ASBS

Australasian Systematic Botany Society

Newsletter

No. 151 June 2012

Price: $5.00

ISSN 1034-1218

AUSTRALIAN SYSTEMATIC BOTANY SOCIETY INCORPORATED

Council

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

Vice President
Dale Dixon
Royal Botanic Gardens Sydney
Mrs Macquaries Road
Sydney, NSW 2000
Australia
Tel: (02) 9231 8171
Fax: (02) 9241 2797
Email: Dale.Dixon@rbgsyd.nsw.gov.au

Secretary
John Clarkson
Dept of National Parks, Recreation, Sport and Racing
PO Box 156
Mareeba, QLD 4880
Australia
Tel: +61 7 4048 4745
Fax: +61 7 4092 2366
Email: john.clarkson@qld.gov.au

Treasurer
Frank Zich
Australian Tropical Herbarium
E2 building, J.C.U. Cairns Campus
PO Box 6811
Cairns, Qld 4870
Australia
Tel: (07) 4059 5014
Fax: (07) 4091 8888
Email: frank.zich@csiro.au

Councillor (Assistant Secretary - Communications
Ilse Breitwieser
Allan Herbarium
Landcare Research New Zealand Ltd
PO Box 40
Lincoln 7640
New Zealand
Tel: +64 3 321 9621
Fax: +64 3 321 9998
Email: breitwieseri@landcareresearch.co.nz

Councillor
Pina Milne
National Herbarium of Victoria
Royal Botanic Gardens
Birdwood Ave
South Yarra VIC 3141
Australia
Tel: (03) 9252 2309
Fax: (03) 9252 2423
Email: pina.milne@rbg.vic.gov.au

Other Constitutional Bodies

Public Officer
Annette Wilson
Australian Biological Resources Study
GPO Box 787
Canberra, ACT 2601
Australia

Affiliate Society

Papua New Guinea Botanical Society

ASBS Website

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

Hansjörg Eichler Research Committee
Bill Barker
Philip Garnock-Jones
Betsy Jackes
Greg Leach
Nathalie Nagalingum
Christopher Quinn
Chair: Dale Dixon, Vice President
Grant application closing dates:
Hansjörg Eichler Research Fund:
on March 14th and September 14th each year.
Australian Conservation Taxonomy Award:
on March 14th 2013.

Cover image: *Alloxylon flammeum* (Proteaceae), reproduced with the permission of David Mackay (the artist) and RBG Sydney.

Publication dates of previous issue
Austral.Syst.Bot.Soc.Newslett. 150 (March 2012 issue)

Hardcopy: 6 June 2012; ASBS Website: 13 April 2012

From the President

One of the most important responsibilities of ASBS Council is the wise management and use of the money that has accumulated in the Hansjörg Eichler Research Fund. That responsibility is soon to become much greater with the Fund's inheritance of a substantial proportion of the estate of the late Marie-Luise (Marlies) Eichler, Hansjörg's wife. Mrs Eichler died on New Year's Eve, 2010, leaving two thirds of her liquid assets to the Research Fund. Administration of her estate will soon be finalized by the New South Wales Trustee and Guardian's office, but the official who has been working on this project has already given me a rough estimate of the amount that our society stands to inherit. This is likely to exceed $700,000, which will bring the amount in the fund to over $1.2 million, a fantastic asset for supporting research into plant and fungal systematics by members of ASBS, especially its student members. The next ASBS Council will need to decide how best to manage the enlarged fund and use the additional income that will be generated. Suffice to say that substantially enhanced Eichler Awards will result from Mrs Eichler's generous donations, both in life and death. When one also considers the new Australian Conservation Taxonomy Award, funded by a grant from The Nature Conservancy and Thomas Foundation, ASBS is now in a position to support student research projects much more handsomely than ever before.

This brings me to the results of the March 2012 round of applications for ACT and Eichler Awards. Two excellent applications were received for the ACT Award. Our Research Committee, augmented by James Fitzsimons, representing The Nature Conservancy, granted the Award to Todd McLay, a Ph.D. student at the School of Botany, University of Melbourne, supervised by Dr Mike Bayly. Todd will be formally presented with the Award at this year's ASBS conference in Perth in September. His project as a whole is a systematic study of the genus *Xanthorrhoea* with the aim of further resolving species boundaries and the phylogeny of the genus using morphological and molecular evidence. The subproject that Todd nominated for his ACT proposal was the systematics of the Western Australian species and especially of the taxa native to the Great Western Woodlands, one of two regions that is of particular concern to The Nature Conservancy. This might have given Todd's proposal an edge.

Disappointingly, only one application was received for an Eichler Award and this was judged by the Research Committee not to be of a sufficient standard to warrant a grant. This continues a disturbing decline in the number of applications for Eichler Awards over the past three years. After having to offer no award in March 2009 because of the global financial crisis and its negative effect on the performance of the fund's investments, seven student members applied for Eichler Awards in September 2009, of whom two were successful. Since then the numbers of applicants (and Award winners) have decreased as follows: March 2010: 6(2), September 2010: 5(2), March 2011: 2(1), September 2011: 1(1). This downward trend does not mirror a significant drop in the number of student members over this period, so I am struggling to explain it. A number of potential explanations seem plausible. Is a $2000 grant and an award added to the student's *curriculum vitae* insufficient incentive to justify the effort of preparing an application? Do most of our student members think that their research projects fall outside the scope of the Eichler Awards? Is the number of student members doing research projects as part of their degrees decreasing? Do students mistakenly believe that we receive so many applications that success is unlikely? To get a better understanding of the problem, we will be sending an email survey to student members to hear their views. In the meantime, I want to encourage all student and early career members who are actively working on, or planning a research project (including those who have already won an Eichler Award and fulfilled all of its requirements) to seriously consider applying for an Eichler Award in the next round of proposals, which closes on 14 September 2012.

Those of us who are fortunate enough to have been granted institutional support or flush enough to afford to fund our own travel to Perth are "gearing

up" for the next ASBS conference this coming September. Hopefully we will have written our abstracts and started preparing our presentations by the time this newsletter is published, and will be looking forward to revisiting Perth, old friends, and the fantastic flora of south western Western Australia or perhaps exploring these wonders for the first time. Preliminary preparations have started for our following conference in Sydney, a meeting that will be held jointly with the Society of Australian Systematic Biologists, most probably at the University of Sydney in November 2013. We have no plans as yet for meeting in 2014 and I would like to hear from any member or organization that might be interested in hosting that meeting.

Many of you will be aware that two of our long-standing members and Nancy Burbidge Medallists, Professor Stephen Hopper, Director of the Royal Botanic Gardens Kew and Dr Alexander George, an Adjunct Associate Professor at Murdoch University, were recognized in this year's Queen's Birthday Honours. Steve was awarded the Companion of the Order of Australia (AC), for "eminent service as a global science leader in the field of plant conservation biology, particularly in the delivery of world class research programs contributing to the conservation of endangered species and ecosystems". Alex was appointed a Member (AM) in the General Division for "service to conservation and the environment as a botanist, historian and author, particularly in the area of Australian flora, and through roles with national and international professional organisations". I am sure members will join me in sending hearty congratulations to both.

Peter Weston

We're anticipating a strong turnout at this year's conference in Perth, having already received more than 50 registrations; however, we've not received many abstracts! The deadline for abstract submission has therefore been extended to Friday July 20. If you are submitting an abstract, we kindly request that you also register by this date.

The field trip to Mt Lesueur is filling fast—if you are keen to join us on this botanical jaunt then you will need to register your interest quickly. May was an extremely dry month in Perth and the Mt Lesueur area, but we have received some good rainfall during June and hopefully this will continue to ensure a terrific spring flowering season.

We remind you that accommodation can be very difficult to get at the last minute in Perth, so if you're planning to attend the conference we strongly recommend that you book your accommodation now.

Our website will be regularly updated with all the latest news in the lead up to the conference. We will also be increasing activity on our Facebook and Twitter pages. Coming to terms with social networking has been well out of our comfort zone, so get out of yours and join in!

ASBS 2012 Perth Conference Committee
asbs2012perth@gmail.com
http://www.asbs2012perth.com/

From the Editors

A big thank you to the Barkers and their colleagues at AD for (once again!) stepping in to see the smooth production of the *Newsletter* in Russell's absence. Their experience in the role and broad connections in the scientific community set a high standard for the content of the *Newsletter*.

This issue contains a bumper crop of book reviews - probably the most ever included in a single issue of the *Newsletter*! This is due to the hard work of John Clarkson in approaching publishers for books that can be offered to members for review, and then perhaps the more challenging task of chasing up the actual reviews from the members. We are sure everyone will agree that John is doing a great job, and we hope that the members find the reviews to be of significant value.

Russell's time away was very refreshing, with plenty of opportunities to observe some botanical curiosities such as the Uros Islands, consisting entirely of floating sedges (*Schoenoplectus*):

Articles

ALLAN CUNNINGHAM IN CAREENING BAY, WA

Joan B. Webb

There's a giant boab (*Adansonia gregorii*) in the scrub behind the beach of Careening Bay in the Kimberley region of north Western Australia. This boab has its bark engraved with the inscription, H.M.C. MERMAID, 1820, carved by the crew of the cutter MERMAID while it was careened for repairs in September 1820. It was the MERMAID's third voyage to chart the Australian coast, its captain being Phillip Parker King, and its chief botanist Allan Cunningham. King and Cunningham had already sailed on two previous voyages in the MERMAID, and were to complete a fourth in the brig BATHURST in 1821–1822.

A letter from Lord Bathurst to King, 8 February 1817, informed the captain of Cunningham's commission:

'Besides the persons necessary for the navigation of the vessel, you will receive on board Mr A.Cunningham, a botanist, now in New South Wales, who has received the orders of Sir Joseph Banks to attend you ….'

Cunningham recorded 'A Few General Remarks' about Careening Bay where the company remained from 21 September to 9 October 1820. (King, 1827, Vol. 2) This bay, 15º 06' S, 125º 00' E, was also visited on the Bathurst voyage on 23–24 July 1821, and a nearby island, Bat Island, was also a site for collecting. Cunningham wrote:

'Our encampment on the shore of the latter bay [Careening], during the repair of the vessel, enabled me to examine the country around, to the distance of four or five miles; but it being at the height of the dry season, comparatively few flowering plants were detected, and no herbaceous plants of importance. Our prolonged stay there also enabled me to form some idea of the Flora

of its shores and neighbouring country, from which I gathered materials for comparison with the vegetation of Endeavour River, situated at the eastern extreme of its parallel on the opposite shore of the continent: the identity of certain species on either coast, together with the inference drawn therefrom, will appear stated, towards the close of this general notice.'

Cunningham, in later comparing the west and east coasts of Australia, stated (King, 1827, Vol. 2) that the genera were the same, although the species were very distinct upon the several coasts. However, certain genera, frequent upon the east coast, were found to be wholly wanting on the north-western shores. For example, in the Proteaceae, the order seems to be limited, he said, to *Grevillea, Hakea* and *Persoonia*. Cunningham also said that he thought it 'singular' that the genus *Banksia* should be wholly wanting on the line of the north-west coast. He also pointed out that 'our very limited knowledge of the Flora of this vast continent is entirely confined to the vegetation of the immediate shores … the interior within the tropic remains entirely in obscurity …' This was certainly true at the time of his report, early 19th century.

King also gave a comment on the vegetation of Careening Bay, and in his Volume 1 of his Survey Report, gave a list of seventeen trees indigenous to the shores and neighbourhood of the bay, a list with families and genera, supplied by Cunningham. King wrote:

'The country in the vicinity of the bay which, from the use we made of it, was called Careening Bay, is only slightly covered with a poor, stony soil; but notwithstanding this drawback the hills are well wooded and vegetation so abundant that, had it not been for the conflagration which has lately spoiled the trees of their leaves, the country would have appeared pleasing and verdant.' (King, 1827, Vol. 1).

Writing about the plants in the King report, Cunningham included a section on what he called 'Capparides'. (King, 1827, Vol. 2).

'Within an area on this extensive coast, not exceeding four degrees of longitude, on the parallel of 15º South, a tree of very remarkable growth and habit, has been traced, having all the external form and bulk of *Adansonia* of the western shores of Africa.… Its flowers, however, have never been discovered, but from the characters of the fruit, it was (upon discovery) referred to this natural family.'

Adansonia gregorii F. Muell (Malvaceae), the bottle tree or boab, is named specifically for A.C. Gregory, an Australian explorer. It is a small spreading tree, the trunk bloated and barrel shaped, up to 20 m. in circumference, fibrous inside and covered with smooth brown bark. The flowers are white and fragrant, the petals fleshy, stamens numerous. In the tropical areas where it grows, it requires well drained soil in dry situations, and it can withstand drought periods, shedding its leaves completely, flowering before the new leaves appear. The sap was blended with water by Aborigines to make a tasty drink, and the woody fibres used to make twine and nets.

When King landed again in Careening Bay on his fourth voyage, he wrote on July 23, 1821:

'The large gouty-stemmed tree on which the MERMAID's name had been carved in deep indented characters remained without any alteration, and seemed likely to bear the marks of our visit longer than any other memento we had left. (King, 1827, Vol. 2).

Allan Cunningham (1791–1839) was born at Wimbledon, Surrey, England. In 1810 or 1811 he accepted a position at the herbarium at Kew as clerk to the curator of the Royal Gardens, William T. Aiton. With the agreement of Sir Joseph Banks, Aiton approached the Treasury to finance two collectors to work in the new world. The two men selected were Allan Cunningham and James Bowie, Bowie to eventually collect at the Cape and Cunningham to work in Australia, arriving in Port Jackson in the SURRY on 20 December 1816. By December 1817 Cunningham was engaged to accompany Phillip Parker King on his first voyage in the MERMAID.

From September 1822, after King had returned from his final voyage around Australia, Cunningham busied himself with botanising in the area between Bathurst and the Cudgegong River in New South Wales, continuing to blend exploration with botanical research. Other journeys followed, to present day Queensland, to discover the

Darling Downs, to New Zealand in late 1826, to Norfolk Island in 1830. In 1828 Cunningham had requested permission to return home to England, and this was granted in November 1830. He left for home on 25 February 1831, arriving there in mid-July. He took a house at Strand-on-the-Green near Kew and settled down to work with Aiton and Robert Brown on the vast mass of specimens he had accumulated. In 1836 he accepted the post of Colonial Botanist in Sydney, returning in February 1837.

While in England, Cunningham was fully occupied in arranging his large herbarium and in writing for the botanical periodicals of the day. Not just a collector, he did name plants, supplying manuscript names and diagnoses. However, most of his manuscript names of Australian plants that reached publication appear in papers by various authors in the serials such as Hooker's *Botanical miscellany* (1829–1833) and de Candolle's *Prodromus* (1823–1873), and later in George Bentham's *Flora Australiensis* (1863–1878). Accordingly, the majority of his published names have authorship in the form 'Cunningham ex ….', such as in *Acacia stenophylla* Cunn. ex Bentham, and *Daviesia virgata* Cunn. ex Hooker.

A selection of Cunningham's plants from Careening Bay with their publication history presents a fine historical vignette of the Cunningham legacy and its place in the broader botanical fraternity of the 19th century. In 1836, when Cunningham had decided to return to Australia, he wrote to William Hooker, regius professor of botany in Glasgow, to say he had broken up his herbarium 'having given the better portion to MM de Candolle, Martius, Endlicher, Schauer (Breslau), Fischer, Lindley, Don, Bentham and some few much esteemed friends, lovers of botany.' (Kew Archives). With respect to this distribution he had earlier written to Bentham to say:

'I will be leaving for Port Jackson early in September…… which has been bought about by the lamentable death of my brother Richard. I beg to observe further that I shall be immediately breaking up my Herbarium, intending to distribute my plants among working Botanists in Great Britain and on the Continent. I shall be very happy to include you among them whom I regard as bona fide labourers in the great field of Botanical investigation and in the distribution of plants, to put on one side, specimens of such as I may consider interesting to you, accompanied by a brief note of its name, locality, etc.' (Kew Archives).

Following Cunningham's death in 1839, his own personal large and valuable herbarium was distributed among the working botanists of the day by his executor, Robert Heward. Thus, as the following brief selection from the Careening Bay plants, shows, Cunningham's work as a collector made it possible for a number of botanists to have material to describe and classify; his place in the botanical fraternity was chiefly as a facilitator.

A Selection of Careening Bay Plants

- *Corymbia clavigera* (A.Cunn. & Schauer) K.D. Hill & L.A.S. Johnson, under *Eucalyptus clavigera* Cunn. ex Schauer in Walpers, W.G. Repertorium Botanices Systematicae 2 (1843) 926, type, Careening Bay, holotype Kew, isotype NSW. The reference quoted 'A. Cunn. Herb – Schauer mss.' In ora septentrionali-occidentali Novae Hollandiae, Careening Bay – A. Cunn. Herb. No. 242/1820. (Myrtaceae)

Johannes Conrad Schauer (1813–1848), a German botanist, was at Breslau with C.G. Nees in charge of the botanical garden 1832–1848, when he received the donation from Cunningham in 1836.

- *Solanum cataphractum* Cunn. ex Benth, Flora Australiensis 4 (1868) 459. Type citation: 'N. Australia. Bat Island and Regent River, N.W. Coast, A. Cunningham (with linear-lanceolate leaf-lobes); the specimens are all in fruit only. I describe the flowers from Cunningham's notes and from a drawing of a plant formerly raised in Kew Gardens from his seeds.' (Solanaceae).

D.E. Symon (J. Adelaide Botanic Garden 4 (1981) 298-300) refers to a number of Cunningham collections, based in several herbaria, and collected from Montague Sound, Regent River and Bat Island. Symon selected the BM specimen from Regent River to be the lectotype, A. Cunn. 132. The Bat Island specimen, Cunn. 192, is an isotype at Kew.

- *Ceriops candolliana* Arn. in Ann. Nat. Hist. I. 364 (1838) (Rhizophoraceae).

G.A. Walker-Arnott (1799–1868) was a Scottish botanist, his herbarium and library acquired by

Glasgow University. He studied Cunningham's specimen in Hooker's herbarium, publishing his description in 1838 after Cunningham had given specimens to William Hooker in Glasgow in 1836.

- *Ficus indecora* Cunn. ex Miq. London J. Bot. 7, 426, (1848) Type: Careening Bay, holotype Kew. (Moraceae).

Friedrich Anton Wilhelm Miquel was a Dutch botanist, director of the botanical garden in Amsterdam in 1848 when he wrote this description of Cunningham's specimen (in Amsterdam 1846–1859). Miquel described many new taxa on the basis of material obtained on loan; this one from Careening Bay he examined in the Hooker Herbarium.

At the time when science as a pursuit did not exist in the Colony of New South Wales, Cunningham was obliged to transfer his collections and his writings to the metropolis in England, and those of his collections which exist in Australian herbaria today are the result of grace and favour donations from the repositories overseas.

Captain Phillip Parker King should have the last word: Cunningham 'was a rare specimen – quite a genus of himself; devoted to his own science, Botany; a warm friend and an honest man.' (Heward, 1842).

Acknowledgement to Bob Makinson, Sydney, for reading the paper.

References

Heward, R. (1842) 'Biographical Sketch of the late Allan Cunningham, Esq.' in the *Journal of Botany,* W.J. Hooker, Vol. 4.

Kew Archives, Cunningham to W.J. Hooker, 17 October 1836, DC 73, No. 86.

Kew Archives, Cunningham to Bentham, 1836, Bentham Correspondence 5.

King, P.P. (1827). *Narrative of a Survey of the Intertropical and Western Coasts of Australia,* 2 vols.

It's all in the name

John Clarkson
Queensland Parks and Wildlife Service
PO Box 156, Mareeba QLD 4880

In the last issue of this *Newsletter*, John Hosking (2012) briefly discussed retrospective host specificity testing of biocontrol agents released in Australia for the control of St. John's wort (*Hypericum perforatum* L.). He pointed out that this testing might have underestimated the potential for off-target damage because researchers failed to recognise that the names *Hypericum gramineum* G. Forst. and *H. japonicum* Thunb., as applied in Australia, probably include several unrecognised taxa. This prompted me to think of another situation where an imprecise taxonomy might lead to unsuspected impacts on Australia's biodiversity.

