian orchids could be named in the next ten years!

The names used are as expected, other than for *Paracaleana* which has been dropped in favour of the original *Caleana* which will be quite acceptable to most and has the advantage that we will not have to use the dubious generic name *Sullivania* previously favoured by Jones.

As to be expected from such an experienced author the book is relatively error free. For South Australia however, Jones' habit of putting (s-e) for the South Australian distribution of many species occurring as far west as Eyre Peninsula or as far north as far as the Flinders Ranges seems rather confusing when 'South Australia: south' would have been better, unless the species really was restricted to the south-east.

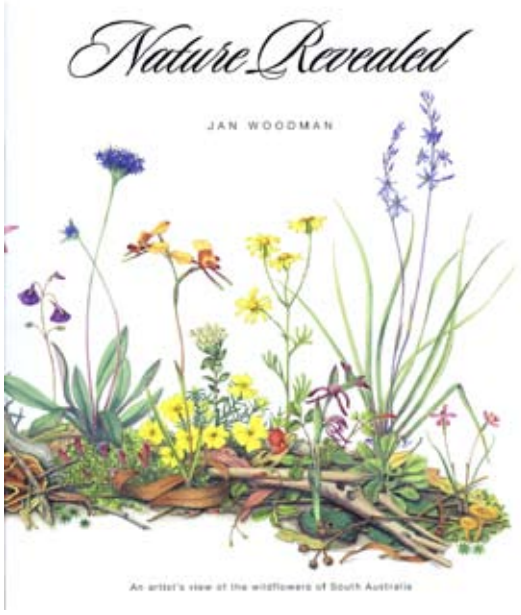
Nature Revealed

An artist's view of the wild flowers of South Australia

Elizabeth Joyner
Botanical Artists' Society of Australia

***Nature Revealed: an artist's view of the wild flowers of South Australia* by Jan Woodman -author and artist. Board of the Botanic Gardens and State Herbarium Government of South Australia, Department of Environment and Heritage. Peacock Publications 2008. ISBN 1 9210 08822. RRP: $49.90.**

This delightful book by prominent South Australian artist, Jan Woodman, provides a fascinating and wide-ranging study of the state's wildflowers. The material is largely arranged according to geographic regions, plus one chapter each on orchids/fungi, technique and the boundaries of botanical illustration.



The foreword and last chapter by W.R. Barker, Chief Botanist of the State Herbarium at the South Australian Botanic Gardens, pay tribute to the author's talent and commitment to this project.

The aim of the book is to focus public attention on the beauty and diversity of flower form, pollination strategies, new species, existing species and their adaptation to aridity, rain, fire and fauna over time. The importance of preservation of species and the conservation of plant rarities and biodiversity is thereby emphasised. As Dr Barker writes, this book is "a treasure trove of hidden delights".

Notable features of the artwork are the delicacy of soft, subdued, pastel tones and sense of vitality in the drawings. Plants are often shown grouped in their local habitat or ecological setting, sometimes with pollinators such as butterflies and birds. There are also formal classical studies of single flowers with life stages and dissections. A few bush, coastal and riverside paintings can be found to expand the ecological aspects.

In regard to technique, useful advice on the author's approach to and preparation of the artwork, as well as specific art materials, are detailed.

The text is personal and conversational in style and descriptive of where and when specimens were found or their special growth requirements.

The last section gives the author's biographical and career details, followed by references, location maps and index.

Overall, this is a charming yet scholarly work that shows a career path for the dedicated botanical artist if they are fortunate enough to have the encouragement and expertise of a state herbarium to bring it to fruition.

There is a great need and advantages for all involved when collaboration between botanical illustrators and botanists is actively fostered. The immense scientific value of our flora could then be better realised by public exhibitions of botanical artwork. Plants are the basis of all life on earth and we forget this at our peril.