Diesel tree, *Milletia pinnata* (L.) Panigrahi, formerly known as *Pongamia pinnata* (L.) Pierre, is being promoted as a feedstock for the biodiesel industry (Scott *et al*. 2008, Murphy *et al*. 2012). Much of this promotion relies heavily on grossly exaggerated claims for the plant's potential. The plant is claimed to tolerate temperatures from -5º C to 50º C, altitudes from 0 to 1200 m, annual rainfall from 200 to 2500 mm, drought, grow well in full sun and partial shade, and is said to grow in most soil types (web ref 1). This is used to support claims that the plant can be grown on "marginal land" with limited fertiliser input. The same data lead me to question whether there might be more than one taxon involved.

Milletia pinnata, as currently recognised, has a broad natural distribution in tropical and temperate areas of Asia extending from India though Malesia to north and north-eastern Australia and some Pacific Islands. The plant has been used in gardens and street plantings and, at least in Queensland, has spread from cultivation and become naturalised in places well south of its natural range (Stanley and Ross 1986). The genus was revised for the Flora Malesiana area by Adema (2000) who, noting the variability observed in the species, expressed the view that "further field studies may show the existence of more taxa".

A number of plantations have already been established throughout Queensland, in the Northern Territory and in Western Australia. One advantage commonly claimed by proponents of *M. pinnata* is that the species is "native to Australia" (web ref 2). This no doubt helps enhance the clean, green, image put forward for biofuels and conveys the notion that an industry based on this

species is safer than one employing introduced plants. Even the Invasive Species Council (ISC), an environmental group which campaigns for better laws and policies to protect the Australian environment from weeds, feral animals and exotic pathogens, has responded in this way. In a report for the ICS, which strongly recommended against 16 of 18 species reviewed, Low and Booth (2007) say, "Pongamia does not pose the same threat as other plants listed here since it is native to northern Australia". Statements of this nature also appear in the weed risk assessment of the species by Csurhes and Hankamer (2010). They say in their summary, "When combined with the fact that it is considered native to northern Australia, this study concludes that pongamia poses a low risk in Queensland". To their credit, Csurhes and Hankamer do recommend elsewhere in their risk assessment that genetic material sourced from existing Australian stocks should be used. This is not happening. The longest running trial plantation in Australia was established at Kununurra in Western Australia in 1999. It has been suggested that the seed used there was sourced from India (Murphy *et al*. 2012). These authors also point out that while trees growing on Brisbane streets were the source of most Queensland seed material, these trees may have been grown from seed originally sourced from the Indian subcontinent. Current selection for flowering time, canopy vigour, seed yield and oil content is almost totally based on "elite" cultivars from India and Sri Lanka (Lihou 2010) where, proponents claim, plants have been subject to rigorous selection for hundreds of years by people who use the oil for lighting and domestic use (Clonal Solutions 2012). It is highly likely that what is being grown and promoted in Australia is not an Australian indigenous plant but something which, at present, for want of some basic taxonomic research, simply shares the same name.

Readers will notice that I have not strayed into issues such as government policy on biofuels, the weed risk posed by many species being promoted as feed stocks, competition with food crops for arable land, nor sustainability of the industry. These, and a whole suite of other issues, are important but well dealt with elsewhere (e.g. O'Connell *et al*. 2007, Buddenhgen *et al*. 2009, Low and Booth 2007, Dale *et al*. 2010). The issue here is that the importation and release of an obligate outcrossing species is being permitted when the taxonomy of that species is poorly studied and the nomenclature unclear. The name in this case provides a convenient imprimatur for "True Blue" claims while at the same time opening a door in Australia's plant import restrictions. *Millettia pinnata* is currently listed as a Permitted Species on ICON, the Australian Quarantine and Inspection Service's import conditions database (AQIS 2012), and therefore can be freely imported into Australia. AQIS takes the view that if a species is present in the country and is not under official control there is no justification in preventing further entry and, if a plant is permitted at the species level, then all subordinate taxa of that species are also permitted. So, as the name *Millettia pinnata* is applied to an Australian native plant, new cultivars can be freely imported. It's all in the name.

References

Adema, F. (2000). Notes on Malesian Fabaceae (Leguminosae – Papilionoideae) 7. The genus *Milletia*. *Blumea* 45: 403-425.

Australian Quarantine and Inspection Service (2012). ICON AQIS import conditions database. http://www.aquis.gov.au/icon32/asp/asp/homecontent.asp (accessed 4th June 2012).

Buddenhagen, C.E., Chimera, C. and Clifford, P. (2009). Assessing biofuel crop invasiveness: a case study. *PLoS ONE* 4(4): 1-6.

Clonal Solutions (2012). Pongamia (Millettia). http://www.clonal-solutions.com.au/products/pongamia-milletia/ (viewed 4th June 2012).

Csurhes, S. and Hankamer, C. (2010). Weed risk assessment: Pongamia (*Millettia pinnata* syn. *Pongamia pinnata*). Queensland Department of Employment, Economic Development and Innovation.

Dale, V.H., Kline, K.L. Wiens, J. and Fargione, J. (2010). Biofuels: implications for land use and biodiversity. Biofuels and Sustainability Reports. Ecological Society of America.

Hosking, J. (2012). Native *Hypericum* species in Australia. *Australasian Systematic Botany Society Newsletter* 150:11-14.

Lihou, M.G., Blackman, C.E. and Miller, R.J. (2010). Identification of candidate genotypes for plantation culture of *Pongamia pinnata*. 19th International Symposium on Plant Lipids, Cairns 11-16 July 2010. http://www.ispl2010.org/getpdf.cfm?file=Posters\P-23_Michelle_Lihou.pdf (viewed 4th June 2012).

Low, T. and Booth, C. (2007). The weedy truth about biofuels. Invasive Species Council, Melbourne.

Murphy, H.T., O'Connell, D.A., Seaton, G., Raison, R.J., Rodriquez, L.C., Braid, A.L., Kriticos, D.T., Jonanovic, T., Abadi, A., Betar, M., Brodie, H., Lamont, M., McKay,

M., Muirhead, G., Plummer, J., Arpiwi, N.L., Ruddle, B., Saxena, S., Scott, P.T., Stucley, C., Thislethwaite, B., Wheaton, B., Wylie, P. and Gresshoff, P.M. (2012). A common view of the opportunities, challenges, and research actions for Pongamia in Australia. *Bioenergy Research*. Online first http://www.springerlink.com/content/506205400h170m31/fulltext.pdf

O'Connell, D., Batten, D., O'Connor, M., May, B., Raison, J., Keating, B., Beer, T., Braid, A., Haritos, V., Begley, C., Poole, M., Poulton, P., Graham, S., Dunlop, M., Grant, T., Campbell, P. and Lamb, D. (2007). Biofuels in Australia – issues and prospects. Rural Industries and Research Development Corporation. Barton ACT.

Scott, P.T., Pregelj, L., Chen, N., Hadler, J.S., Djordjevic, M.A. and Gresshoff, P.M. (2008). *Pongamia pinnata*: an untapped resource for the biofuels industry of the future. *Bioenergy Research* 1:2-11.

Stanley, T.D. and Ross, E.M. (1986). *Flora of south-eastern Queensland*, Volume II. Department of Primary industries, Queensland.

Web ref 1. http://www.cilr.uq.edu.au/UserImages/File/factsheets/Pongamia%20Binder1.pdf (viewed 4th June 2012).

Web ref 2. *Pongamia pinnata* plantation and infrastructure development proposal for northern Australia. http://www.bioenergyresearch.com.au/pre.pdf (viewed 4th June 2012).

Two new postdoctoral positions at NSW

Yola Metti and Trevor Wilson, with their collaborators, were each successful in attracting ABRS funding for three year postdoctoral positions at NSW (Royal Botanic Gardens & Domain Trust) starting in July 2012. Both have recently completed their PhD's and will be continuing research on their groups of interest.

Yola Metti grew up in Vancouver (Canada) and studied at the University of British Columbia before completing her PhD in Sydney. She will be collaborating with Alan Millar (NSW) and will investigate species and generic limits in the *Laurencia* complex (Rhodomelaceae). This group of common red algae contains approximately 170 species found along the world's temperate and tropical coastlines. Australia is a major centre of diversity with 61 identified species. The *Laurencia* complex can dominate the intertidal zone and is often abundant in the shallow subtidal region. Within the state of NSW it is the third most abundant group of algae. These species can become very important in terms of intertidal biomass and ecology, where they provide food, oxygen and shelter to a vast array of intertidal organisms. In her three year project Yola will document the biodiversity of the group for the *Algae of Australia*, produce identification tools, and discover and describe new genera and many new species.

Trevor Wilson, also Canadian, studied at the University of New Brunswick and The University of Guelph before moving to Sydney to complete his PhD. He is the principle investigator in a collaborative three year project with Dr Barry Conn (NSW) and Murray Henwood (Uni. Syd.) that will conduct the first rigorous, comprehensive revision of the subfamily Prostantheroideae (Lamiaceae). There are over 300 species that belong to this endemic Australian subfamily. Some species are well known in horticulture, such as native rosemary (*Westringia sp*.) and the Australian mintbush (*Prostanthera sp*.). The delineation of several generic boundaries and species complexes are necessary before the correct treatment of Australian Lamiaceae can be achieved. Over the next three years, Trevor will also publish material on undescribed species of high conservation value and provide identification tools for the Prostantheroideae

We here at NSW are very excited about Yola's and Trevor's success and the opportunity afforded to these early career researchers by ABRS. NSW will benefit greatly from their input, interaction and enthusiasm over the next three years and we are all looking forward to them starting.

Marco Duretto
Manager Plant Diversity
National Herbarium of New South Wales
The Royal Botanic Gardens & Domain Trust

A. Yola Metti: collecting intertidal samples at Arrawarra Headland, Coff's Harbour, NSW. **B**. *Laurencia calliptera*. **C**. Trevor Wilson collecting at Mt Kaputar, NSW. **D**. *Prostanthera monticola*.

ABRS Report

Queen's Birthday Honours

Congratulations to Alex George, the first executive editor of the *Flora of Australia* (1981–1993), who has been made a Member in the general division of the Order of Australia (AM), for service to conservation and the environment as a botanist, historian and author, particularly in the area of Australian flora, and through roles with national and international professional organisations.

Grants

ABRS Research Grants for 2012–13 have been awarded, and the list of grants can be found at: http://www.environment.gov.au/biodiversity/abrs/funding-and-research/research-grants/awarded-rg.html

Bush Blitz Tactical Taxonomy Contracts and ABRS Student Travel Bursaries have also been

decided, so if you have applied for any ABRS funding this year and have not yet been contacted by the Grants team, please get in touch.

Bush Blitz

The Bush Blitz team has completed two surveys in the Northern Territory—at Fish River in the Daly River catchment, and Wongalara in southern Arnhemland. Staff from DNA and CANB participated in both surveys, and the addition of helicopter transport and potential crocodile sightings made fieldwork memorable as well as productive in the number of species collected.

Flora of Australia

The next volume of the Flora to be published will be Volume 26 (Meliaceae, Rutaceae and Zygophyllaceae). Editing is also under way on volume 23 (Euphorbiaceae) and Volume 38B (Asteraceae).

Annette Wilson
Editor, Flora of Australia
June 2012

David Symon (1920–2011)

As was reported in *Newsletter* 149, David Symon passed away on 18th December 2011 having been diagnosed with a brain tumour some 2 months previously.

David was an active member of the Society from its inception and his botanical exploits have been documented previously in the *Newsletter*. In 1996, when David was awarded the degree of Doctor of Science by the University of Adelaide his contribution to the Society, particularly the South Australian Chapter, was documented in *ASBS Newsletter* 90. In 2000, following the conferral of life membership by the Australian Systematic Botany Society, the announcement, together with a potted history, appeared in *Newsletter* 104. This was followed by a more complete history in *Newsletter* 105 in which David provided notes on his botanical career. These notes were accompanied by lists of his collections and publications as well as species named by him and for him until that time. Somewhat more unusual was the publication of original letters written by David from some of his early and longer field trips, two from the Koonalda Caves on the Nullarbor in 1967, three from a collecting trip from the Gulf Country to Broome in the same year, one from the Kimberley in 1971 and one from Arnhem Land in 1975; these letters reveal a different time and place, Finally there is a letter describing the travails of reaching the Solanaceae conference in Bogota in 1988.

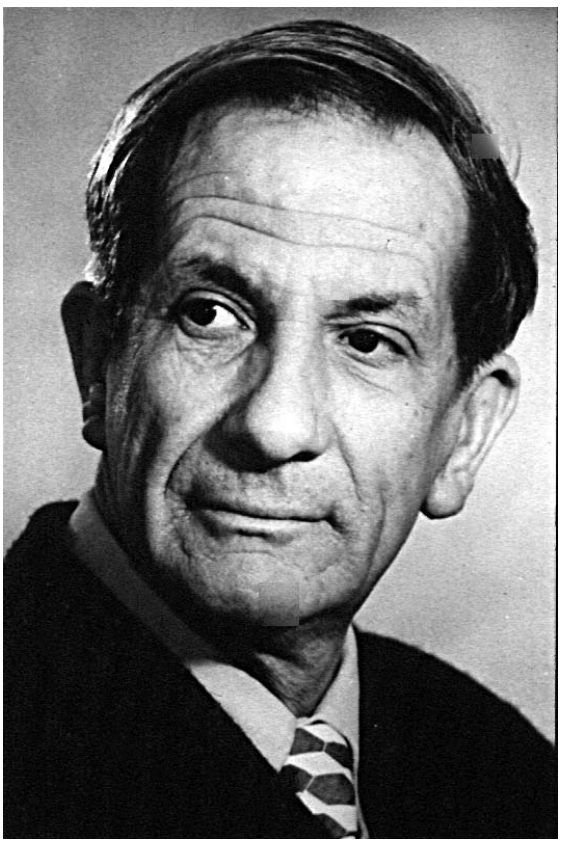


Fig. 1. David Symon (July 1971). Ph. Symon family.

David continued on for another 11 years in his role as an Honorary Research Associate at the State Herbarium, although this was now relocated down the hill in the Old Tram Barn. He continued to be productive, with much

of his energy given to working out the taxonomy, and then identification, of the *Rubus* species present in Australia (Symon 2001, 2004, Evans *et al*. 2004, Evans *et al*. 2007). He maintained his life-long interest in *Solanum* (Symon 2001, Brennan *et al*. 2006) and *Nicotiana* (Symon 2003, 2004, 2005, Symon & Lepschi 2007, 2010), continued his interest in gypsophilous plants (Symon 2007), became worried about the spread of the single pink oleander (Symon 2002) and continued to strongly advocate for ornamental pears as street trees (Symon 2001, 2002). His botanical history interests led to research and documentation of Fanny de Mole's *Wildflowers of South Australia* (Symon 2001, 2003), while a paper on Ednie Brown's *Forest Flora of South Australia* remains to be completed because the junior author hasn't had time to complete her part. But for much of the early part of these years he was also preoccupied with the Sturt Pea book (Symon & Jusaitis 2007) and the collection of ephemera relating to the plant. I suspect that this project took the place of the pottery which he enjoyed for a good many years at the University of Adelaide, until the kiln's closure.

Even before the Sturt Pea book was published David had moved on to the next subject to take his interest, the poetry of Australian plants. He would spend hours on the one day that he did not appear at the herbarium, usually Thursdays, combing the Barr Smith and other libraries for poems, and then on the following day we would often be regaled with those for which he had a particular appreciation. We attended, with some apprehension, the first time when David and Judy gave a public performance of these collected verses. Both of them were equally apprehensive, but we need not have worried as the event was very much a success.

In the last few years David's hearing became an increasing problem and he found it difficult to hear talks and plays and to communicate in anything but a one to one situation. However he continued to come to the herbarium, although now by car rather than by his trusty bicycle, and he reduced back to three days a week so that he could attend an exercise class. With the appointment of a young weeds botanist, Chris Brodie from Kew, to the AD staff, David was rejuvenated; he went on field trips with Chris to a number of areas of the state with which he was familiar and was able to pass on at least some of his considerable knowledge about the plants. A perfect mentor with a willing pupil – and both of them gaining from the experience.

Until the end David retained that insatiable thirst and enthusiasm for knowledge in a myriad of subjects that was so much the essence of him. He was in so many respects fortunate since he had good health for most of his life and shared so many of his interests with his wife, Judy. Even though Judy did not necessarily share his interest in plants it was she who held the family fort while David participated in annual field work and in later years she was often also his companion in this field work.

Although six months have now passed, he is still missed at AD. Clearly there is no-one who has such a broad knowledge of both the native and the cultivated plants of South Australia or his fields of expertise in the Solanaceae, Rosaceae and the legumes, but it is all of his other qualities that we really miss. Having been around the State Herbarium for 26 years in his retirement, this is scarcely surprising.

David did not have a conventional funeral as his body was donated to the University of Adelaide. Instead the family held a memorial service in the Waite Arboretum at the same site as the marking of his 90th birthday. Reproduced below is the tribute given by Bill at the request of the family.

Robyn Barker

David Symon, a life with plants – eulogy covering his involvement in the State Herbarium and plant systematics, by W.R. (Bill) Barker

A slight expansion of a strictly 9 minute presentation at the family's celebration of David's life on 14th January 2012 at the Waite Arboretum (Fig. 2). I have added some references to other aspects of his life, most of which were dealt with by others at the function: the Waite Institute (Robin Graham), the Waite Arboretum (Jennifer

The family's celebration of David's life, attended by about 100 people, in the Waite Arboretum on Saturday, January 14th 2012 (clockwise from top). a, A capella performance, the former Marryatville High School group coming together just for the event, with grand-daughter Lucy in centre. b, Son Robert. c, Grand-daughter Bridie.

Ph. Bill Barker

Gardner), his mentoring of the State Herbarium's weeds botanist (Chris Brodie), and presentations by his son Robert, daughters Ruth and Vanessa, and Bridie, representing the grand-children.

My most vivid early memory of David Symon was of him driving Robyn and me to Melbourne in 1974 for the meeting that established the Australian Systematic Botany Society. David was so enthused with the roadside flora that we had little time for sharing his enthusiasm – we were more worried about him keeping to the road and of the consequences of his dealings with slow cars. Having satisfied his botanical interests on a straight stretch of road, he turned his focus to the rush to catch up with the car ahead, finding more often than not, at the brink, that it was all too late. Such was his over-riding passion for plants.

David lived his life to the very full – in botany, in conservation, in community engagement, and in his hobbies (ceramics) and, shared with his wife Judy and family, his passions in the arts (literature, music, dance, theatre) and politics– his cup overflowed (interests developed early on through his family upbringing, as evidenced in the penultimate paragraph of Fig. 4 and in his biography of his father). He was readily distracted from such routine matters as passing slow cars. The blessing for all of us has been that he readily shared his passions.

I knew David first from around 1969, in his visits from the Waite to the State Herbarium and at the Nature Conservation Society of South Australia meetings. He played a significant role in that Society, being President for a couple of years, and participating in botanical surveys and the resultant publications that led to the declaration of a number of national parks in the 70s.

David was quite a raconteur – his style was considered and intellectual. I sometimes thought he spoke in bullet points, succinctly cutting to the chase on each point. He was a central character in the herbarium tea room and around the Herbarium. Tea breaks at the State Herbarium were often blessed by a critique of a play or ballet or something about a book, and plenty about plants. He was a lateral thinker; he had ideas, he enthused, he encouraged.

His focuses in plants were wide ranging; they centred on the systematics of Australian plants, native and naturalised alike, but ranged into useful plants and world views. He started with his work in the Waite Agricultural Institute with enriching the State's pastures using the medics collected on a memorable field trip around the Mediterranean in 1956 (Fig. 3c), during which he was famously arrested scaling the cliffs below the walls of the palace at Monaco (Fig. 4), and in developing the Waite Arboretum on a grand scale (cf. Figs. 4, 5, 6b), "water-wise" long before the present day catch cry. The latter was a passion that continued to his last days and he provided much support both to his successor, Jennifer Gardner, and to the later formed Friends of the Waite Arboretum. He continued to lead tours for the public, regularly contributed to the Friend's Newsletter and functions and it was in the Arboretum that his 90th birthday was celebrated in 2010 with the unveiling of a plaque to mark the occasion (Fig. 5).