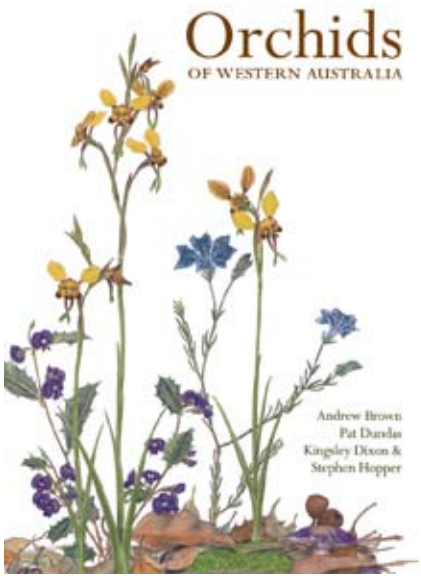
Perhaps the day will come when a keen illustrator can contact their state herbarium directly and be welcomed to undertake a project of mutual benefit to all concerned. Just think in terms of Celia Rosser and her life work on the genus *Banksia*!

Orchids of Western Australia

Joe Quarmby
Department of Environment & Heritage, Adelaide

***Orchids of Western Australia* by A. Brown, P. Dundas, K. Dixon and S. Hopper. University of Western Australia Press, Crawley, WA. http://www.uwap.uwa.edu.au/books/natural-history/orchids. RRP: $89.95.**

This impressive, visually stunning book is an extremely valuable contribution to the publications on the orchid flora of Western Australia. It will be of interest to the amateur and professional botanist alike, or anyone with a keen interest in orchids. This comprehensive resource features all 409 currently known species in Western Australia, beautifully illustrated by Pat Dundas, including orchids of the Kimberly region which have previously been neglected by most authors. It also contains a wealth of information about orchid biology, ecology, and taxonomy.



The book commences with a detailed introduction to the orchids of Western Australia, including information about orchid biology; pollination; life history; response to fire; threatening processes; conservation; and cultivation. There is also a lengthy section on taxonomy, which discusses the history of orchid discovery and description in Western Australia – including the recent dramatic increase in the number of recognised species and current taxonomic research, and contains a list of all currently unnamed species. I found this section of the book particularly interesting, because it contains a wealth of previously unpublished information, and clearly demonstrates the authors' depth of knowledge.

The book is then divided into chapters on the orchids of the South-west region—which comprises the majority of the publication, and the orchids of the Kimberly region. The orchids in these chapters are arranged firstly in alphabetical order according to genus and then in taxonomic groupings with similar species grouped and illustrated together. The order and groupings of species make it relatively easy to compare closely related taxa; however for some of the larger genera (e.g. *Caladenia*, *Pterostylis*, *Thelymitra*) a key would have greatly assisted in determining which group a particular species belongs.

Each species is illustrated—drawn and painted in watercolour, usually with three or four species to a page, and all to scale. The botanical artwork is beautiful, however it can be difficult to differentiate the morphological features in some illustrations, especially with the small-flowered species (e.g. in *Corybas*, *Microtis*, *Prasophyllum*, *Pterostylis* etc.). The corresponding information provided for each species is brief but includes an explanation of the botanical name; flowering time; when and who discovered and described it; distribution; habitat; size and distinguishing features. The species descriptions are basic, and botanical terminology is kept to a minimum, which will make it easier for enthusiasts to understand, but may make it difficult to accurately identify species.

This book is clearly not intended to be used as a field-guide, mainly due to its large size and weight, and would be best suited to desk-top use. It is unrivalled in its comprehensiveness, largely

due to the inclusion of species from the Kimberly region. Indeed, many of the species in this region were only recently discovered and described as a result of targeted surveys in the 1990s to early 2000s. Furthermore, the inclusion of numerous recently described and unnamed species ensures that the reader has the most complete inventory of species. Obviously, many of the unnamed species are likely to be formally described in the near future, and new species will be discovered and named—but this is inevitable as a result of ongoing taxonomic research.

I would highly recommend this book to anyone with an interest in the orchids of Western Australia. It is a very impressive publication and is the result of decades of work by the authors and artist. It definitely inspires the reader to want to explore the orchids of the west.

Book notices

The Digital Plant Atlas **by R.T.J. Cappers, R. Neef and R.M. Bekker. Rijksuniversiteit groningen and Deutsches Archaologisches Institut, 2009. 3 parts, more than 1,800 pages, more than 10,000 photographs, hard cover, 21 x 29.7 cm (A4). € 245.- incl. 6% VAT. After 1 July 2009 € 325.- incl. 6% VAT. http://www.plantatlas.eu/ea.php**

Purchase of the book grants access to the protected parts of the website.

Grasses of James Cook University, Townsville Campus. Part A: a pictorial key to grass genera in North Queensland**; and** ***Part B: generic descriptions and key to species*** **by Nanette Hooker.**

http://eprints.jcu.edu.au/2103/PartA

http://eprints.jcu.edu.au/2104/PartB

We would like to draw your attention to a new publication in the form of an eprint. It includes all the grasses on the James Cook University, Townsville Campus and this means that it covers many grasses occurring around Townsville and north Queensland generally. These eprints are available to be printed off as pdfs.

The Biology of Australian Weeds **Volume 3 edited by Dane Panetta. R.G. and F.J. Richardson, Meredith, Vic. Price: $119.90 [incl. GST] + postage. Available from www.weedinfo.com.au or by telephone or fax (03) 5286 1533.**

The latest publication from R.G. and F.J. Richardson is now available. There are only a limited number of copies available, so hurry!

Includes detailed reviews of 16 more of Australia's worst weeds:
Anredera cordifolia Madeira vine
Asparagus asparagoides bridal creeper
Bryophyllum spp. mother of millions
Calotropis procera rubber bush
Conyza bonariensis hairy fleabane
Jatropha gossypiifolia bellyache bush
Lantana montevidensis creeping lantana
Leucaena leucocephala leucaena
Ligustrum lucidum and *Ligustrum sinense* privet
Lonicera japonica Japanese honeysuckle
Macfadyena unguis-cati cat's claw creeper
Pittosporum undulatum sweet pittosporum
Polymeria longifolia clumped bindweed
Prosopis spp. mesquite
Solanum elaeagnifolium silverleaf nightshade
Ziziphus mauritiana Chinese apple

New online jounal: ***Conservation Letters***

The online journal *Conservation Letters*, started in 2008, has free access for the rest of this year.

It is a journal of the Society for Conservation Biology and publishes empirical and theoretical research with significant implications for the conservation of biological diversity. It publishes three types of articles:

Letters: novel findings with high relevance for practice or policy.

Mini-reviews: overviews of emerging subjects that merit urgent coverage or succinct syntheses of important topics that are rarely encountered in the mainstream literature.

Policy Perspectives: brief essays for a general audience on issues related to conservation and society.

Items already included are outcomes of an American test of the Australian Weed Risk Assessment system, directions in threatened species recovery and a retrospective analysis of previous conservation spending which makes recommendations for more cost-effective conservation investments in the future.

See: www3.interscience.wiley.com/journal/118902559/home

Special offer on Lucid Keys

ABRS Identification series:

***Key to Australasian Liverwort and Hornwort Genera*. A special offer at $20.00, plus GST, post and packaging.**

ABRS Identification series:

Two CDs: "*On the fly—the Interactive Atlas and Key to Australian fly Families*" and "*What wasp is that? An Interactive Identification guide to the Australian Families of Hymenoptera.*" Purchase the two CDs for $30.00 plus GST, post and packaging.

For details on any CBIT products, visit the online shop at http://shop.cbit.uq.edu.au/

The Pea Key

A reminder that the Lucid Key to Peas is presently available online. The website and introduction are given below.

***THE PEA KEY: An interactive key for Australian Pea-flowered Legumes*. Version 1.0. http://www.anbg.gov.au/cpbr/cd-keys/peakey/key/The%20Pea%20Key/Media/Html/index.html**

The pea-flowered legumes, the family Fabaceae (with more than 1,500 species) form an important part of the flora of Australia. The family is currently being treated for the *Flora of Australia* by a number of researchers, postdoctoral fellows and students from around Australia. Capitalising on that collaborative effort, the legume researchers at the Australian National Herbarium and the Centre for Plant Biodiversity Research initiated and have coordinated this project to build an interactive key to all the pea-flowered legumes of Australia—*The Pea Key*. A character list developed as the result of a workshop held at the Centre in late 1999, was used by the participants to code species; this included a coordinator engaged with Australian Biological Resources Study support in 2000–01.