Fig. 3. Early days (anticlockwise from top left). a, Performing at Pyap near Loxton, with kookaburra and galah (early 1930s). b, The archetypal Aussie at Roseworthy Agricultural College, (about 1943). c, Beach at Itea, Greece – Sven Ellerstrom, David, C. Zerlentis (1956), d. Off to Sydney by bike (!), starting at home in Saint Peters (1948). Ph. Symon family.

David's work on Australian plants was remarkable for its foundational nature; he'd undertake major work and then promote or inspire others into its further development.

Cassia proved a complex genus on which to cut his taxonomic teeth. His revision was not the end of things. With Bryan Barlow of Flinders University, he co-supervised Barbara Randell's Ph.D. investigating its complexity. David had shown the genus to exhibit polyembryony in a note in the prestigious journal *Nature*. Barbara showed it to be prone to hybridisation, rife with polyploids, and apomictic — he'd certainly chosen a tough first group to sort out.

David's revisions of Australian and New Guinea *Solanum* led to renown amongst global workers in the Solanaceae. Not only did he do the conventional taxonomy, but he also collaborated in looking into the chemotaxonomy, dispersal, pollination and breeding systems. His wife Judy remembers the standing ovation he received when he stood to speak at the Third International Solanaceae Conference in Bogota in 1988, though this was more about his resplendent *Solanum* purple shirt and yellow tie. He was an inaugural attendee at these Solanaceae meetings. The Argentinians in their own way applauded his achievements at Adelaide's turn to host the world conference on the family in 1994. They feted him in words to the tune of *Walzing Matilda* – he was brought to tears, though these were multiplied from his wiping his eyes with hands dusted with Australian pepper (*Drimys piperita*).

David garnered two students in Solanaceae: Laurie Haegi who did his PhD revising the Australian Anthocercideae – Laurie named the

Climbed palace wall to gather seed!

Passing Parade By BLAKE BROWNRIGG

Monegasque police patrolling solemnly outside Prince Rainier's palace one sunny morning last year stopped suddenly and gazed in astonishment.

A man was climbing the rocky approaches to the high palace walls!

In response to their excited, threatening yells, the tall, bronzed stranger returned willingly enough to the roadway.

He was only collecting wild cabbage seed, he explained.

The police looked knowingly at each other. Ah, a clever one, this. Collecting wild cabbage seed, eh?

With unmistakable tell-that-to-the-marines gestures, they marched the big man away for further questioning

Persuasive

It took all his letters of identification and much persuasive talk to convince them that he was David Symon, of the Waite Agricultural Research Institute Adelaide.

And that he really WAS trying to reach some wild cabbage seed

David Symon mentioned it yesterday as probably the only truly unusual incident experienced in his kind of scientific work.

This is mainly concerned with what he

DAVID SYMON . . climbed the walls of Prince Rainier's palace.

terms systematic botany and identification of plants.

And I think he remembers with far more satisfaction his part in identification of the Khaki weed, that resulted in departmental action and its virtual control in South Australia.

I went to see David Symon in his cool office at the Waite Institute about South Australia's first school on tree-growing, to begin at the institute on Monday, March 9.

Director

He is director of the course, but he emphasises modestly that others who are specialists in tree culture will have far more of practical value to tell the 60 farmers who are expected to attend.

The whole project is designed to underline the importance of tree growing for farm shelter belts, and the economics of the farm tree lot.

Enrolments are being taken at the Department of Adult Education, University of Adelaide.

R. G. Gray, of the Department of Woods and Forests, will talk on "Raising and Buying Young Trees," Noel Lothian, Botanic Garden director, on "Choice of Trees in Relation to Climate and Soil" and "Tree Planting and After Care."

Two other Woods and Forests Department men, C. D. Boomsma and D. R. Douglas, will talk respectively on "The Farm Tree Lot and Shelter Belts" and "Fire Hazards and Their Control."

David Symon's contribution will be entitled "Trees for Shelter, Shade, and Decoration."

He believes there is much to be done in South Australia in all phases of forestry development indicated by the talks titles.

Natives

His own paper will discuss showy native trees and suitable introduced species available for use.

David Symon is in charge of the Institute arboretum which contains about 1,400 trees, representing 700 species.

Special attention is being given to developing eucalypts. One result of this policy has been selection of the flowering gum, Urrbrae Gem, by head gardener Fred Couzens.

This is a bright pink flowering eucalypt. There has already been wide distribution of seed, and it has been chosen by the Housing Trust for extensive planting at Elizabeth.

Following his Mediterranean excursion, David Symon and others are engaged in long-term experiments on cereals, pasture grasses, and clovers he collected there.

Patient

It is an unhurried, patient, thorough work these botanists are doing—work that some day might yield results very important to Australia's agricultural development.

Athletic-looking David Symon takes his relaxation as quietly as his work. He collects pottery and ceramics, enjoys music, theatre, and ballet.

PS.—He did not get his wild cabbage seed from the walls of Prince Rainier's palace in Monaco.

AIRTRIPS IN 'DULUX SHOW'

Contestants in tonight's "Dulux Show," compered by Jack Davey, have the chance to win free air trips anyhere in Australia by TAA, and one of the contestants could win an overseas trip by Qantas.

"If you've got the answers, I've got the planes," says Jack Davey at 7.30 on 5DN in the "Dulux Show."

Fig. 4. Arrested scaling cliffs below palace at Monaco, 1956. Note his activities as botanist at the Waite Agricultural Institute in Adelaide and his hobbies that continued through his life. Probably from the *Sunday Mail,* 1957.

genus *Symonanthus* after his mentor – and Philippa Horton who worked up *Nicotiana* for her MSc. Laurie also revised *Datura* in Australia and later David and he developed a neat biogeographic story involving Spanish galleons visiting Australia. American co-workers in Australian *Solanum* Professor Greg Anderson and Dr Chris Martine have communicated appreciation of David's knowledge and generosity in their collaborative work.

Cassia and *Solanum* were the subjects of a significant historical biogeographic paper with Barbara Randell in Search on the relictual nature of Australia's arid uplands and recency of radiations onto the surrounding plains.

David's interest in cultivated and invasive Rosaceae led, late in life when aged in his mid 70s, to a major achievement in setting the ground work for a new perspective of one of Australia's top weeds. At a symposium on blackberry in Victoria in 1997 he perceptively realised that differences in responses to herbicides and rusts might reflect a greater diversity of introduced species than previously thought. So he went about collecting 600 specimens of the genus. Of these 140 were jointly collected with local weeds botanists in the three south-eastern Australian states. His special care to represent and document vegetative and floral features is a legacy adopted today by Australian collectors. Without such collections our knowledge would never have been advanced as it has been. On these collections were founded molecular, phenetic and revisionary morphotaxonomic studies. Many microspecies have been recognised for the first time requiring their own control mechanisms. We now have a new Australia-wide approach to attacking this pest.

His interest in blackberry arose from his long-time championing research on Australia's under-collected weeds.

Fig. 5. At David's 90th birthday celebrations in the Waite Arboretum, Glen Osmond, on 13th October 2010 (clockwise from top). a, The crowd at the plaque unveiling. b, Reclining visionary under a favourite dragons blood tree. c, The plaque, d–e, The special cake in the Waite residence with Vanessa and daughter Hannah looking on. f, With Judy on The David Symon Seat which marks his service in 1956–1985 as Curator of the Arboretum.

Ph: a–b David Catcheside, c–f, Bill Barker .

He long saw the critical need to collect and document their diversity, new and potential naturalisations, and changes in distribution over time. He supervised Peter Kloot in the 1980s in documenting and analysing the state's naturalised flora. More recently he took under his wing the State Herbarium's weeds botanist Chris Brodie and they developed a close friendship centred around day trips and longer journeys to the South-east and Far North (Fig. 6). In the last year or two he also had interactions with other young researchers Patricia Fuentes-Cross on molecular

taxonomy of quandong (*Santalum*) and Duncan Jardine on *Solanum* barcoding.

His passion for cultivated plants resulted in work on the dragons blood tree, symbol of the Friends of the Waite Arboretum; the arboretum contains fine examples (e.g. Fig. 5b), the first planted in 1928 before his time. Through searching out examples from parks and home gardens throughout Adelaide, he developed ideas on determining the age of plants from the sequence of branching. Having published several short articles over 34 years on the tree, he has handed on a manuscript documenting his knowledge of the genus which he hoped would be completed .

David's knowledge was great and ever much in demand. He lectured in the Agronomy Department at the Waite and for a short while gave lectures in taxonomy in the Botany Department, following the death of Con Eardley and until the arrival of Dave Christophel. In retirement he lectured to the University of the Third Age and was often invited to speak or workshop with Friends of the Adelaide Botanic Gardens and the Waite Arboretum.

Some examples of his lateral thinking were:

o Proposing the growing of sterile examples of plants of economic importance or amenity value that were prone to weediness. Think of the advantages of a sterile olive and a sterile *Melia azedarach*. How much less damage to the environment, how much better as a street tree without those ball-bearing fruits.

o Amongst publications that came opportunistically or from his interests:

  o Examining what camels ate on his trek to the Simpson desert

  o A dog's response to consuming hallucinogenic *Brugmansia*

Fig. 6 (clockwise from left). a, Awarded his Doctor of Science, with Ruth, Judy and Vanessa, at the University of Adelaide's Bonython Hall (May 1996). b, With Jennifer Gardner, his successor as Director fo the Waite Arboretum, at the ASBS annual meeting on History of Australasian Systematic Botany, University of Melbourne (1988). c, Launch of the Australia's Virtual Herbarium in the vaults of the State Herbarium of South Australia, guiding Senator Robert Hill, Minister of Science (14 June 2001). d, At age 90 with weeds botanist Chris Brodie to South Australian-Northern Territory border area (April 2010), one of many field trips with him. Ph. a–c, Bill Barker, d, Chris Brodie.

- A large annotated list of gypseous plants in Australia – taking information from herbarium labels
- Utilising early South Australian paintings to determine the vegetation and floristics of early South Australia
- More recently has been that massive effort with Judy in researching a book on "The Australian flora in verse". He and Judy have compiled around a thousand poems – a wonderful idea, a lot of work, and it deserves to be completed.

David had the respect of his Australian peers; he served some years on the inaugural Editorial Committee of the *Flora of Australia*. He was also a member of the South Australian Handbooks Committee which published many handbooks on the state's natural assets, including successive editions of the *Flora of South Australia*. Amongst others was David's update of David Whibley's *Acacias of South Australia* to a second edition.

He was accorded the Australian Systematic Botany Society's second Life Membership for his services to the Society (one of only four in 40 years). David contributed hugely to the Society following that ride to Melbourne. His enthusiasm at our local meetings and his continuing flow of articles to the Newsletter were widely appreciated; the Newsletter's Editor feted David as "far and away the most active supporter of the Society that has never held a post … We all owe him a considerable debt."

His contributions finally abated, but memorable in 2008 was the David and Judy show at the ASBS Dinner in Adelaide. They gave three stirring renditions from their "Australian flora in verse" and brought the house down. I do wish they'd produced that CD!

David's skill in communication lay particularly with the spoken word and his prolific off the cuff, short articles. He did suffer in more formal publications from his impatience to get on to other things and with the nitty-gritty of editorial matters. But his work was invariably worthwhile. A particular example is his wonderful vision, the book on *Sturt Pea*, which he, in his 80s, co-authored with Manfred Jusaitis, local expert on its breeding and cultivation. His draft was ready early. But it was spurned by several commercial publishers. He persevered and with lots of willing help, the addition of a design team, further refinement, help in gaining copyright on 200 items utilised, and many other frustrating delays, David's vision came to fruition in a book which is among the best of its type. A Kew reviewer (Lewis 2008) wrote: "It is a model of how to put together an illustrated monograph of a single species."

And finally we come to David's collections, testament to his dedication to the basics of his science:

- He oversaw the assembling of 70,000 plus specimens in the Waite Institute Herbarium (ADW). After retirement this herbarium was amalgamated with the State Herbarium
- His own collections were massive – he figured in 23,912 collections now housed in the State Herbarium (AD). They ranged widely across the vascular flora.
- Leading again by example for all of us, he assembled some hundreds of specimens (with information about their wild provenance) that were the results, over the years, of growing on cuttings and seeds to flowering and fruiting in his home garden in Tusmore. Judy reckons that their garden is poor as gardens go – rampant and unordered – perhaps an overstatement. But it must have harboured over that time the richest of arrays of unusual and interesting plants.

In all of these doings we must acknowledge Judy, her commitment surely a keystone. She kept a watchful eye on David's well-being, particularly in later life, and shared in many of his adventures.

David left a legacy of publications, collections and ideas. He has also left his many friends in the Herbarium, in botany and in the environment endearing memories of his resolute commitment and passion for plants and their science.

Reference

Lewis, G. (2008). Sturt pea – A most splendid plant. *Curtis's Botanical Magazine* 25(2): 188–189.

Completing lists of David Symon's taxonomic contributions

The following lists are additions since the listings in *ASBS Newsletter* 105. The complete listings will be included in a coming issue of the *Journal of the Adelaide Botanic Gardens*

New species and combinations

Nicotiana monoschizocarpa (P.Horton) Symon & Lepschi, *Journal of the Adelaide Botanic Gardens* 21: 92 (2007).

Solanum oligandrum Symon, *Nuytsia* 13(3): 537 (2001).

Solanum sejunctum Brennan, K, Martine, C.T. & **Symon, D.E.** *The Beagle, Records of the Museums and Art Galleries of the Northern Territory* 22: 1-7 (2006).

Taxa named after D.E.Symon

Chamaecrista symonii Pedley**,** *Flora of Australia* 12: 197, fig. 66 (1998).

Solanum symonianum W.N.Takeuchi, *Edinburgh J. Bot*. 58(1): 167 (2001).

Publications

Symon, D.E. (2000). Catalina Ironwood *Lyonothamnus floribundus* (Rosaceae). *Friends Waite Arboretum Newsletter* 25: 8.

Symon, D.E. (2000). *Willdampia* land or be wrecked? *Australian Systematic Botany Society Newsletter* 104:35–36.

Symon, D.E. (2000). From the Frontier. *Australian Systematic Botany Society Newsletter* 105: 29-30.

Symon, D.E. (2000). *Solanum oligandrum* (Solanaceae) A new species from the Great Sandy Desert, Western Australia. *Nuytsia* 13 (2001) 537–541.

Albrecht, D. & Symon, D.E. (2000). A re-evaluation of *Cassia oligophylla* var *sericea* Symon (Caesalpiniaceae). *J. Adelaide Bot. Gard*. 19. 95–96

Lepschi, B.J, & Symon, D.E. (2000). A preliminary cladistic analysis of Australasian *Solanum* and *Lycianthes*. In: Nee, M., Symon, D.E., Lester, R.N. & Jessop, J.P. (eds). *Solanaceae IV: advances in biology and utilization*. Kew: The Royal Botanic Gardens, Kew, 1999 publ. 2000 pp.161–170

Symon, D.E., Whalen, M.A. & Mackay, D.A. (2000). Diversity in *Acaena* (Rosaceae) in South Australia. *J. Adelaide Bot. Gard*. 19. 55–73.

Symon, D.E. (2000). The genus *Quercus & Q. ilex*. *Friends Waite Arboretum Newsletter* 26: 1–2.

Symon, D.E. (2001). Nursery Catalogues & A Civilized Landscape. *Friends Adelaide Bot. Gard. Gazette* 24 (2001) 22 & 26.

Symon, D.E. (2001). D.E.S. Writes Home. [20 copies personally assembled end Jan. 2001].

Symon, D.E. (2001) Sunflowers. *Friends Adelaide Bot. Gard. Gazette* 24 (2001) 53–54.

Symon, D.E. (2001) *Oxalis*. *Friends Adelaide Bot. Gard. Gazette* 24 (2001) 105.

Symon, D.E. (2001) Boerboon, *Schotia brachypetala*. *Friends Waite Arboretum Newsletter* 28: 4.

Symon, D.E. & Gardner, J. (2001). Looking at the landscape potential of flowering pears. *Aust. Hortic*. 99: 36–40.

Symon, D.E. (2001) A local rarity, *Wild Flowers of South Australia*. *Friends Adelaide Bot. Gard. Gazette* 24: 116.

Symon, D.E. (2001) Arboretum Pears and *Bursaria spinosa*. *Friends Waite Arboretum Newsletter* 29: 1–2, 6.

Symon, D.E. (2001) Fanny De Mole's Wild Flowers of South Australia. *Australian Systematic Botany Society Newsletter* 108: 19.

Symon, D.E. (2001) *Rubus*: a note for curators, mounters and volunteers. *Australian Systematic Botany Society Newsletter* 108: 20.

Symon, D.E. (2001) [2002] How to avoid being eaten. *South Australian Naturalist* 75 (3–4): 4–7.

Symon, D.E. (2001). *Solanum oligandrum* (Solanaceae), a new species from the Great Sandy Desert, Western Australia. *Nuytsia* 13. (3): 537–541

Symon, D.E. (2002) The Olive 'Swan Hill'! *Friends Waite Arboretum Newsletter* 30: 1–2.

Symon, D.E. (2002) *Scerolaena*, Bindyi Prickles. *South Australian Naturalist* 75: 5–7

Symon, D.E. (2002) The botany of vomit, or a dogs dinner. *Australian Systematic Botany Society Newsletter* 110: 6.

Symon, D.E. (2002) Book Review: *Acacia,* Flora of Australia Volumes 11A & 11B. *Australian Systematic Botany Society Newsletter* 110: 18–19.

Symon, D.E. (2002) Botanical legacy of 1802, exhibition at AD. *Australian Systematic Botany Society Newsletter* 110: 24–25.

Symon, D.E. (2002) Oleander menace in the Flinders. *Friends Adelaide Bot. Gard. Gazette* 25: 71.

Symon, D.E. (2002) A dryland botanist meets the rainforest. *Australian Systematic Botany Society Newsletter* 111: 9–10.

Symon, D.E. (2002) Ornamental Pears in the Waite Arboretum. Treenet, Street tree Symposium, Sept 5–6. Univ. of Adelaide, S. Aust. pp 23–26.

Symon, D.E. (2003). *Beschorneria yuccoides*. *Friends Adelaide Bot. Gard. Gazette* 26: 11.

Symon, D.E. (2003). Acorns & *Quercus emoryi*. *Friends Waite Arboretum Newsletter* 34: 9.

Symon, D.E. et al, (2002/3). The Moon Plain. *South Australian Naturalist* 76: 4–16.

Symon, D.E. (2003). What happened to the cereals? *Australian*

Systematic Botany Society Newsletter 114: 15.

Symon, D.E. (2003). The genus *Nicotiana* illustrated. *Australian Systematic Botany Society Newsletter* 114: 18–19.

Symon, D.E. (2003). Wild Flowers of South Australia (1861) by Fanny De Mole. *Archives of Nat. Hist.* 30: 139–148.

Symon, D.E. (2003). Camel snacks. *Australian Systematic Botany Society Newsletter* 115: 3–4.

Symon, D.E. (2004) *Citrus glauca*, Desert Lime. *Friends Waite Arboretum Newsletter* 38: 5.

Gardner, J. & Symon, D.E. (2004). The Waite Arboretum, past and future. *Australian Garden History* 15: 15–19.

Symon, D.E. (2004) *Pinus edulis*. *Friends Waite Arboretum Newsletter*

Symon, D.E. (2004) Our native jasmine. *Friends Adelaide Bot. Gard. Gazette* 20: 54.

Symon, D.E. (2004). Great Expectations. *Friends Waite Arboretum Newsletter* 40: 6.

Symon, D.E. (2004). Aboriginal choice of *Nicotiana* species. *South Australian Naturalist* 78: 4–5.

Symon, D.E. (2004) Fifty thousand flowers. *Cactus & Succulent Journal* 76: 132–133.

Evans, K.J., Symon, D.E., Whalen, M.A., Barker, R.M., Hosking, J.R., Oliver, J.A. (2004). Taxonomic update & Lucid key for introduced blackberry in Australia. 14th Australian Weeds Conf.. Weed Society of New South Wales. pp. 509–512.

Symon, D.E. (2004) Caper tree, Native Orange, *Capparis mitchellii*. *Friends Waite Arboretum Newsletter* 41: 2.

Symon, D.E. (2004). *Nicotiana* in Australia. *Australian Biologist* 17: 63–68.

Symon, D.E. (2005). In praise of *Ginkgo*. *Friends Adelaide Bot. Gard. Gazette* 28: 10.

Symon, D.E. (2005). Book review: *Gardenesque*. *Australian Systematic Botany Society Newsletter* 122 (2005) 19–20.

Symon, D.E. (2005). Book review: *Compendium of Symbolic & Ritual Plants in Europe*. *Australian Systematic Botany Society Newsletter* 122 (2005) 24–25.

Symon, D.E. (2005). Native tobaccos (Solanaceae; *Nicotiana* spp.) in Australia and their use by aboriginal people. *The Beagle, Records of the Museums and Art Galleries of the Northern Territory* 21: 1-10.

Symon, D.E. (2005). A note on the sexuality of *Beschorneria yuccoides* and comments on the horticulture of this uncommon garden subject. *Cactus & Succulent Journal* 77: 144–145

Symon, D.E. (2005). Pepper Tree (*Schinus areira*). *Friends Waite Arboretum Newsletter* 45: 4.

Symon, D.E. (2005). Burning Bushes. *Australian Systematic Botany Society Newsletter* 124: 4–6.

Symon, D.E. (2005). Plant regeneration on mine spoil heaps at Coober Pedy. *South Australian Naturalist* 79: 12-14.

Brennan, K, Martine, C.T. & Symon, D.E. (2006). *Solanum sejunctum* (Solanaceae), a new functionally dioecious species from Kakadu National Park, Northern Territory, Australia. *The Beagle, Records of the Museums and Art Galleries of the Northern Territory* 22: 1–7.

Symon, D.E. (2006). *Juniper communis* & *J. phoenicea*. *Friends Waite Arboretum Newsletter* 46: 2.

Symon, D.E. & Jusaitis, M. (2007). *Sturt Pea: a most splendid plant*. (Board of the Botanic Gardens and State Herbarium: Adelaide). 151 pp.

Symon, D.E. & Lepschi, B.J. (2007). A new status in *Nicotiana* (Solanaceae): *N. monoschizocarpa* (P.Horton) Symon & Lepschi. *J. Adelaide Bot. Gard.* 21: 92.

Symon, D.E. (2007). List of gypsophilous plants from southern Australia. *J. Adelaide Bot. Gard.* 21: 45–54.

Evans, K.J., Symon, D.E., Whalen, M.A., Hosking, J.R., Barker, R.M., Oliver, J.A. (2007). Systematics of the *Rubus fruticosus* aggregate (*Rosaceae*) and other exotic *Rubus* taxa in Australia. *Austral. Syst. Bot.* 20(3): 187–251.

Symon, D.E. (2008). Dragon decapitated. *Friends of the Waite Arboretum Newsletter* 55: 8.

Symon, D.E. (2008). Highway plantings in China. *Friends of the Waite Arboretum Newsletter* 56:6.

Symon, D.E. (2008). The Cedars of Lebanon. *Friends of the Waite Arboretum Newsletter* 56: 7-8.

Symon, D.E. (2008). A comment on a SGAP historical account. *Australian Systematic Botany Society Newsletter* 135: 40.

Taplin, R.T. & Symon, D.E. (2008). Remnant horticultural plants at the site of the former Newmans Nursery 1854-1932. *J. Adelaide Bot. Gard.* 22: 73-96.

Symon, D.E. (2010). Book review: The Museum of Economic Botany at the Adelaide Botanic Garden – a souvenir. *Australian Systematic Botany Society Newsletter* 143:17–18.

Symon, D.E. (2010). A note on clarification on two volumes on *Nicotiana*. *Australian Systematic Botany Society Newsletter* 143:18–19.

Symon, D.E. (2011). Letter from David Symon. *Friends Waite Arboretum Newsletter* 66: 8–9.

Symon, D.E. (2011). A singular Pepper tree (*Schinus molle*). *Friends Waite Arboretum Newsletter* 68: 9.

Poczai, P., Cseh, A., Taller, J. & Symon, D.E. (2011). Genetic diversity and relationships in *Solanum* subg. *Archaesolanum (Solanaceae)* based on RAPD and chloroplast PCR_RFLP analyses. *Plant Systematics & Evolution* 291: 35–47. (Published online 27 Oct. 2010).

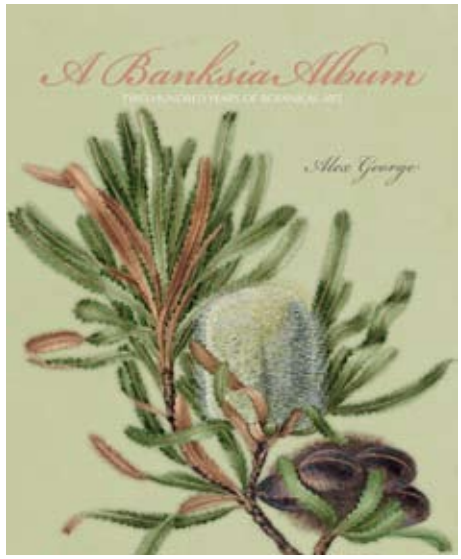
Poczai, P., Hyvonen, J. & Symon, D.E. (2011). Phylogeny of kangaroo apples (*Solanum* subg. *Archaesolanum*, Solanaceae). *Molecular Biology reports* 38(8): 5243–5259. doi: 10.1007/s11033-011-0675-8

Book Reviews

A Banksia Album: Two Hundred Years of Botanical Art. By Alex George. National Library of Australia. 2012. 132 pp. ISBN 978 0 642 27739 8. AU $34.95 (softcover)

This is a book about 48 artists (plus potentially 3 more shown only as 'unknown') whose works are held by the National Library of Australia. They cover 240 years of banksias in drawings, paintings, etchings, watercolours, pencil and sepia-wash drawings, colour prints, hand-coloured engravings and lithographs.

The complexity of assigning a name to the producer of the works is seen in the listing of the 'artist', plus also 'engraver' or 'painter'. It raises questions of how 'we' attribute 'ownership' of a work. If the work is a painting, then the 'artist' is the person who did the painting. But when work is printed in multiple copies, things get complex. When the technology was manual, the 'artist' of the original work plus the engraver and perhaps the colourist's names seems to attach, but when it is mechanical or electronic, we dissociate names of those who produce the work. This may be an idiosyncrasy of the 'paper-sheet' artistic community which is quite different from that of the moving image which for many years has acknowledged the contributions of all who were needed to bring a 'work' to public display.



The book is divided into five parts: the art, biology and ecology, the album, artists' biographies and a list of illustrations. The text could hardly be by a more competent and experienced individual, with respect to this nationally iconic genus of plants, than Alex George (now A.S. George AM, a well deserved honour).

The chapter on 'art' provides an historical account of the sequence in which artists produced their works on banksias. It recalls many key people and dates in the botanical exploration of Australia by Europeans. Reminders of how incredibly long it can take for an individual's work to finally reach publication is seen in the accounts for S. Parkinson (over 200 years) and F. Bauer (over 170 years); and I thought the 35+ years for some of my work was excessive!

The Biology and Ecology section presents a brief overview of key elements such as distribution, habit, soils, plus characteristics of the flowers, pollination, flowering seasons and fruit development. The language is clear and would be informative for non-biologists to set the context for the following pictures.

This book contains images of 25 species, three subspecies and three varieties out of the currently known 78 species, 9 subspecies and 11 varieties.

An Editor's note gives a description of the format for the text accompanying each plate: first collector, location of type collection and collector, namer and date of the original botanical description and the meaning of the specific epithet. Some illustrations include Aboriginal names and author's notes about the image. The number of images per artist ranges from 1 to 12 (Ellis Rowan). Several images have more than one 'artist'.

The Album section presents the species, which are listed in alphabetic order, and has a table of contents on page 15. The artist for each plate is given, with the date, but the place of publication is omitted – a pity. One can go back to the introduction where many are given, but it would have been better to go with the 'author's notes'.

The illustrations are presented in a strange mixture of layouts. Some show the full original with a range

of 'framing' materials. Others appear as clipped details from a larger original, while yet others appear to be digitally clipped from their originals. Some have the text area clearly separated from the illustration, while others have the text and image almost intertwining. I'm not sure this mixing of styles of presentations has added to the beauty of the book.

In a few instances, very brief notes are included with some interesting information, e.g. *B. integrifolia*, first named by Carl Linnaeus the younger in reference to the entire margins of mature leaves, while a later synonym by Nusbiegel, *B. spicata*, referred to the inflorescence – how different taxonomists see the same species with respect to selecting a name.

The List of Artists presents brief biographies of the artists, engravers and painters. Reading these short stories of these people, one comes to realise that some artists live long lives, to their 90s, while others have very tragically short ones. For example, Daniel Hughes, engraver of over 250 of the 738 plates for Sydney Parkinson's drawings for *Banks' Florilegium*, died age 25, while Sydney Parkinson himself died age 26 of tropical diseases acquired in Batavia.

This is a beautiful coffee-table style book with the significant addition of authoritative text by the author. The collection of illustrations focussing on one major genus allows comparisons of styles across time and between artists. For those who enjoy botanical art, it is well worth the price.

Roger Hnatiuk
Cook, ACT, Australia

A Tale of 1000 Watercolours

A Brilliant Touch: Adam Forster's Wildflower Paintings. By Christobel Mattingley. National Library of Australia, Canberra ACT. 2010. 200 pp. ISBN: 978 0 642 27717 6. AU$ 29.95 (hardcover)

Well, nearly. When he died aged 80 in 1928, Adam Forster (1848-1928) had completed 918 watercolours of Australian wildflowers. Drawn mostly from plants on the east coast and especially the area around Sydney, the collection includes some of Australia's best known and loved flowers, such as wattles, banksias and various state floral emblems. *A Brilliant Touch* illuminates the life and work of this self-taught botanical artist who, fascinated by the diverse and unusual flora of his adopted country, made it his goal to paint 1000 species of Australian wildflowers. Part of the National Library of Australia's portfolio series, this book contains a biography of Forster's life by Christobel Mattingley, a selection of 90 watercolour images presented as full-colour plates and an introductory note by Barrie Hadlow.

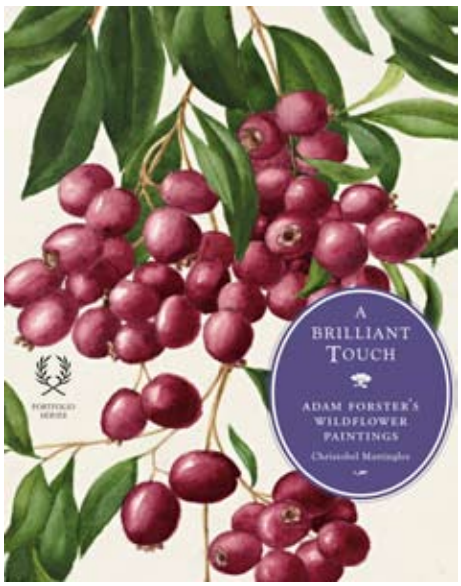
The life of Adam Forster is a transplantation success story. One of six children, Forster was born Carl Ludwig August Wiarda in Emden in East Friesland (Germany) on the 5th of April 1848. The son of a judge, Carl received a classical grammar school education, studied medicine at Hanover University and served as a lieutenant in the Franco-Prussian War (1870-1871). Sickened by the horrors of war, he resigned his commission sometime towards the end of 1870 and took ship for South Africa. Family legend has it that he travelled from Cape Town to Port Elizabeth by cattle cart. In 1874 Carl Wiarda married the 19-year old daughter of the first mayor of Port Elizabeth, Mary Emma Smith, with whom he later had three children.

It is in Port Elizabeth that Carl Wiarda starts to express his artistic talent. In pencil, ink and watercolour, he sketched and painted local landmarks, flowers, animals and people, the latter often humorously. A selection of these sketches, some possessed by his descendents and others held at the National Library of Australia, are included in *A Brilliant Touch*, including one of Mary and another of their home in Port Elizabeth.

About 1890, partly due to ongoing conflict in South Africa, Carl Wiarda decided to move his family to Australia in search of a better and more stable life. As part of this decision, he chose to change his German name to a more English-sounding one in order to create a more acceptable identity for the British colony. His choice of name (Adam Forster) is postulated by Mattingley as being influenced by his admiration of the German-English naturalist Johann Georg Adam Forster, whose botanical drawings and scientific articles Carl Wiarda would have been familiar with due

to his upbringing.

Leaving his family behind, the newly renamed Adam Forster arrived in Sydney in 1891 and at first did it tough, reportedly sleeping under newspapers in the Domain in the initial months after his arrival. However, he soon set about establishing himself and was granted naturalisation in 1896. The rest of the family arrived in 1899 and they settled in Ashfield, Sydney. Forster was appointed as Registrar of the Pharmaceutical Board in 1897, a post he held for 23 years until his retirement, despite anti-German sentiment during World War I. He was also the Secretary of the Pharmaceutical Association at this time and was involved in introducing new safety measures for poisons and medicine, including ridged bottles that warned anyone handling them in the dark that the contents were potentially dangerous. Fluent in seven languages and described as "personable, cultured, with a pleasant well-modulated voice and speaking perfect English with no trace of an accent" (p.12), the highly respected Forster was made a Justice of the Peace by 1903.



Forster was fascinated by the Australian flora, so different to that of Europe and South Africa, and set about illustrating wildflowers in his free time, travelling by tram and train on the weekends to the bush that then surrounded Sydney. In 1922, Forster became a member of the Naturalists' Society of NSW and his wildflower paintings played an important part in the society's natural history and wildflower exhibitions of the mid-1920s. These aimed to raise awareness in the local community of the wealth and diversity of the Australian flora and fauna. Word of his artistic skill and botanical accuracy soon spread, and Forster received carefully-packaged specimens from naturalists from as far away as Western Australia. Forster's watercolours also provide a record of the flora and insect life in the bush around Sydney, with each page of his sketchbook carefully annotated with plant names, date and locality for the species illustrated; some notes also include descriptions and test colours of the species painted.

Fellow naturalist and pioneer conservationist David George Stead saw a need for a handbook to the Australian flora and suggested to George Robertson (of Angus and Robertson Publishers) that his friend Adam Forster would make an ideal illustrator for the project. Forster accepted the commission to illustrate a text written by Edwin Cheel (then State Botanist of New South Wales) and delivered miniature versions of his works to Angus and Robertson in batches. When he died in April 1928, Forster had completed 248 images for the book. Unfortunately George Robertson died around the same time and the project was shelved. Ten years later, the printing blocks and manuscript were discovered by George Ferguson (Robertson's grandson). Sharing his grandfather's passion for publishing Australian material, he consulted Stead, who recommended that he ask teacher and environmental advocate Thistle Harris (with whom Stead was in a long-term relationship) for her opinion of the material. Harris reworked the text to make it more reader-friendly, including a comprehensive botanical key, and *Wildflowers of Australia* was finally published in 1938.

Despite considerable interest from Germany and the United States, it was Forster's express wish that his work not leave Australia. Respecting his desire to make the watercolours available to the Australian people, his family donated the bulk of his paintings to the National Library of Australia in Canberra in 1949.

I rather liked *A Brilliant Touch*; it was a nice way to spend an hour or so on a weekend, flipping through

the watercolours and learning about the varied life of Carl Wiarda / Adam Forster. It is almost like a miniature coffee-table book, with its full-colour plates, but is also a historical and botanical work. The colour scheme, of lavender, deep violet and crimson, appears to have been inspired by Forster's painting of Brush Cherry (*Syzygium paniculatum* Gaertn.), which also graces the cover. Each of the 90 selected watercolours gets its own page, with a few enlarged to show more detail. Pencil sketches, and watercolours of insects (especially cicadas) are scattered throughout. A nice touch is the flower detail on the title page of each section; for example, the flannel flowers on the main title page, or the common buttercup on the page preceding the collections of watercolours. I am hard-pressed to choose a favourite: Golden Everlasting (*Xerochrysum bracteatum* (Vent.) Tzvelev, p. 44), Christmas Bells (*Blandfordia grandiflora* R.Br., p.47) and Blue Pincushion (*Brunonia australis* Sm. ex R.Br., p.68) all rate a mention, although there are many others.

I have one or two minor quibbles with this book, but these are more a matter of personal taste than strident criticism. Firstly, I simply wish more of Forster's watercolours were included! The selection of 90 watercolours, whilst illustrating the diversity of species Forster painted, is only a tantalising glimpse into the collection - the National Library of Australia holds more than 900 paintings. Secondly, I believe the watercolours would have benefited from being printed in a larger format. The book measures 198 × 154 mm and some of the detail may be lost in the digitisation process (the original watercolours are mostly twice this size).

A Brilliant Touch showcases the works of Adam Forster, lover and painter of wildflowers, and would be of interest to both botanists and nature lovers alike, as well as anyone with an interest in art or Australian history.

Trisha Downing
School of Botany
The University of Melbourne
Melbourne, Victoria

Palm leaves, stems and spines: a thorough and detailed examination of their anatomy

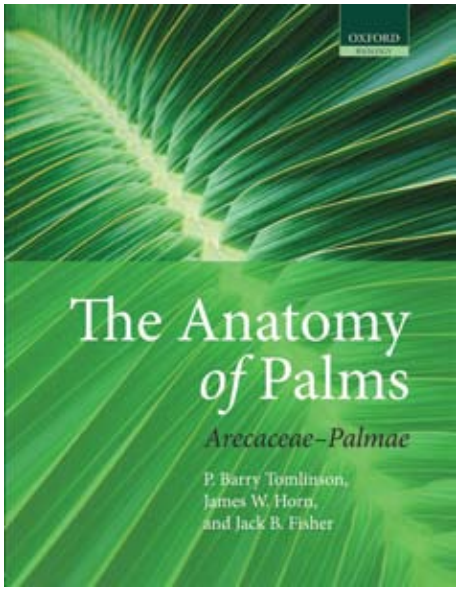
The Anatomy of Palms (Arecaceae - Palmae). By P. Barry Tomlinson, James W. Horn & Jack B. Fisher. Oxford University Press, 2011. 276 pp. ISBN 978-0-19-955892-6. AUD $190.00 (hardcover)

This work, in intent, is a revision of *Anatomy of the Monocotyledons: Palmae* (Tomlinson, 1961) and somewhat of a companion to *The Structural Biology of Palms* (Tomlinson, 1990). However, unlike the previous works, *The Anatomy of Palms* is placed in a completely new context with direct reference to recent phylogenetic and systematic work involving the Arecaceae. In addition, the work refines and enhances traditional methodologies for anatomical preparations and imaging, producing images of exceptional clarity and visual impact.

The authors: Barry Tomlinson, Jay Horn, and Jack Fisher, are among the most widely published and experienced researchers in the fields of structure, biology and systematics of the Arecaceae. This is a major collaboration, with each researcher bringing their extensive individual expertise to the production of an exceptional and thorough work. The man-power, funding and support have been provided by three important institutions: Harvard University, National Tropical Botanical Garden (USA), and the National Science Foundation (USA).