Every effort has been made to include the most up-to-date taxonomic information; all treatments up to November 2007 (1,500 taxa) have been included. As the many active projects of the Australian Pea-flowered Legume Research Group come to fruition, the results will be incorporated into *The Pea Key*.

The Pea Key, which was originally conceived as a research tool to cover the taxa in the tribes Mirbelieae, Bossiaeeae and Brongniartieae, has evolved into a more extended identification tool to all the pea-flowered legumes of Australia. It is now an identification system, developed using Lucid software, for all Australian native (presumed to be present in Australia prior to 1788) and naturalised (introduced species with self-maintaining 'wild' populations) species and sub-specific taxa.

A fact sheet exists for all species included in *The Pea Key*. However, at this time, only 4 species are presented with images as a well developed species profile i.e. *Chorizema retrorsum, Daviesia ulicifolia, Hovea longipes* and *Pultenaea spinosa*. These examples have been prepared in a format similar to the *Flora of Australia* so that once treatments are prepared for the pea-flowered legumes the structure will be compatible and appropriate for *Australian Flora Online*. For all species the most current information from the *Australian Plant Name Index* has been incorporated.

Australian Systematic Botany Society Incorporated

(incorporated under the Associations Incorporation Act 1991)

NOMINATION FORM
ELECTION OF COUNCIL MEMBERS FOR 2009-2010

Note:
- For limitations on and procedures for Nomination and Election to Council refer to Rules 12 and 13 of the Rules of the Society.
- Only financial members, or those accorded that status by the Rules, are eligible to stand for Council or to make nominations.
- A separate nomination form or facsimile of the same is required for each candidate or, where a member is nominated for more than one position, each position.
- No member of Council can simultaneously hold more than one of the six positions elected by members to Council (Rule 12(4)).

We, the undersigned members of the Society, nominate (Full Name) ……

for : **President** **Vice-President** **Secretary** **Treasurer** **Councillor**.

(*Please delete the offices that do not apply to this nomination*)

First Nominator	**Second Nominator**
Member's Name: …….	Member's Name: …….
Signature	Signature:

I hereby consent to my nomination for the position of .....

Signature ..... **Date** .....

Nominations must be in the hands of the Secretary by Friday, 25th September 2009 at the following address:

Mrs K.J.Cowley, Secretary ASBS,
Australian National Herbarium
Centre for Plant Biodiversity Research
G.P.O. Box 1600
CANBERRA A.C.T. 2601

For further information contact the Secretary: Ph. (02) 6246 5024, Fax (02) 6246 5249, Email: Kirsten Cowley@csiro.au

Chapter Conveners

Adelaide
Robyn Barker
State Herbarium of South Australia
Department for Environment and Heritage
PO Box 2732
Kent Town, SA 5071
Tel: (08) 8222 9348
Email: barker.robyn@saugov.sa.gov.au

Armidale
Jeremy Bruhl
Department of Botany
University of New England
Armidale, NSW 2351
Tel: (02) 6773 2429
Email: jbruhl@metz.une.edu.au

Brisbane
Laurie Jessup
Queensland Herbarium
Mt Coottha Road
Toowong, QLD 4066
Tel: (07) 3896 9320
Email: laurie.jessup@epa.qld.gov.au

Canberra
Vacant

Cairns
Mark Harrington
James Cook University
PO Box 6811
Cairns, QLD 4870
Tel: (07) 4042 1338
Email: mark.harrington1@jcu.edu.au

Darwin
Philip Short
Northern Territory Herbarium
Parks and Wildlife Commission of the NT
PO Box 496
Palmerston, NT 0831
Tel: (08) 8999 4512 / Email: phil.short@nt.gov.au

Hobart
Marco Duretto
Tasmanian Herbarium
Private Bag 4
Hobart, Tas. 7001
Tel: (03) 6226 1806 / Email: marco.duretto@tmag.tas.gov.au

Melbourne
Frank Udovicic
Royal Botanic Gardens Melbourne
Birdwood Avenue, South Yarra, Vic. 3141
Tel: (03) 9252 2313 / Email: frank.udovicic@rbg.vic.gov.au

Perth
Kristina Lemson
Plant Systematics and Conservation
Centre for Ecosystem Management and School of Natural Sciences, Edith Cowan University, Joondalup WA 6027
Tel: (08) 6304 5369 / Email. k.lemson@ecu.edu.au

Sydney
Hannah McPherson
National Herbarium of NSW
Mrs Macquaries Road
Sydney, NSW 2000
Tel: (02) 9231 8111
Email: hannah.mcpherson@rbgsyd.nsw.gov.au

Contacting Major Australian Herbaria and Systematics Institutions

From outside Australia: add the country code 61 and omit the leading zero of the area code

AD tel: (08) 8222 9307 fax: (08) 8222 9353 www.flora.sa.gov.au	HO tel: (03) 6226 2635 fax: (03) 6226 7865 www.tmag.tas.gov.au/Herbarium/Herbarium2.htm	MEL tel: (03) 9252 2300 fax: (03) 9252 2350 www.rbg.vic.gov.au/	NSW tel: (02) 9231 8111 fax: (02) 9251 7231 www.rbgsyd.gov.au/conservation_research/herbarium_&_services
CANB tel: (02) 6246 5108 fax: (02) 6246 5249 www.anbg.gov.au/	BRI tel: (07) 3896 9321 fax: (07) 3896 9624 www.epa.qld.gov.au/hebarium	DNA tel: (08) 8999 4516 fax: (08) 8999 4527 www.nt.gov.au/pwcnt	PERTH tel: (08) 9334 0500 fax: (08) 9334 0515 http://science.dec.wa.gov.au/herbarium/
QRS tel: (07) 4091 8800 fax: (07) 4091 8888	MBA tel: (07) 4048 4745/4743 fax: (07) 4092 3593	NT tel: (08) 8951 8791 fax: (08) 8951 8790	*Australian University Herbaria* Contact CHAH representative: Murray Henwood, University of Sydney
Council of Heads of Australasian Herbaria (CHAH) Chair: Dr Brett Summerell (NSW) brett.summerell@rbgsyd.nsw.gov.au or www.chah.gov.au/	ABRS tel: (02) 6250 9554 fax: (02) 6250 9555 email: abrs@environment.gov.au www.environment.gov.au/biodiversity/abrs/	*Australian Botanical Liaison Officer* (ABLO) Tony Orchard Herbarium, Royal Botanic Gardens, Kew Richmond, Surrey TW9 3AB England tel: 44-20-8332 5270; fax: 44-20-8332 5278 email: ablo@kew.org	

ASBS Publications

History of Systematic Botany in Australia

Edited by P.S. Short. A4, case bound, 326 pp. ASBS, 1990. $10; plus $10 postage & packing.

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

Systematic Status of Large Flowering Plant Genera

Austral.Syst.Bot.Soc.Newslett. 53, edited by Helen Hewson. 1987. $5 + $1.75 postage.

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*.

Australian Systematic Botany Society Newsletter

Back issues of the *Newsletter* are available from Number 27 (May 1981) onwards, excluding Numbers 29, 31, 60–62, 66, 84, 89, 90, 99, 100 and 103. Here is the chance to complete your set. Cover prices are $3.50 (Numbers 27–59, excluding Number 53) and $5.00 (Number 53 and 60 onwards). Postage $1.10 per issue, apart from $1.75 for the Large Genera issue (Number 53).

Evolution of the Flora and Fauna of Arid Australia

Edited by W.R. Barker & P.J.M. Greenslade. Peacock Publications, ASBS & ANZAAS, 1982. $20 + $8.50 postage.

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.

Also available from Peacock Publications, 38 Sydenham Road, Norwood, SA 5069, Australia. To obtain this discounted price, post a photocopy of this page with remittance.