The book is structured to incorporate two distinct parts. Part 1 provides a synopsis of the subject and the relationships of anatomical features within a phylogenetic context for the Arecaceae as a whole. Part 2 provides a detailed treatment of each of the five Arecaceae subfamilies. Part 1 begins with an introduction to the research undertaken on the anatomy of palms with reference to the pioneering work of Hugo von Mohl in the 1840s and follows with a brief summary of the contributions of those researchers who have worked in the field up to the present day. It continues with descriptions of the principal methods used, with notes on the difficulties involved with palm materials and the problems involved in accessing sufficient material to provide as thorough as possible representation of

the family. Palms, in general, are large plants that are difficult to reduce to an herbarium specimen. The fibrous and lignified nature of many organs, especially petioles and leaves, are difficult to work with in the laboratory and specific techniques are required for sectioning and staining. Only stems, leaves and roots are examined in this work and there is no provision for floral or fruit anatomy. With almost 200 genera and about 2300 species in the Arecaceae, it was always going to be difficult to provide an even and yet thorough treatment of the family. To overcome this, representative taxa were chosen so that at least all subtribes and above are represented. This methodology works well enough as many species within higher level groups are fortunately anatomically similar. To save on page space, accession data and full species nomenclature are provided online on the Fairchild Tropical Garden (Florida, USA) website. Many of the materials used were indeed taken from living palms in the extensive palm collection at Fairchild Tropical Garden and the nearby Montgomery Botanical Center. Part 1 continues with a thorough synopsis of the Arecaceae; with chapters on palm construction and classification, leaf lamina anatomy, leaf axis anatomy, stem anatomy, root anatomy, tissue and cell structure, and spine anatomy. These chapters are summarised and placed into context with the final chapter of Part 1, the classification, phylogeny, and anatomical evolution of palms. Some of the Part 1 chapters pertaining to palm organ anatomy include family-wide keys to aspects such as vascular bundle types, leaf base types, stem anatomy, and spines. These keys mostly lead to subfamily, tribal, or subtribal groupings and, in some cases, even to genera. The introductory chapters are succinctly and clearly referenced and fully illustrated with regard to the organs being described. Of particular interest in the final chapter of Part 1 is the presentation of cladograms over which anatomical character states are overlaid and incorporated. The phylogeny adopted for the work is derived from the most recent subfamilial and tribal analyses, such as those for the Calamoideae, Coryphoideae, Crysophileae, Ceroxyloideae, etc., and as presented in *Genera Palmarum: the Evolution and Classification of Palms* (Dransfield *et al*. 2008). In some cases, the cladograms have been "grafted" and "pruned" to produce a comprehensive family phylogeny which is followed for each of the cladograms presented in this part and subsequent sections. Some of the anatomical states used in this way include silica body types, association of stegmata with transverse veins, phloem of petiolar vascular bundles and lamina longitudinal vein bridging cells, among others. The use of the cladograms with the inclusion of the overlaid anatomical states, provides a clear and immediate picture of the points that are being discussed, usually in considerable detail and length, in the text. In general, the anatomical information presented is unrelentingly dense so the cladograms and images are often a welcome visual relief.



Part 2, which takes up about two-thirds of the book, provides a systematic account of the anatomy of palms. This part is not presented in chapters but rather in sections that deal individually with the five subfamilies. For point of familiarisation, the five subfamilies, in their order of appearance, are the Calamoideae, Nypoideae, Coryphoideae, Ceroxyloideae and the Arecoideae. Each is provided with page space relevant to the number of species included in each. For example, the Nypoideae, which is a monotypic subfamily, occupies five pages, whilst the largest of the subfamilies, the Arecoideae, runs to 55 pages.

Each subfamily section follows more or less the same format with a detailed introduction followed

by an annotated list of the major anatomical features as they occur in the particular subfamily. Again, many of the organs, if distinct for the subfamily, are clearly illustrated and referenced. Various phylogenies, either explicitly for the subfamily or pruned from a large full family phylogeny, are provided by way of introduction. As with Part 1, anatomical states are incorporated into the relevant cladograms, thus providing a visual indication of where certain anatomical characters have evolved in which taxa within the subfamily. The description of anatomical characters are then given for tribal and subtribal groups and, where appropriate, genera within the particular subfamily. Of particular interest to me, as a means of additional identification at low level magnification, are the images of stomata depicting structure, orientation and density for individual taxa.

The anatomical images are indeed artistic in their appearance on the page with histological staining providing vivid red, blues and pastel shades. However, the images go way beyond aesthetic appeal, revealing with exceptional clarity the composition of cell walls, cell contents and vascular structures. The clarity of the images was made possible by the use of digital photography rather than film; with cameras attached directly to dissecting microscopes.

The users of this book will certainly be palm biologists as well as a general audience of plant anatomists and systematists. The work is an exemplary example of how to synthesise structural and anatomical information, molecular phylogenetics and evolution. The almost square format (22 cm x 28 cm) allows the images and cladograms to be presented in an uncluttered and relatively large scale. This is an authoritative work that will be the standard reference on palm anatomy.

References

Dransfield, J., Uhl, N.W., Asmussen, C.B., Baker, W.J., Harley, M.M. and Lewis, C.E. (2008). *Genera Palmarum, the Evolution and Classification of Palms*. Kew Publishing, Kew.

Tomlinson, P.B. (1961). *Anatomy of the Monocotyledons. II. Palmae*. Oxford: Clarendon Press.

Tomlinson, P.B. (1990). *The Structural Biology of Palms*. Clarendon Press: Oxford.

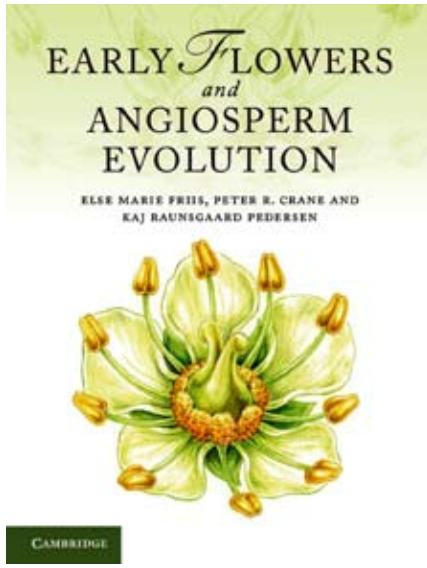
John Leslie Dowe
James Cook University
Townsville, Queensland

Angiosperm origins and evolution – great progress at last

Early Flowers and Angiosperm Evolution. By Else Marie Friis, Peter R. Crane and Kaj Raunsgaard Pedersen. Cambridge University Press, Cambridge. 2011. 585 pp. ISBN: 978 0 521 59283 3. AU $195.00 (hardback).

At the International Botanical Congress in Melbourne last year there were advance copies of this book, but I did not get a chance to look at it in detail. However, I have been anticipating its arrival ever since. I am very pleased to say that this book was well worth the wait. The most notable thing about it is its relentless attention to detail. The amount of high quality data presented in these 585 pages is astonishing – every facet of early angiosperm history is covered in fine style. There have been many other books written in the last 20 years on angiosperm origins and early history, and most of them are lined up on my bookshelves and have been well thumbed as I have written and re-written undergraduate lectures on this important and absorbing topic. Next time I give these lectures I foresee a very major re-write, if not a completely new start, because this new book offers so much depth on all aspects of this subject. Interestingly, and not surprisingly, this is still a work in progress, and the authors freely acknowledge that. With so much new information coming to light in the last 10 or so years there are as many new questions as answers. It would be easy to get to the end of this book and feel a measure of disappointment at this if it were not for the obvious alternative conclusion – despite the absolute complexity of the data, and the still relatively meager amount of it, we now know more about the origin and early evolution of flowering plants than we do about any other major plant group, and in fact probably quite a lot more. What a change that is from only a few years ago, when the obscurity of angiosperm origins was the mantra of palaeobotany.

The book itself is well ordered - I expected a thorough treatment, what I got was much more than that. The book works methodically through the story, beginning with a description of what an angiosperm is, to the environment the early angiosperms lived in, and a description of the key localities they are found in. This is followed by a description of the key plant groups that have been closely associated with angiosperm origins and an assessment of their likely time of origin. Following this is the bulk of the book, dealing in great detail with all aspects of the Cretaceous and sometimes Cenozoic angiosperm record, placing fossils in context with living groups. The only real criticism I can find of the whole book is that sometimes Southern Hemisphere groups are treated with less detail than Northern Hemisphere groups. This is partly because more information is available in the Northern hemisphere, but I think sometimes it is because the authors are less familiar with Southern Hemisphere palaeobotany. However, this is a minor criticism. The book finishes with an overview that runs for about 100 pages, dealing with structural diversification of reproductive structures, the evolution of pollination and dispersal, developing vegetation types and increasing angiosperm diversity through time.



There are so many highlights in this book that the best I can do is to feature some of them to give you a sense of what you will get if you make the effort to really come to grips with the detail.

Most of you will be aware of the enormous amount of data that has come to light as a result of the detailed description of the mostly tiny flowers and fruits that have been recovered from Early Cretaceous sediments in the last decade or so, but how many of you have registered that many of these are "charcoalified, as a result of natural fires in the source vegetation" (p. 29)? What was going on here? What was the ignition source for these fires? Why was the vegetation dry enough to burn? Was there something unusual about atmospheric gas composition that assisted this phenomenon? Was frequent fire an important factor in early angiosperm evolution? While I was reading this book, a relevant paper appeared (Brown *et al*. 2012). Look at this quotation from the abstract and think about how fertile this research field will be in the future: "fires were widespread and frequent and … the Cretaceous can be considered a "high-fire" world. This increased fire activity has been linked to elevated atmospheric oxygen concentrations … Some early angiosperms are interpreted as being of weedy form and as having thrived in disturbed environments."

There remain, and probably always will, some enigmatic pre-Cretaceous fossils that could be related to angiosperms. One of the most interesting is *Sanmiguelia*, now known from more than one Late Triassic locality in North America. *Sanmiguelia* has been regarded as having angiosperm affinities, but it is far too old to fit in with other well established data, and so caution prevails. In this book, the conclusion (p. 159) is "The new reconstruction of *Sanmiguelia* with its reproductive structures … reveals an intruiging early Mesozoic plant that is unlike any known seed plant." This is probably the best assessment that can be made at present, but it highlights a problem with the fragmentary nature of the fossil record. Extreme caution is, and should be, used when outlier fossils appear. Researchers looking for oldest fossil records to anchor phylogenies of living species please take special note.

For those of us interested in the flora of the Southern Hemisphere, the comments made in this book on the Proteales are of particular interest. In noting that the Nelumbonaceae, Platanaceae and Proteaceae are placed together in the Proteales based on molecular evidence, Friis, Crane and

Pederson note that "In habit and morphological features … [they] … are very different from each other, and a close relationship among them would not be suspected based on morphology." (p. 292). This poses particular difficulties with the fossil record, where the origins of Proteaceae are mysterious to say the least.

I could go on delving in to the detail of this book for a long time and still not give you a full sense of the detail and experience that is presented here. Last year I had the great pleasure of introducing Else Friis when she presented the opening keynote address at the Melbourne International Botanical Congress. I said then that as a very young palaeobotanist I was inspired by some of Else's early papers which, I could see, set the benchmark for quality research in this area. Over the intervening years my admiration of Else's work has continued to grow, along with that of Peter Crane and Kaj Pedersen. This book is a triumph of the combination of detail, experience and intellect. It answers many questions and asks many more. We are a long way from a full understanding of the origin and early evolution of angiosperms, but thanks to this book we now know, much more precisely than ever before, what questions we should ask and where the gaps in knowledge are. This is a great legacy from all three authors, but I am optimistic they all have much more to offer in the future.

Reference

Brown, S.A.E, Scott, A.C., Glasspool, I.J. & Collinson, M.E. 2012. Cretaceous wildfires and their impact on the Earth system. *Cretaceous Research* 36: 162–190.

Bob Hill
School of Earth and Environmental Sciences
University of Adelaide, South Australia

Biological Control of Weeds in Australia. Edited by Mic Julien, Rachel McFadyen and Jim Cullen. CSIRO Publishing, Collingwood, Victoria. 2012. 648 pp. ISBN: 9780643099937 AU $180.00 (hardback).

An eBook version is available from eBooks.com allowing it to be read online, or downloaded in EPUB (ISBN: 9780643104211) or PDF (ISBN 9780643104204) format for the same price.

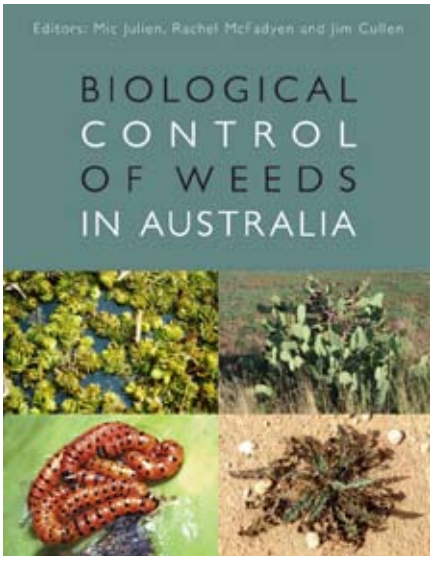
It has been many years since the last comprehensive review of the biological control of weeds in Australia was produced by Frank Wilson (Wilson 1960) and here, at last, we have its successor. This impressive, well illustrated, 648 page volume, edited by three of Australia's foremost figures in biocontrol, collates information on 106 weed species written by 54 authors (for some reason the editors claim only 90 weeds and 47 authors). The list of contributors is a veritable who's who of those involved in biocontrol in this country plus a smattering of internationals.

Few Australians would be unaware of the prickly pear story, of how the larvae of a small, South America, cactus-feeding moth, *Cactoblastis cactorum*, released in 1926, freed vast tracts of eastern Australia from the scourge of *Opuntia stricta*. But how many appreciate the effort that was required to achieve this success? How many would know that many insects were tried and failed or were rejected in a program which ran from 1911 to 1939 and that, of 20 control agents which were released, only 14 were reported to have become established and some of these appear to have subsequently died out? A conservative estimate of the benefit:cost ratio of this biocontrol program has been calculated as 312.3:1 and, in 2005 dollar terms, the investment in the program is claimed to have returned a net present value of over $3.1 billion. However, this early success set the bar very high in terms of creating expectations that biological control can always produce this sort of result and it must be understood that this type of miracle is the exception rather than the rule.

Australia has accumulated a wealth of scientific expertise in the fields of entomology, pathology and botany related to biocontrol of weeds and is at the forefront of research in this field internationally. *Biological Control of Weeds in Australia* is the story of this expertise in practice, its successes and its failures. It provides, in 72 stand alone chapters, comprehensive accounts of the effort that has gone into ecological and biological studies of the target weeds and their natural enemies; historical accounts of exploration and survey for potential agents in the native range of the weeds; and notes

on the candidate agents including those which were considered but rejected as well as those which were eventually released in Australia. Each chapter concludes with an eclectic discussion of the success of agents released, opportunities for the future and occasionally some candid observations on the politics and funding of biocontrol.

With so many contributing authors, the editors have done an exceptionally good job in ensuring a reasonably consistent style was maintained throughout the book. Maps, photographs and the occasional line drawing, figure or table break up the text nicely and inform the narrative well. The standard of editing and proof reading is exceptionally good. The only obvious error discovered was the distribution map for *Hyptis suaveolens*. This species is found across the northern half of the continent. The map on page 309 is virtually a north-south mirror image of what it should be and is actually a reproduction of that for *Hypericum perforatum* on page 301.



Surprisingly, in a book entitled *Biological Control of Weeds in Australia*, the first chapter focuses on biological control of Australian plants in South Africa and the United States. Although Australian plants have become highly invasive and troublesome weeds in many countries, only South Africa and the USA are actively involved in biological control programs against these plants using agents sourced in Australia. It's not that this chapter shouldn't have been included, the book is far richer for its inclusion, but it would have been much more appropriately placed at the end of the volume, perhaps grouped with those three chapters dealing with native Australian species in the genera *Billardiera, Cassinia, Dodonaea, Eremophila* and *Myoporum* which behave as weeds in parts of this country, and have been the subject of biological control.

As good as this book is, one cannot help feeling that the editors did not quite finish the job. Between them they authored or co-authored 20 chapters, yet they provide an introduction which is barely one page long. While they claim that their aim was to encourage biological control workers involved with particular weed species to review research up to 2010, and indeed, in this, they have succeeded admirably, in a book such as this readers could surely expect to find at least one or two chapters that brought everything together. What is missing is a comprehensive review of the Australian guidelines for the introduction of exotic biological control agents. The protocols and procedures governing this are ever evolving and have come a long way since work on biological control of lantana and prickly pear began over 100 years ago. The latest guidelines were released as recently as 2009 (DAFF 2009). The Biological Control Acts in Australian states and territories were the first legislation anywhere in the world designed to manage conflicts of interest around biological control programs, yet readers who are unaware of this must read the chapter on Paterson's curse to learn of it. While a recent analysis of weed biocontrol programs by Page and Lacey (2006) found that, overall, biocontrol effort has provided a strongly positive return on investment, the benefits have varied widely from one target species to another. Although readers are alerted to Page and Lacey's work in the introduction, they are left to search for evidence of costs versus benefits by working their way from one chapter to the next or risk assuming that things are better than they may possibly be from the editors' use of superlatives such as "very good", "extraordinary benefits" and "significant positive returns on investment" in the one paragraph in their introduction which comments on the economics of biocontrol projects. Where too is the discussion of what happens when things don't quite go to plan? We read in the chapter on *Opuntia* spp. that *Cactoblastis*

cactorum, the little moth that was so effective in Australia, when introduced to the West Indies, spread to North and Central America where it now poses a major threat to the species-rich *Opuntia* floras there. A discussion of the implications of this for the practice of biological control would sit well in this book. It could be argued that essays on these matters are available in the extensive literature, and indeed they are. Many were even written by one or other of the editors (McFadyen 1998, Julien 2006, Cullen and Delfosse 1985). Surely these and the wealth of information collated for this book would have made this a fairly straight forward exercise and doing so would have greatly enhanced the value of this book. A very good book on the subject could have become the definitive book. However, the editors are to be congratulated in bringing this book together. It is long overdue. If you work on weeds in any way *Biological Control of Weeds in Australia* is an absolute must for your bookshelves.

References

Cullen, J.M. and Delfosse, E.S. (1985). *Echium plantigineum*: catalyst for conflict and change in Australia. In *Proceedings of the 6th International Symposium on Biological Control of Weeds*. 19-25 August 1984, Vancouver. (Ed E.S. Delfosse) pp. 249-292. Agriculture Canada, Ottawa.

Department of Agriculture, Fisheries and Forestry (2009) *Biosecurity guidelines for the introduction of exotic biological control agents for the control of weeds and plant pests* http://www.daff.gov.au/_data/assets/pdf_file/0014/1250231/Biosecurity_guidelines_for_the_introduction_of_exotic_BCAs.pdf (accessed 19th June 2012).

Julien, M.H. (2006). Biological control of rangeland weeds in Australia. *The Rangelands Journal* 28: 47-54.

McFadyen, R.E.C. (1998). Biological Control of Weeds. *Annual Review of Entomology* 43: 369-393.

Page, A.R. and Lacey, K.L. (2006). Economic impact assessment of Australian weed biological control. *CRC for Australian Weed Management. Technical series No. 10.*

Wilson, F. (1960). A review of the biological control of weeds in Australia and Australian New Guinea. *Commonwealth Institute of Biological Control Technical Communication No. 1.* Commonwealth Agricultural Bureaux, Farnham Royal, Bucks, England.

Robyn Barker & John Clarkson
State Herbarium of South Australia,
Adelaide, South Australia
& Queensland Parks and Wildlife Service
Mareeba, Queensland

Encyclopedia of Tropical Plants: Identification and Cultivation of over 3000 Tropical Plants. By Ahmed Fayaz. UNSW Press, Sydney, 2011. 688 pp. ISBN: 978 1 742 23290 4, AU $84.95 (hardback)

Upon opening, Ahmed Fayez's book presents a pleasant surprise. Lavishly illustrated, the images are pleasing to the eye and generally diagnostic for the species they represent. Perhaps the greatest surprise came in the format of the book – the families and genera are arranged following the classification of the Angiosperm Phylogeny Group (2009) and, as noted by Mark Chase in his foreword, one of the first books of its kind to do so. From the perspective of a botanist, this is a very appealing format.

Descriptions are provided for the APG groups, families, genera and species, with occasional notes on varieties important in horticulture. Descriptions cover the most diagnostic features while managing to maintain a relatively standard format. A concise and user-friendly glossary is included (though there are no diagrams for shapes) along with separate indices to scientific and common names.

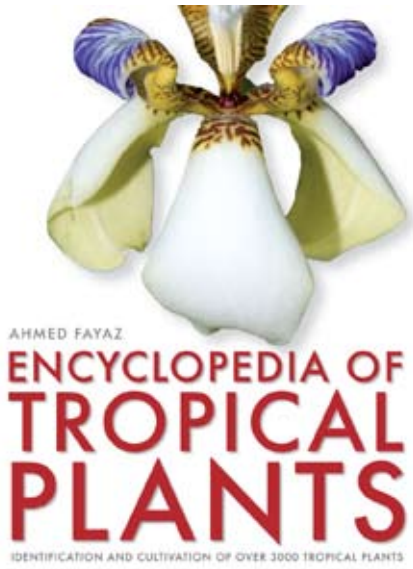
Many 'encyclopaedic' treatments of plants are heavy on pictures and light on content (e.g. Min *et al*. 2006). The same cannot be said of this book. Ahmed Fayez has accumulated a great quantity of high quality images, and backs them up with a surprising amount of detail in the plant descriptions, cultivation tips and distribution notes.

While the focus is clearly on tropical plants, as the title dictates, this definition is based on where these species *can* be grown, not necessarily where they naturally occur. A number of species from the subtropics are also included such as the New Zealand endemic Araliad *Pseodopanax ferox* (p.684), grown in tropical regions for its striking foliage.

I have recently returned from travels in tropical South America where I encountered several thousand species I was not immediately familiar with. Armed with a general knowledge of tropical

plant families from northern Australia, a fair guess at the family (or family group) and Fayez's book, I am able to identify a large number of the plants I photographed in while I was there to genus level relatively quickly. In this sense, the broad coverage of the volume seems to work well.

Ferns, in their various guises, are treated well and an overview of the basal angiosperms presented (though Trithuriaceae and Austrobaileyaceae are not included). Greater emphasis is placed on showy groups popular in horticulture (e.g. 18 *Magnolia* species are included). Likewise, the unusual Araceae and popular Orchidaceae are well covered (including 50 out of 85 *Paphiopedilum* species), the latter family occupying no less than 130 pages!



Large groups such as the Orchidaceae, Bromeliaceae and Cyperaceae obviously only cover a small portion of the many genera found in tropical areas (Poaceae is covered in just 8 pages). For some of these large families, inclusion of a few more representatives from the larger genera would have been useful, but a line clearly had to be drawn somewhere and overall I think the balance is good. Not all species included in the text are illustrated – the absence of a photo of the distinctive *Equisetum* is perhaps surprising, but with only 15 species (not all tropical), perhaps the space is reasonably allocated to larger genera.

The Australian tropics fare well, perhaps largely due to our proximity to Asia where Fayez spent a lot of time while working on this book, and many species I am familiar with are illustrated here. A number of these are rarely included in photographic books, perhaps because many are less conspicuous components of our flora or rarely encountered. Africa and India are also suitably represented in the coverage, giving a good sense of balance to the coverage of the book. The phylogenetic classification has clearly helped Fayez to achieve this by providing a framework to be filled in with suitable tropical representatives.

I have few reasons to be critical of the book however a few points that could be improved in future editions are pointed out here. Although I have not checked all 688 pages of dense text, I spotted relatively few typographic errors for a work of this size. Those that I found were minor (e.g. '*Dendrobium cunninghamii*' in the text, vs. '*D. cunninghami*' in the image caption – p. 117). As noted in other reviews, there are occasional incorrect captions (e.g. '*Rondeletia odorata*' = *Clerodendrum calamitosum* (p. 581) and '*Cestrum aurantiacum*' = *Brugmansia sanguinea* (p. 662)).

There are a few inconsistencies in the text – Cycadaceae is stated to include one genus with 100 species, while the entry for *Cycas* states ~60 species. Mabberley (2008) gives ~50 species, while the Cycad Pages gives ~90 species (Hill *et al*. 1998–). The description of 'climate zones' is overly brief, and given that this is the main basis for horticultural guidance (i.e. 'Can I grow this here?'), I think it could usefully have been explained in more detail. The first heading 'Lycophytes' in the main section of the book is followed by the erroneous heading of [mosses] – presumably a contraction to represent [clubmoss] and [spikemoss] – and possibly an editorial 'adjustment' to neatly fit the space available? As always, there will be differences in taxonomy – *Cassine melanocarpa* (p. 349) is currently known as *Elaeodendron melanocarpum* in Australia.

In summary, I recommend the book to anyone interested in tropical plants. This book will fill a gap in the current market for an overview of the tropical flora of the world (and take up a good chunk of your bookshelf). The binding is sturdy and should handle extensive use and for the size of the book it represents good value for money.

References

Angiosperm Phylogeny Group (2009). An update of the Angiosperm Phylogeny Group classification for the orders and families of flowering plants: APG III. *Botanical Journal of the Linnean Society* 161: 105–121. doi: 10.1111/j.1095-8339.2009.00996.x.

Hill, K.D., Stanberg, L. and Stevenson, D. (1998–). The Cycad pages. Royal Botanic Gardens Sydney. http:// http://plantnet.rbgsyd.nsw.gov.au/PlantNet/cycad/index.html

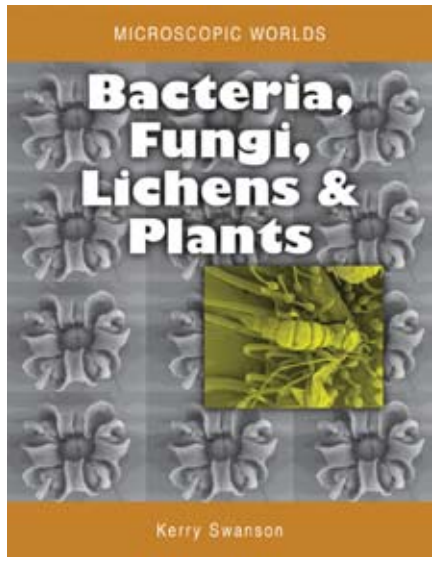
Mabberley DJ (2008). *Mabberley's plant book. A portable dictionary of plants, their classification and uses*. Third edn. (Cambridge University Press: Cambridge).

Min BC, Omar-Hor K, Lin O-YC (2006) '1001 garden plants in Singapore.' 2nd edn. (National Parks Board: Singapore).

Russell Barrett
Kings Park & Botanic Garden
West Perth

Microscopic Worlds: Bacteria, Fungi, Lichens and Plants. By Kerry Swanson. CSIRO Publishing, Collingwood, Australia. 2012. 128 pp. ISBN: 978 0 643 10392 4. AU$39.95 (paperback)

This slim, A4-sized book has the look and feel of an academic textbook from the 1980s. The page layout is a bit old-fashioned and it doesn't have much colour – only blurry, green and grey pictures with a tinge of red. The font size is big and the text double-spaced, as though it might have been a stretch to make this a saleable book.



All this doesn't matter of course if the book is informative, well-written and those pictures are obscure for a reason. Let's start with the last point. The pictures are oddly coloured and focussed because they ride the wave (albeit at the back of the set) of the 3D phenomenon. Don the kindly supplied cardboard glasses with red cellophane in the left eye, green in the right, and all is revealed: a three dimensional world of microbes and microscopic images of plants.

Are the images any good? Well, they are OK. All these images are taken through a scanning electron microscope. Not just any SEM, but as the back of the book puts it "one of the most modern and powerful scanning electron microscopes available". SEM pictures can be spectacular, particularly when a little colour is added. If you haven't seen any of Wolfgang Stuppy's books on seeds and pollen you haven't lived! And 3D pictures can be colourful – look out for Chris Carter's glorious images of algae in a CD that comes with *The Freshwater Algal Flora of the British Isles*. Carter's pictures are from fresh material under a light microscope so the comparison is a little unfair, but I think SEM pictures in a book like this need some colour added or the whole thing becomes a little tiring on the eyes and doesn't grab our these days over-stimulated attention.

Kerry Swanson's images aren't up to the standard of Stuppy's but then the subject matter is less photogenic. Most of the pictures are taken from surfaces in the wild and consist of bits and pieces of detritus with various threads and spores tangled among them. Towards the end of the book we get into plant tissues and it's all about sheared rows of cells. As art these don't work as well as carefully cleaned seeds and pollen. As science they work only a little better.

On the positive side, Swanson's pictures give you a sense of the three-dimensionality of these microscopic worlds. I particularly like the fungal hyphae reaching out of the page (Figure 3.32), the gland-tipped hairs of the sundew (5.3), and some of the stomata and waxy cuticles (e.g. 5.41, 5.42). Ironically for a book mostly about microbes, the best pictures, I think, are of the flowers (5.55 and 5.56). The rest get a bit repetitive, at least to someone familiar with these organisms and SEM images (I spent much of my PhD, in the 1980s, taking hundreds of SEM

pictures of an algal genus called *Vaucheria* so I may be a little jaded).

Is the text informative and well written? Unfortunately it comes across as everything the author knows, or could find out, rather than a well-argued story about a fascinating part of our living world. Like the pictures, interesting facts are tangled among a sketchy outline of background 'noise' about bacteria, fungi, lichens and plants. And the scope is odd. Ferns are covered briefly at the start, but bryophytes are missing. Algae are dealt with rather oddly, with a couple of comments in the lichen chapter about diatoms, kelps and red algae: but why these ones, which have nothing much to do with lichens? Perhaps the answer lies in one of the companion volumes, *Bugs of the Ocean* (the third in the series is *Bugs of the Land*), which covers other algae in more detail. I would have liked a clear statement that some (or all) of the green algae can be considered part of the green plant group rather than 'just how many groups may legitimately called algae and their relationships to each other is something scientists are still arguing after'.

Swanson is a geologist and freelance motoring journalist living based in New Zealand and I was pleased to see that a colleague and friend of mine from there, Paul Broady, helped out with some of the factual information. But this expert guidance doesn't save the book from being a compilation of sometimes interesting facts with rather ho-hum information in between. Then there is the matter of the distracting pictures if you are not wearing your red and green glasses. That's one of the big problems with the layout of the book. You either, wear your glasses and appreciate the images, or you take them off to more easily read the text but get continually distracted by the fuzzy images on each page. Better, I think, to have separated the images and text if they had to be in the same book.

With all this carping perhaps I'm not the target audience. The back of the book says it will 'appeal to readers of all ages' and 'the author makes no assumptions about what the reader knows about science'. I'm not sure that either statement is true. The story is not compelling enough to entice the non-scientist and the writing style often a little turgid and technical: e.g. 'Most leaves have a number of adaptations that contribute to the plant's ability to control moisture levels within its tissues'. And it might be folksy to hear from Swanson that he 'managed to get some good images of spores on the surfaces of plant leaves especially' but this adds to the sense that the words and images are there only because they are the ones the author had.

I did learn a few new things. In 1897, a research paper by the author Beatrice Potter was read at the British Linnean Society. Being a woman she couldn't read it herself, and she didn't even attend the meeting. Soon after, she turned from botany to writing and illustrating children's books. Which is a good point to observe that this book is clearly a labour of love. In the first chapter headed 'Why bacteria, fungi, lichens and plants' Swanson ends with the sentence: 'What I want to do in this volume is to use the SEM to illustrate the intricate detail and beauty of organisms representing two major groupings or domains of life – Bacteria and Eukarya – at the microscopic level, providing an intimate portrait of rarely seen aspects of life'. Sadly I don't think this has been achieved. Better to have used SEM as an adjunct to light microscopy, 3D as an adjunct to 2D, and for the author to have written a separate essay on what should be a mesmerising micro-world.

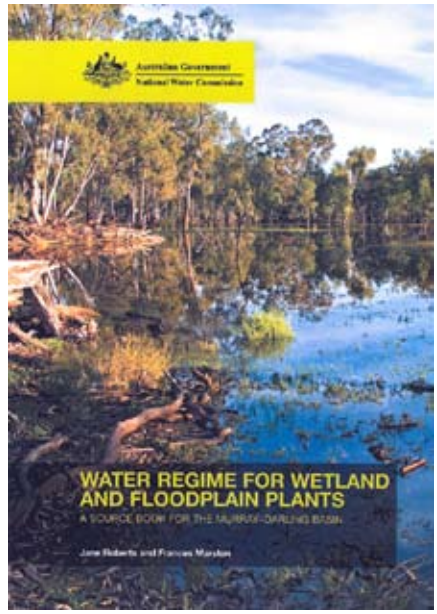
Tim Entwisle
Royal Botanic Gardens, Kew
Richmond, Surrey, UK

Two Books Related to Things that Live and Grow on Floodplains in the Murray-Darling Basin

Water Regime for Wetland and Floodplain Plants: A Source Book for the Murray-Darling Basin. By Jane Roberts and Frances Marston. National Water Commission, Canberra. Free download from http://nwc.gov.au/publications/topic/environment/water-regime-for-wetland-and-floodplain-plants

Floodplain Wetland Biota in the Murray-Darling Basin: Water and Habitat Requirements. Kerrylee Rogers and Timothy J. Ralph. CSIRO Publishing, 2010. 360 pp. ISBN: 978 0 643 09628 8. AU$ $99.95 (paperback)

Although these two books are about the same thing, they are very different in scope and readability. It's not really fair to compare them, the Roberts and Marston book is a second edition, and the product of possibly 30 years of on-ground research and expertise, and only about plants. The Rogers and Ralph book is much more a literature review, based on a relatively short-term but comprehensive study and government department report, and it covers all groups of living things.

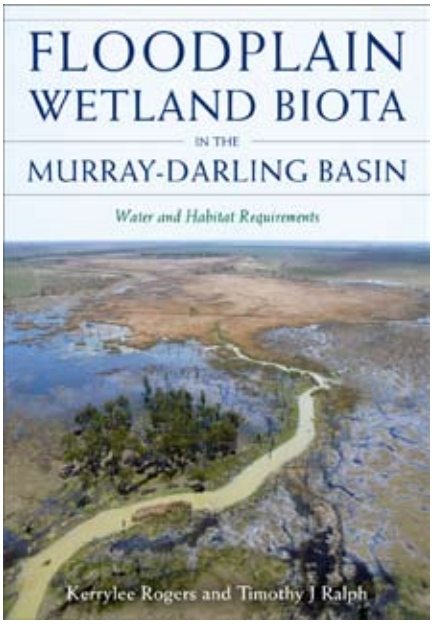


Having been a very minor contributor of information to the first edition of the Roberts and Marston book (*Water Regime for Wetland and Floodplain Plants: A Source Book for the Murray-Darling Basin*), I was looking forward to seeing the improvements made for the second edition. The first edition compiled information on floodplain plants from *Eucalyptus camaldulensis* to *Chara* and *Nitella*, drawing together the often-limited information in the published and 'grey' literature. It was a go-to resource when determining plant distribution in relation to water regime and predicting plant responses to floods and drought. I have used the first edition extensively in my work on water regime and wetland plants.

The first difference I found with the second edition of Roberts and Marston was the improved appearance of the book, heavy pages, spiral bound, full of beautiful pictures of the plants, with the clear input of a graphic designer (and so it says on the inside of the front cover: amended and adapted for print by *Angel Ink*). This book is delightful to look at and use (spiral binding means you can lay it open, or fold it flat on the appropriate page and it doesn't try to shut itself), well written and informative. The second difference I noticed is that the authors have reduced their scope (i.e. number of species) but increased the depth (of information) for each species that they do refer to. So charophytes are out and only one submerged species is referred to. This is a bit disappointing for me (a charophytologist) but quite understandable, given the need to generalise and the paucity of life-history, ecological and water-regime information available for many floodplain species. Only 19 species are treated: six trees, one shrub, four grasses, six sedges or rushes, one weedy herb, and one submerged species. Thus it gives a good general coverage of the all life-forms, in all parts of a floodplain and river channel, and most of the very important species are included (my personal prejudice for charophytes is revealed here). You could also justify the reduced coverage by saying that the ecological information for a large number of other species would be almost the same as the 19 species dealt with in detail, and the minor differences wouldn't be terribly informative to managers. Provide water for the desirable ones in the 19, and you will be providing water for the whole ecosystem. Sad to say, but many non-botanists can find it hard enough distinguishing between species of *Eucalyptus,* not to mention species of *Potamogeton*. So this book caters to them by providing a glossy, well-presented book with plenty of pictures and no real taxonomic skill is needed to work out the relevant species. From there, recommendations of water regime for germination, establishment, growth and survival are easy to find.

This is a great book, and I'll recommend it to the managers that I come in contact with in CMAs and the water-resource industry. It might help to overcome the reliance on 'water-bugs' for

condition assessment, since plants are always there in drought or flood (growing or in the seed bank), they don't try to get away when you sample them and the taxonomy is well-established and accessible. I will use this book in the future (but might sneak a peek at the first edition when I need to check out more than the 19 species in this one).



The second book on water regime, *Floodplain Wetland Biota in the Murray-Darling Basin: Water and Habitat Requirements*, is harder to review. Rogers and Ralph have tried to include *everything* that lives or grows on the floodplain and wetlands of the Murray-Darling Basin, from invertebrates to trees, with fish, frogs, birds and herbs in between. There is a huge amount of information summarised here, but it is well-referenced, and the source material is comprehensively listed. There is some summarisation of the responses of biota to water availability and the authors have made a good attempt to place the knowledge in a theoretical context. However, it is not an easy read. I had to turn off my editor-brain, even my author-brain, as I read because I found the phrasing, the grammar, the choice of words, even the arrangement of information, irritating. It might just be me, but this book reads like an un-edited report, or a literature review in first draft. Maybe they did use a copy-editor but it still needs a lot of editorial effort to make it readable. I won't go on, picking bits to criticise, because I think the authors have tried very hard to provide a useful book, and they have been let down by the editorial process. I did think about what I might use the book for and decided I would quite likely go to it for the source material. The pictures of fish, birds and invertebrates are great and the listing of references is comprehensive.

Michelle T. Casanova
Royal Botanic Gardens
Melbourne, Victoria

An Intimate Portrait

Rainforest Country: An Intimate Portrait of Australia's Tropical Rainforest. By Stanley and Kaisa Breeden. Fremantle Press, Fremantle WA. 2012. 240 pp. ISBN: 978 1 921 88860 1. AU$75.00 (hardback).

Stanley and Kaisa Breedan's second book in this series of nature photography deserves its subtitle of "intimate portrait". The book features many close-up photographs of rainforest flora and fauna (and in one case rocks) in such exquisite detail that one could sit and stare at them for ages. One of the most eye-opening sections of the book is devoted to moths, which prove to be much more interesting butterflies! There are also beautiful long and middle-distance shots of rainforest scenes, which are particularly effective on the centerfold of the book.

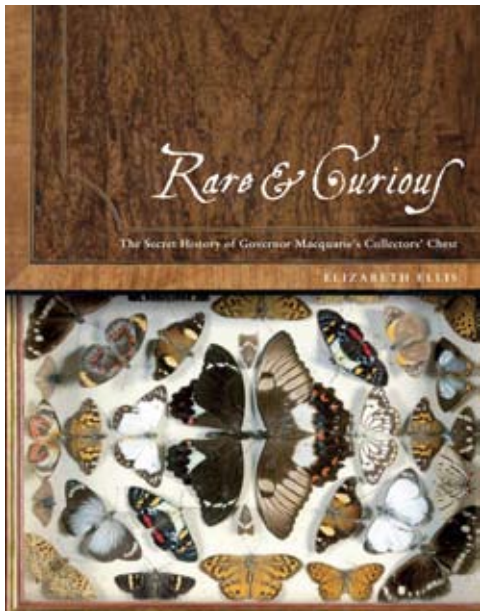
The photos are accompanied by informative captions that often discuss some of the ecology of the subject. The main text is written in an engaging first-person style. Most chapters highlight the authors' experiences of living in and exploring the rainforest, others discuss the rainforest's natural history. One of the most fascinating aspects that the authors highlight is the immense age of Australia's rainforest flora, which used to cover most of the continent before it grew drier. They point out that the sclerophyllous trees and shrubs, that we think of as quintessentially Australian, are very recent derivations from rainforest-dwelling ancestors.