Ecology of the Southern Conifers (Now out of print)

Edited by Neal Enright and Robert Hill. ASBS members: $60 plus $12 p. & p. non-members $79.95. Proceedings of a symposium at the ASBS conference in Hobart in 1993. Twenty-eight scholars from across the hemisphere examine the history and ecology of the southern conifers, and emphasise their importance in understanding the evolution and ecological dynamics of southern vegetation.

Postage rates: Those quoted apply only within Australia. Please email for prices to other locations. Send **orders and remittances** (payable to "ASBS Inc.") to:

Helen Thompson
ASBS Sales
ABRS
GPO Box 787
Canberra, ACT 2601, Australia
Or fax credit card details to:
Helen Thompson Fax: (02) 6250 9448

Contact details. Email: helen.thompson@environment.gov.au . Tel: (02) 6250 9445. Fax: (02) 6250 9448.

AUSTRALIAN SYSTEMATIC BOTANY SOCIETY INCORPORATED

The Society

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

Membership

Membership is open to all those interested in plant systematics. Membership entitles the member to attend general meetings and chapter meetings, and to receive the *Newsletter*. Any person may apply for membership by filling in a "*Membership Application*" form, available on the Society website, and forwarding it, with the appropriate subscription, to the Treasurer. Subscriptions become due on January 1 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 *Australian Systematic Botany Society Inc*., and remitted to the Treasurer. All changes of address should be sent directly to the Treasurer as well.

The Newsletter

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

Contributions

Send copy to Russell Barrett and Peter Jobson and book reviews to Gael Campbell-Young at the addresses given below. They *preferably* should be submitted as: (1) an MS-DOS file in the form of a text file (.txt extension), (2) an MS-Word.doc file, (3) a Rich-text-format or .rtf file in an email message or attachment or on an MS-DOS disk or CD-ROM. *Non-preferred media* such as handwritten or typescripts by letter or fax are acceptable, but may cause delay in publication in view of the extra workload involved.

Formatting of submitted copy. Please use Word in formatting indents, bullets, etc. in paragraphs and for tables. Do not format primitively with tabs, which change with the Normal style sheet. If embedding tables or references or other Objects from other software (Excel, bibliographic software, etc.) ensure that these are converted to Word tables or paragraphs. Letters in abbreviations of Australian States (SA, WA etc., but Vic.) and organisations (e.g. ASBS, ABRS) should not be separated by full-stops, but initials should be (e.g. W.R. Smith, not WR Smith).

Images: their inclusion may depend on space being available. Improve scanned resolution if printing your image is pixellated at a width of at least 7 cm (up to a 15 cm full page). Contact the Editors for further clarification.

The *deadline* for contributions is the last day of February, May, August and November. All items incorporated in the *Newsletter* will be duly acknowledged. Any unsigned articles are attributable to the Editors.

Authors alone are responsible for the views expressed, and statements made by the authors do not necessarily represent the views of the *Australian Systematic Botany Society Inc*. *Newsletter* items should not be reproduced without the permission of the author of the material.

Advertising

Advertising space is available for products or services of interest to ASBS members. The current fee is $100 per full page, $50 per half-page or less.

Flyers may be approved for inclusion in the envelope for products or services of interest to ASBS members. The current fee is $100 per flyer, plus the cost of inserting them (usually roughly $25–30). Flyers are not part of the *Newsletter* and do not appear with the *Newsletter* on the ASBS Website.

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

Editors

Russell Barrett Kings Park & Botanic Garden Fraser Ave West Perth WA 6005 Tel: (08) 9480 3640 Fax: (08) 9480 3641 Email: russell.barrett@bgpa.wa.gov.au	Gael Campbell-Young Ecological Associates 5/235 Unley Rd Malvern SA 5061 Tel: (08) 8272 0463 Fax: (08) 8272 0468 Email: gcampbellyoung@eassoc.com.au	Peter Jobson ecologia Environment 1025 Wellington St West Perth WA 6005 Tel: (08) 9322 1944 Fax: (08) 9322 1599 Email: peter.jobson@ecologia.com.au

Contents

Australian Systematic Botany Society Newsletter 139 (June 2009)