The detail of their photos is likely to be inspirational to budding nature photographers. Helpfully, one of their chapters, "Photographing the Rainforest", provides some tips for achieving these. Overall, this book would be ideal for anyone with an interest in Australian flora and wildlife, or who like looking at beautiful pictures.

Richard Boyne
Queensland University of Technology
Brisbane, Queensland

Rare & Curious: The Secret History of Governor Macquarie's Collectors' Chest. By Elizabeth Ellis. The Miegunyah Press, Melbourne, Vic. 2011. 284 pp. ISBN: 978 0 522 86117 4 AU$59.99 (hardback)

This beautifully produced book, in small landscape format, concerns 'The Strathallen [sic] Chest, an important Australian Collector's Cabinet' as it was described in the auctioneer's catalogue in Melbourne in 1989. The cabinet was acquired in 2004 by the State Library of New South Wales and is now known as the Macquarie collectors' chest. According to Ellis 'it is a museum in miniature, a celebration of friendship and patronage, and a joyous expression of very personal appreciation of the glories of the natural world of Australia in the initial flush of enthusiasm in the decades following white settlement'.



It is in fact one of a pair. The second (the 'Dixson chest'), also in the Library, was purchased in London in 1937. There is debate as to which of the two was the model for the other. Both were inspired by portable or 'campaign' furniture of the late eighteenth to early nineteenth century. Both are made principally of red cedar (*Toona ciliata*) and rosewood (*Dysoxylum fraserianum*). Both have painted panels, secret drawers and – in the Macquarie chest – trays and cases still with the original specimens inside. The specimens were not scientifically arranged, the whole being in the genre of the 'cabinet of curiosities' of a pre-scientific era and therefore rather distinct from the intensively taxonomic cabinets of, for example, the Macleay family. The birds are arranged tightly; the insects and shells according to size and in patterns. The only botanical materials are in two secret side drawers in the chest's inner compartment- algae arranged in 'childlike designs'. It would appear that the cabinetmakers and specimen-preparers must have worked closely together. The specimens and the steel mounting pins are in remarkably good condition.

There are some errors in the book, notably: a very loose use of the words 'type specimen', that butterflies seem not to be considered insects though spiders are, the idea (p. 57) that Banks was the first to preserve botanical specimens from Australia, that Harvey was the first to make a 'major collection' of 'phycological type specimens of Australian seaweeds and algae [sic]' (p. 93),

while the major expeditions before Macquarie's time (Malaspina, Baudin, Flinders) are just ignored. However, the local industry in collecting natural history specimens is better documented, in particular Macquarie's 'small private industry' in transporting 'rare and curious specimens'. He sent birds and plants to England even to the 'crowned heads of Europe'. Plants and animals from Oxley's second expedition went to Lord Bathurst, Gymea lilies and Norfolk Island pines to Queen Charlotte at Kew (but sadly lost in a shipwreck), and also drawings by John Lewin. Sending exotic flora and fauna was 'desirable currency for favours in the old world' on his return, though this did Macquarie little good when his viceroyalty came under intense scrutiny on his return to Scotland. The two chests were part of this currency, but 'happen to be on a more ambitious, complicated scale than anything else of their kind ever attempted in the Australian colonies at the time, or since'. James Drummond of Strathallan Castle got not only live black swans but perhaps also the collectors' chest.

The book ranges widely over the period of Macquarie's governorship, but it is clear that the chest is intimately linked with early Newcastle, NSW, and so is a celebration of a particular time and place and of the people there then. It would appear that the chest was part of the cargo including living plants and animals to leave Sydney with Macquarie in February 1822. At his death, his heir was his son, Lachlan, whose life ended aged 31 in 1845 following an alcoholic 'Rake's Progress'. He had borrowed heavily from William Drummond, Master of Strathallan, and his chattels were the surety on his debts, so that the chest then came to Drummond, if it had not already been in the family by then. It became known to the Mitchell Library in Sydney in the 1980s and, in 2004, was reunited with other Macquarie artefacts bequeathed to Drummond and acquired by the Mitchell Library in 1913 and 1914 - and joined the Dixson chest.

The lively debate as to which of the two chests is the earlier leads Ellis to compare the paintings on the chests' panels, particularly helpful being c. 1937 pre-restoration photos of the Dixson chest, in which one of the panels figures buildings, notably the convict barracks at the Lumber Yard in Newcastle. The barracks were not erected before late 1818 and do not appear in the equivalent panel in the Macquarie chest, suggesting it, or at least parts of it, antedate some or all of the Dixson. Whatever is the truth in this matter, these two pieces are triumphs of colonial cabinet-making and this beautiful scholarly book does them appropriate justice.

David Mabberley
Royal Botanic Gardens and Domain Trust
Sydney, New South Wales

Reframing Darwin: Evolution and Art in Australia. Edited by Jeanette Hoorn. Miegunyah Press (An imprint of Melbourne University Press), Carlton, Victoria. 2009. 255 pp. ISBN: 978 0 522 85684 2. AU $39.99 (paperback)

The 200th anniversary of Charles Darwin's birth was celebrated throughout the world in many ways. At Meredith College we had a large exhibition in our science facility based on his *Beagle* voyage and one in the library that emphasized publication covers that commemorated the day. Reading this book, published to accompany an exhibition by the same name at the Ian Potter Museum of Art, made me wish that I had been able to visit Melbourne during this exhibition (14 August - 4 November, 2009). Reading the book is the next best thing.

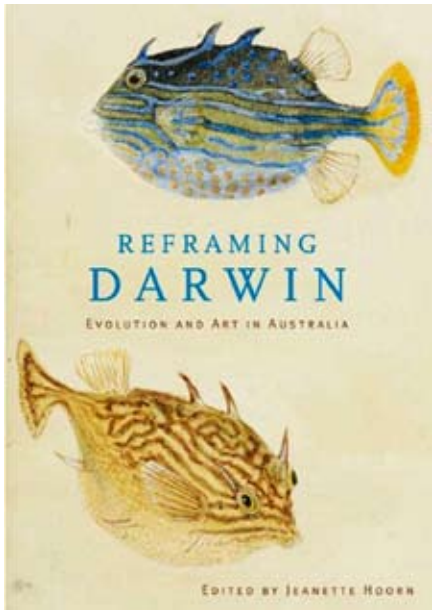
This unusual exhibition takes subjects that are well-known and shows unexpected and some heretofore unexplained connections with Darwin's ideas. The helpful Introduction, "Reframing Darwin: *Beagle* to Bioethics", by the guest curator, Jeanette Hoorn, gives a taste of the extraordinary nature of the chapters to come. The contributors are all wonderfully qualified to render their particular subjects. What a pleasure it would have been to attend an opening with all of them present!

Anyone acquainted with Darwin's five-year *Beagle* voyage has marveled at the work of the artists who accompanied the voyage. That the best-known of these, Conrad Martens, settled in Australia, is that continent's good fortune and a large number of originals from the voyage can be seen in various collections around the country. Elizabeth Ellis discusses his life during and after

the voyage in Chapter 2, "Rio to Valparaiso: Conrad Martens and the *Beagle*".

Many aspects of the voyage form the basis of other chapters. Darwin's enlightened views of slavery and his friendship with the Beagle's first artist, Augustus Earle, based on their similar views of this practice, are the subject of Chapter 1, "Slavery, a 'Scandal to Christian Nations': Charles Darwin, Augustus Earle and the Compass of Morality". Earle, much older than Darwin and "the first professional artist known to have travelled to all five continents" (p. 27), figures in Darwin's life on several subsequent occasions.

In Chapter 3, "Syms Covington: A Character from the Margins", Roger McDonald, the author of *Mr. Darwin's Shooter*, discusses some of his thoughts about writing this book that brought attention to Darwin's servant, a person largely ignored by Darwin scholars. The author brings the creation/evolution debate into his fanciful account of their relationship. This debate figures prominently in other chapters; as the reigning controversy of the age, it must.



Darwin was not focused on collecting when he was in Australia because by then he had no way of sending specimens to England, as he had done previously, and there was no room on the small ship for much excess. He made his usual keen observations but in reality he was much like a tourist, seeing landforms and people and having a great social time in this British colony. As such, and because his travels were restricted to very few places, he missed most of the great biological diversity that had for decades been bringing wonder to Europeans who set their sights to discover it. In Chapter 4, "From Molluscs to Monkeys: Darwin and Early Australian Biology", Danielle Clode traces some of this history and makes clear that Darwin in his subsequent studies used Australian diversity to a great extent in forming his thoughts.

Chapter 5, "Baldwin Spencer: Evolution and Melbourne University", traces Spencer's life, showing the varied parts he played in bringing evolutionary theory in aspects both brilliant and misguided to his prodigious work through his position at Melbourne University from 1887 until his death in Tierra del Fuego in 1929; "where he had been reading Darwin's *Beagle* diary as his guide" (p. 81). The story of Frederick McCoy and his influence on Australian thought is told through examples of museum exhibitions that were presented in ways to keep the exalted place of the human species in nature firmly in the minds of the viewers. He appears again in Chapter 6, "Garden Islands: The Botanic Garden and Darwinian Thought in Colonial Australia". In this chapter Richard Aitken traces the long history of gardens in Australia with their ties to places and people throughout the world. Attitudes following 1859 among those associated with Australian gardens, both opposed to and accepting of Darwin's ideas, are included. The same controversy concerning the place of man is the theme of Ted Gott's Chapter 8, "A Gorilla for Melbourne". The rich history and many implications of the exhibition of Emmanuel Frémiet's bronze statue, *Gorilla Carrying Off a Woman*, and the subsequent mounting of a gorilla family authorized by McCoy, is presented in the context of this worldwide controversy. Jeanette Hoorn, in Chapter 7, "Tom Roberts' Portrait of Charlie Turner and Darwin's *Expression of the Emotions in Man and Animals*", explores the relationship between this portrait and ideas presented in Darwin's book informed by her long-standing study of the artist.

John Gould, the British ornithologist who first called Darwin's attention to the mistakes he had made in organizing his finch collections from the Galapagos, illustrated and described (with his wife,

Elizabeth) Darwin's bird collections for Darwin's *Zoology of the Voyage of HMS Beagle*. After producing successful European bird publications, he moved to Australia in 1838 where he could observe the fascinating birds of the continent first-hand. That his careful observations were a great help to Darwin in some of his most controversial work on sexual selection, is well-told by Jonathan Smith in Chapter10, "Gender, Royalty and Sexuality in Gould's *Birds of Australia*". Here we also get the story of the Goulds' *Birds of Australia* that includes the importance of Elizabeth's contributions. In Chapter 9, "Scientific Pursuits, Colonial Contexts: The Works of Louisa Anne Meredith", Amelia Scurry presents this remarkable woman's 50-year documentation of Australian natural history and culture.

Alex Taylor's Chapter 11, "Wolseley's Lines", and Barbara Creed's Chapter 12, "Is Evolution Over? Art and the Post-Darwinian Body", round out the unusual nature of this book. Looking at the illustrations, I am reminded of the idea that one cannot really appreciate a work of art until one sees the original. What one sees in the book makes one want to search out the originals. Wolseley's work is not difficult to look at and often it is beautiful; it always tells the "truth". Artists in the final chapter show a more disturbing "truth" that does not comfort. This exhibition had something to interest every viewer.

Janice Coffey Swab
Meredith College
Raleigh, NC, USA

A Meeting of High Art and Public Science

Soul of the Desert. By Philippa Nikulinsky and Stephen D Hopper. Fremantle Press, Fremantle WA. 2011. 184 pp. ISBN: 978 1 921 88864 9. AU$45.00 (paperback)

Both anticipation and trepidation ran high when *Soul of the Desert* arrived in the post. Anticipation because a book by Nikulinsky and Hopper combines some of the highest artistic and intellectual resources residing in that ever so fair western third of Australia. Trepidation because my first encounter with Philippa's work was her book *Western Australian Wildflowers in Watercolour* (1980). I had great expectations of seeing the spectacularly rich colours of the flora. I was disappointed by a colour palette that was so muted I could scarcely recognise well known species. So, when the *Soul* arrived, I didn't know what to expect.

So when the wrappers came off of the *Soul*, my delight was palpable when brilliant red eucalypt flowers (Yilpiri or Giles' mallee (*Eucalyptus ramelliana*)) amongst strong blue-grey green leaves and red branchlets nearly jumped off the cover. I could relax and enjoy the 64 + plates to come.

Nikulinsky's paintings are exquisite. Their composition so realistic that one scarcely is aware that it is paper and ink in front of one and not a real specimen seen in the bush. Given the complexity of many of the images, this is no mean feat. Take for example (and there are many to choose from) plate 27: 'Splendid everlasting (*Rhodanthe chlorocephala* subsp. *splendida*) Wanderrie grass(*Eriachne* sp.)'. Here the thin wiry stems of each species are delicately interwoven at the base while, from just above the base, the daisy lies on top of the grass. A lone 'young' green stem of grass sneaks in toward the right, just as might happen as you grasped a collection from the ground.

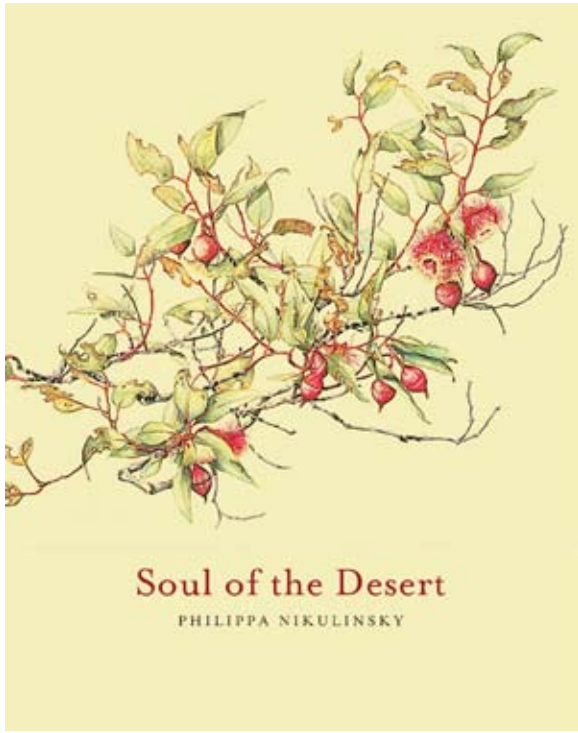
Attention to detail is a hallmark of Nikulinsky's work. It is not the occasional 'botanical dissection' on some plates, but rather the accomplished handling of texture and colour that imparts clear images and feelings as if one were seeing the real thing. There is more realistic detail in the images in the *Soul* set than was the case in the 1980 *Watercolour* set, but it is not photo realism that Nikulinsky produces, but botanical accuracy where it is needed and artistic feeling where required. With the availability of high resolution photography, it is not for the painter to try to compete with the pixel machines, but rather to capture what pixels can't, and Nikulinsky does this exceptionally well.

The book is divided into three parts. The first called 'Deserts through Time' is an essay by Hopper covering Origins, Relative Geological Age of Deserts, Desert People, European Impacts, and Soul of Australia's Deserts. Here Hopper presents a very compact, but easily readable for

the non-specialist, account of these subjects.

The second part is a short presentation by Nikulinsky on how she produces a painting. It is a glimpse into the world of the artist, but it enriches one's appreciation of the plates when one reflects on the detailed and prolonged work required to end up with such fine works.

Part three, 'The Artwork', consists of six sub-chapters, each with a two page introduction by Hopper setting the scene of the physical landscape and aspects of lives of the Indigenous people who live there and use the plant and animal resources. The sub-chapters cover Ranges and Rock Outcrops, Plains, Dunes, Wetlands, Widespread Plants and Animals, and Diversity Explored. The art plates follow as two page spreads. On the lower left is the caption with common and scientific names as well as Indigenous names where known. A few lines of text describe some interesting aspect of the species: use as habitat by native animals, which are sometimes also illustrated, historical references to the region or the botanical history of the species, or Indigenous uses. On most left pages there is also a small secondary painting in the upper left corner. It usually has a caption of the names of what is painted, but if the image contains an animal, then for some reason, only it is named and the plants aren't, though often they could be. When the plants are the same as in the main image on the right page, fair enough, but when not, it is frustrating not to find their names as well.



There are a few strange elements to the publication. The cover misspells Nikulinsky's name. The publisher's page calls this a 2011 *reprint* of the hardcover version published in 2005, but the publisher's webpage calls it a 'second edition' and the picture of the cover has the spelling mistake corrected. A noticeable number of the plates are different from the rest in that they are either using a different style of presentation, which doesn't sit well with the rest, or they had to be rushed to meet a printing schedule – they have unfinished line work amidst the colour work. Sometimes these pencil-drawn lines are just on the edges of the material in the plate, while at other times it is a leaf or branchlet scattered amongst the completed sections. With most of the plates so evenly and beautifully finished, I am left wondering what was going on. The sense of haste was heightened when on plate 62 there are at least two eremophilas that are unlabelled.

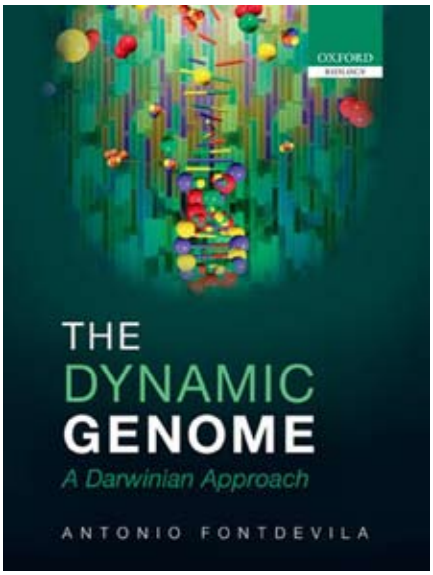
The bibliography at the end is rich in the diversity of material it will introduce the reader to. These are mostly not referred to in the text, though a few are not. Given the density of information is so high, and the readership is most likely to be non-specialists, it might have helped if the references could have been broken into groups such as 'geology', 'biology' and 'human history'.

These are but minor quibbles. I enjoyed reading the text and studying the plates and happily recommend it to those who are curious about our deserts and want to take a most beautifully presented visual and textual tour and want to enjoy a great visit without the heat, dust, flies and spiked tyres.

Roger Hnatiuk
Cook, ACT, Australia

The Dynamic Genome: A Darwinian Approach. By Antonio Fontdevila. Oxford University Press, Oxford. 2011. 212 pp. ISBN: 978 0 19 954137 9. AU $95.95, NZ $99.99 (hardback)

A feeling of familiarity overtook me when I first picked up this nicely presented, conveniently-sized volume. The subtitle, *A Darwinian Approach*, provided the clue to this. It is not long since I read *The Plausibility of Life. Resolving Darwin's Dilemma* (Kirschner and Gerhart 2005). The authors of both books claim audiences ranging from the professional biologist to the scientifically literate scholar, even extending in the case of Kirschner and Gerhart to the lay public. The shared underlying theme of these two very different works is completion of the Darwinian model of evolution: in effect the updating of the Modern Synthesis to include recent contributions from molecular and developmental genetics.



In *The Dynamic Genome*, Fontdevila has achieved what many would consider impossible and very few could even attempt with any hope of success. He has managed with great vision to encapsulate disparate up-to-date lines of evidence bearing on the organization and function of the genome right across the 'boundaries' imposed historically by separate developments in the microbial, plant, animal and medical fields. Fontdevila acknowledges time on study leave away from his home institution while putting the book together, and the reader can follow many traces of host laboratories in the diversity of studies integrated here into a complex but cohesive framework.

Chapter 1, 'The Dynamic Genome: a General Introduction', describes the genome as a dynamic entity through time, including size and its correlates; duplication as a major mechanism for incorporating new functional genes; expansion through transposition; structural, including copy number, variants; the transcriptome and transcriptional complexity. Chapter 2, 'Unity of Body Type', deals with body plans and the quest for ancient (deep) homologies; homeotic mutations and gene function; homeobox genes in crustaceans and flies; vertebrates as upside-down arthropods; insect wings from gill-like appendages; gene control networks and homology/non-homology in the development of the eye in various groups; homologies in fish and tetrapod limbs; compartmentalisation in development. Chapter 3, 'The Genome is Mobile', includes the discovery, types, structures, silencing and invasive patterns of Transposable Elements with excellent coverage of the early plant work in this field; chromatin modification, recombination and exonisation; transposition and insecticide resistance; exon shuffling; retrotransposon mediated transduction; hybridisation in relation to genome reorganisation. Chapter 4, 'The Horizontal Genome', focuses on sympatric versus allopatric speciation; allopolyploidy, again with appropriately heavy emphasis on plant studies; lineage sorting/introgression in gene phylogenies; examples of horizontal gene transfer: Legionnaire's disease, endosymbiotic origins of organelles, angiosperm mitochondrial DNA. Chapter 5, 'Recasting Darwinism: from Darwin to the Genome via the Modern Synthesis', starts with an historical overview, covers the tenets and omissions of the Modern Synthesis, reviews the multiple origins of genetic variability, and covers genetic assimilation and developmental plasticity. Table 5.1 presents a valuable summary of the comparative positions of Darwinism in its original form, the Modern Synthesis as originally defined, and current evolutionary thought.

The illustrations, particularly the colour plates, are generally of a very high standard. Most of the black and white figures have been redrawn from original journal articles so as to be unusually

uniform in style. It is unfortunate (although understandable in view of the saving in production costs) that the colour plates are grouped rather than being placed in context. Some of the black and white text figures are repeated in colour. In certain instances, such as Fig.1.13a and especially Fig. 5.7, the black and white figure closely associated with the text is almost uninterpretable, while the colour version is clear and informative. The Index is nicely inclusive and proved very useful in cross-referencing specific topics raised in different contexts.

The coverage, logical planning and science of *The Dynamic Genome* are excellent, but who will use it and for what purpose? Fontdevila states in his Preface (p. x): "I use a precise and not overly academic language, and provide a comprehensive glossary to clarify every scientific term. …In summary, this book is intended to be of value to graduate (as well as senior undergraduate) students not only in providing them with putative solutions on controversial issues in Darwinian Theory but also, and more importantly, by explaining how and why these controversies exist. But it will also find its way to a postgraduate and scholar readership (evolutionists and non-evolutionists alike),..." Unfortunately these claims are not fully justified. The language used is not always precise and is sometimes awkward. The glossary is not fully comprehensive (nor always accurate). These problems have clearly been exacerbated by poor editing/proofing that has let both the author and Oxford University Press down badly. Literally scores of minor errors mar the book.

Awkward expression often causes the reader to pause and backtrack. For instance, the statement that "Centromeres and telomeres….are *defined* (my emphasis) by a heterochromatic structure", (p. 94) is inadequate, and confusing to the reader in relation to the following sentences and the statement two paragraphs later concerning telomere structure: "This distal part of the chromosome consists of short tandem repeats attached to proximal stretches of heterochromatin." Unequal recombination, Glossary (p. 192), we are told: "Usually refers to the incorrect pairing of two homologous sequences that ensues by recombination to duplications and deletions". Many peculiarities are trivial, such as "Posterior experiments have identified…" (p. 62); "… Mayr studied the distribution and variability of these species, noticing immediately that sea and mountain ranges were often boundaries between sister species, as their fellow precursors did several decades earlier.", (p. 119). Much more serious is the problem when the writing leads to error, as in the case of different species of wingless Pimelia beetles "…occupying *both* sides of many Algerian rivers." (p. 119, my emphasis), whereas the point here is of course that different species are often separated by rivers and occur on different sides, not both. The definition of Homeotic mutation, Glossary (p. 189) makes no sense at all: "A class of mutation that transforms a structure of an organism into another organism's [sic] structure (e.g. antenappedia [sic] homeotic mutation transforms the antenna into legs in Drosophila)", mixing singular and plural (compare picture and caption, Plate 2). In a number of instances non-English words appear for no logical reason (e.g. Table 4.2; Plate 7 caption; p. 189). The definite article is often used where it would generally be omitted (or in other instances replaced by the indefinite) e.g. "… it could not repress the Distal-less in the leg rudiments…" , (p. 61); "…a unity of type … which demolished the independent creation…" (p. 162). Some complex compound-noun constructions caused me momentary hesitation (e.g. "…sister-chromatid mitosis segregation…", p. 94). Individually, these latter minor faults would present little or no problem to the reader already expert and confident in the subject, but I think that here they are sufficiently numerous to irritate and to hinder communication.

Assumptions concerning the background knowledge of readers appear uneven from chapter to chapter. Perhaps sections of the book written at different times were not adequately integrated or reviewed for consistency. As examples, heterochromatin is shown as 8% of the genome in Fig. 1.1 but is neither listed in the figure caption nor defined in the Glossary, although invoked in detail on p. 94. Familiarity with binomial, Linnean nomenclature is assumed in Chapter 1 without question (e.g. see Tables 1.1 and 1.2. It is therefore seems somewhat out of context to find on p. 73 "…the 'dull' *D. melanogaster* appearance (the fruit fly's scientific name…)" The Glossary, if it were to be truly comprehensive, might

have included autopod (necessary in discussing origins and homologies of the tetrapod limb), heterochromatin, karyotype, sister chromatid, reverse transcriptase, but selection of glossary items must clearly be decided in relation to the target readership.

In considering the questions of style and content in relation to readership, let me quote from the Preface of Kirschner and Gerhart's *The Plausibility of Life* mentioned above. "Even if we had tried to confine the message to professional biologists, we would have had problems. In which subfield would this book be understood? If it were addressed primarily to those who study molecular biology, would the ideas be familiar enough to those who study natural history? If addressed strictly to evolutionary biologists, our assumptions would disenfranchise most molecular biologists, who would find the questions peculiar and the examples exotic. We decided that a common, straightforward vocabulary was essential just to reach scientists as a group". I think that this view encapsulates the problem in Fontdevila's writing: the target audience was not identified with sufficient precision at the outset to facilitate consistency of presentation.

In summary, *The Dynamic Genome* presents, in terms of scope and analysis, a truly remarkable compilation of microbial, plant and animal studies leading to a stimulating and satisfying account of the mechanisms of evolution as currently understood. This book would, in my opinion, form an excellent base for a senior undergraduate/graduate level discussion series. It will be a splendid resource for those teaching advanced courses involving evolutionary theory. To get full value from *The Dynamic Genome* demands much of the reader, and a background of at least some molecular biology will be a great help.

Reference

Kirschner, M.W. and Gerhart, J.C. (2005). *The Plausibility of Life. Resolving Darwin's Dilemma*. Yale University Press, New Haven and London.

John Thomson
National Herbarium of New South Wales
Sydney, Australia

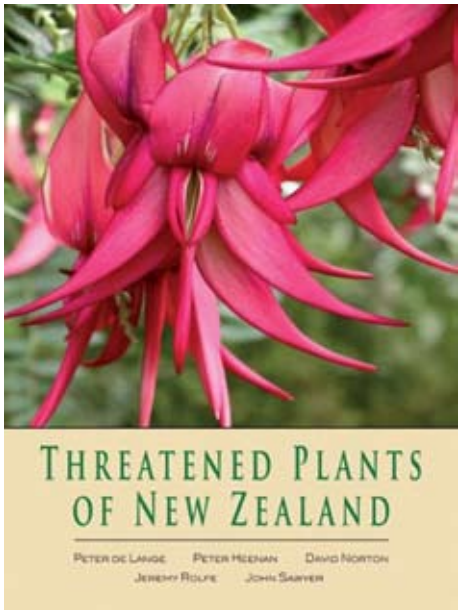
Threatened Plants of New Zealand. By Peter de Lang, Peter Heenan, David Norton, Jeremy Rolfe and John Sawyer. Canterbury University Press, Christchurch. 2010. 471 pp. ISBN 978-1-877257-56-8. NZ $99.95. (hardback)

Threatened Plants of New Zealand is a beautiful and highly relevant reference book for those working with the New Zealand flora and/or involved with threatened species. The publication continues an enviable, New Zealand tradition of providing comprehensive information for all threatened plants in one place to ensure rapid and easy identification.

The introduction briefly covers the current state of knowledge of the origins, international significance, diversity and level of endemism of the New Zealand flora. The authors then outline the nature of rarity and give an exhaustive and superb account of the threats that affect the New Zealand flora including habitat loss, predation, competition, reproductive failure and ignorance. Real examples are given and, as with the remainder of the text, excellent photographs are provided. Next an account of the New Zealand Threat Classification System is provided which is easy to follow. Several examples are given and an analysis is provided of the distribution of the threatened flora across habitat types, plant types and some families. How the threatened flora is managed and what the future looks like is also touched on. The introduction closes with a brief overview of how to use the book and a list of useful acronyms.

From the introduction we go straight into the accounts of the taxa themselves grouped together by threatened plant status: Extinct and Threatened. Threatened has three colour-coded subgroups (which extends to the dots on the maps): Nationally Critical (red), Nationally Endangered (green) and Nationally Vulnerable (blue). Within each of these categories taxa are arranged alphabetically by scientific name. Each species is treated in a similar fashion over two pages in a single opening. Descriptions, photographs or, in one case, an illustration, as well as notes on distribution (with a standard map), habitat, threats and recognition are

provided for all taxa. The descriptions are usually new and based on herbarium and living material, as well as images. Occasionally descriptions are based on already published accounts and, if so, are referenced accordingly. Flowering and fruiting times are given. The section on recognition provides data on key identification features as well as notes explaining how to distinguish taxa from similar species found in New Zealand. The sections on distribution, habitat and threats are straightforward, succinct and informative. The images are a highlight of the work with photographs (usually two or three per species) of living plants usually illustrating both habit and key features. If images of living material are unavailable, e.g. for taxa that are Extinct and in a few cases Threatened, then photographs of herbarium specimens or a colour painting are provided. The captions for the images are very informative and indicate key features etc. Common names are provided if in use (it is assumed) and the authors are to be commended for not coining novel common names if these are not in use or known. The glossary is excellent.



I do like this book and think it excellent but, in producing a product like this, there are always alternative ways the data could have been presented and additional information that could have been included. Below are some ideas and suggestions.

With any book focusing on identification there is always the issue of how to arrange the taxa: alphabetically, by groups, by genus or family, by area, threat status etc or a combination of some of these. Here the authors have opted to list them alphabetically (by scientific name) under each of the four threat categories. The only places where all of the names are listed together are in the table of contents and the index (and then without family). Given that one of the main aims of this book is to help with the recognition and identification of rare and threatened plants, it can be difficult to determine what you have and compare it to similar taxa. A good example concerns the listed species of *Olearia* found on the Chatham Islands. There two closely related species are found together but are widely separated in the text. Another example would be those difficult groups for non-specialists, such as the species-rich grass and daisy families. For most people it is easy to identify these families but to go any further can be difficult. Grouping all species of each family together might help identification and drawn attention to the families and genera with large numbers of threatened species. An appendix or table in the introduction ordered by threatened category would give the reader a good idea of the size of each group as well as the number of species in each category.

In the section on recognition, the authors indicate how to distinguish the taxon from other taxa in New Zealand but it would have been very useful if close relatives had been noted together with an indication of whether these taxa are in New Zealand or not. This would indicate to the users just how significant the taxon is to the flora of New Zealand. This information could be expanded to genera and would be especially important if the species is the sole representative of a genus or family globally or in the New Zealand Flora. In addition, a list of recently used synonyms or alternative names in use elsewhere would be useful (e.g. for *Hebe, Pterostylis* and related genera).

There is no discussion on the classification system used or a link to the excellent *Ngā Tipu o Aotearoa - New Zealand Plant Names* website (Allen Herbarium 2000+). Given that the current classification system does change the family placement of many taxa of high conservation

value it would have been prudent to include this information.

Ideally the contents of this book should be available as a web based product, and freely available. This can be done as a pdf document, dated as revised, or as a searchable database. Having the data presented in an easily accessible and free format can only help preserve the flora. It would also offer the possibility of expanded lists, public interaction, and up to date data.

Books are not the most appropriate place to make new combinations. These are best made in scientific journals where they can be more easily tracked by the scientific community and so not overlooked, especially for workers outside the country. With that said, the combinations made in this book have been picked up by both *Ngā Tipu o Aotearoa - New Zealand Plant Names* (Allen Herbarium 2000+) and *IPNI* (2008). That aside, I think the scientific community would have been better served with a series of small papers describing the issues more fully. These combinations would be better understood if included as part of a larger treatment, or if that was not possible, as a small publication for each species or genus. Also nomenclatorial errors etc are more likely to be detected by journal editors and reviewers.

The Qualifiers listed on page 31 should be added to abbreviation list on page 38. Having enthusiastically dived straight into the book, it took me a while it find what these actually were.

In conclusion I recommend this book and am very pleased to have it on my bookshelf – and having it a little longer than I should for a review has forced me to revisit it a few times which has been a pleasure. It is an impressive piece of work, especially the descriptions, the associated data and the photographs! The authors serve as role models in getting data and good identification tools on threatened taxa to botanists and the public, much more important given that most floras are out of date and often do not include newly described and often rare taxa.

References

Allan Herbarium (2000+) Ngā Tipu o Aotearoa - New Zealand Plant Names Database. Landcare Research, New Zealand. http://nzflora.landcareresearch.co.nz/ (accessed 4 May 2012).

IPNI - The International Plant Names Index (2008+). *http://www.ipni.org* (accessed 4 May 2012).

Marco Duretto
National Herbarium of New South Wales
Sydney, New South Wales

A triplet of Northern Australian plant books

Common Plants of Australia's Top End. By Diane Napier, Nicholas Smith, Lesley Alford and Jacinda Brown. 77 pp. ISBN 978 0 980 85252 3. RRP AU $12.95 (paperback).

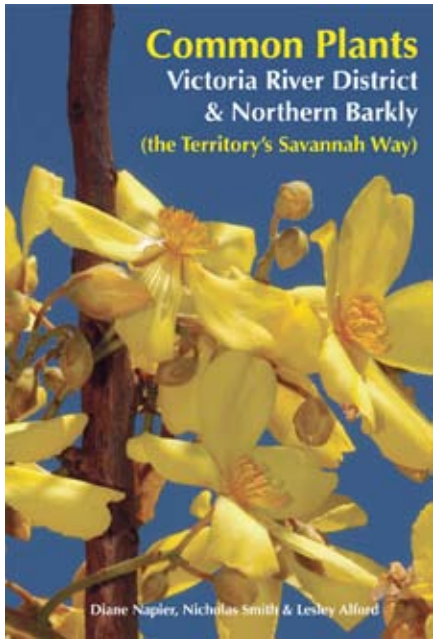
Common Plants Victoria River District and Northern Barkly (the Territory's Savannah Way). By Diane Napier, Nicholas Smith & Lesley Alford. 77 pp. ISBN 978 0 980 85253 0. RRP AU $12.95 (paperback).

Common Urban Weeds of North Australia. By Michael Schmid and Nicholas Smith. 77 pp. ISBN 978 0 980 85254 7. RRP AU $12.95 (paperback).

All three published in 2012 by Gecko Books, South Australia.www.jbbooks.com.au

Have you ever gone on holiday thinking that you really will have a complete break from botany, that you won't take a guide to the plants of the region, that you will refrain from boring your companions with things botanical and become engrossed in the local culture and admire the general scenery? And then you find yourself driving down a road wondering what that common thing is that's growing along the roadside. Well, if you've done that and you're in roughly the upper half of the Northern Territory, help is at hand. Boxes full of copies of three new plants books arrived in Darwin in late May for distribution to bookshops and other local outlets. Each of the three books (or booklets) consists of 77 pages (including the numbered inside of the back cover), are soft cover, measure about 170 by 145 mm and so comfortably fit in the car glove box, and are full of good-quality, colour photographs which should allow accurate identification of all included species.

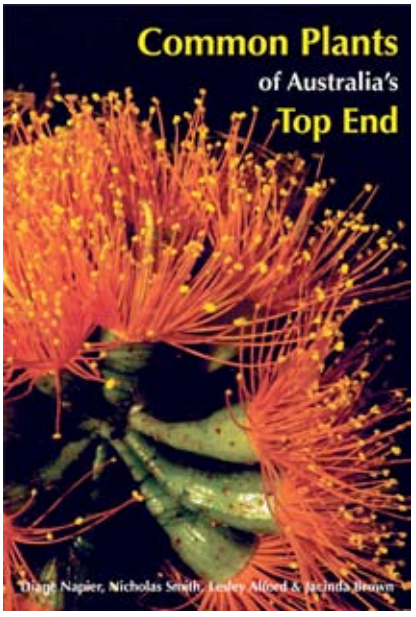
The two books, *Common Plants of Australia's Top End* and *Common Plants Victoria River District & North Barkly (the Territory's Savannah Way)*, are companion volumes, each covering 37 species (without overlap), with two pages per species, one mostly devoted to text, the other to photographs. The *Top End* covers the area of the Northern Territory roughly north of Katherine, while *Savannah Way* encompasses the area below Katherine south to about Renner Springs. In so doing, *Savannah Way* covers the approximately 125,000 km^2 of land which comprises the Victoria River District *plus* the neighbouring Northern Barkly region. As such, you may well be thinking that if, combined, the two books only cover 74 species then they can't be of much use. Well, to the ardent taxonomist bent on trying to name everything they come across, obviously not. However, to the generally "curious" traveller or resident –and the botanist who should be taking a break – I think the selection of plants is very good. Those selected *are* the common plants, native and introduced, which are encountered when travelling the roads in the northern N.T.



In both of these volumes species are alphabetically arranged by genus and the text for each species is laid out under set headings, i.e. scientific name, family name, summary, description, flowering time, habitat, distribution, and the etymology of the scientific name. I've already said the photographs are of good quality, what about the text? Well, that's very good too. I particularly like the snippets of information in the individual summaries provided for each species. I feel they will be of interest to many readers; and if they are not they should be! Here are a few examples. Under the entry for Bullwaddy, *Macropteranthes kekwickii*, it is noted that "These impenetrable trees have challenged explorers and drovers alike. John McDouall Stuart's fifth expedition efforts to the north-west were thwarted … by the thick bullwaddy scrub … Similarly, drovers successfully [negotiating] the Murranji Stock Route were revered, as the bullwaddy thickets and the scarcity of water gave this route a reputation for being one of the most treacherous. As many as 11 drovers died attempting [it]." (*Savannah Way*, p. 50); under the entry for Ironwood, *Erythrophleum chlorostachys*, a species well-known to be fatal to livestock ingesting the foliage, that "brushtail possums and some birds can tolerate the toxicity" (*Top End*, p. 30); for Lancewood, *Acacia shirleyi*, mention is made of its use in the construction of fences and that examples can still be found "in historic yards on stock routes and stations" (*Savannah Way*, p. 6); communities of *Eucalyptus tintinnans*, what locals call Salmon Gum, are a "vital habitat" for Gouldian Finches, hollows in these trees being "a nesting refuge for the remaining populations in the Northern Territory" (*Top* End, p. 38); and finally, for those thinking about getting out the camp oven, that wood from both *Hakea arborescens* and the Snappy Gum, *Eucalyptus brevifolia*, makes a "hot fire with long-lasting coals" (*Savannah Way*, p. 24). From my own experience I'd make use of the Red Gum, *E. camaldulensis*, but for this species, which is included in *Savannah Way*, no mention is made of using the wood as a fuel. Instead, we read of locals calling it a "widow maker", a reference to its propensity to drop limbs unexpectedly.

There are no references in either of these books and nor are there any notes about the authors. I suspect it was felt more important to include as many species as possible rather than note such things but, while this is commendable, I believe the inclusion of one, and preferably both sets of information, are important if a reader is to have confidence in the accuracy of a publication. I can assure potential purchasers that these books are a

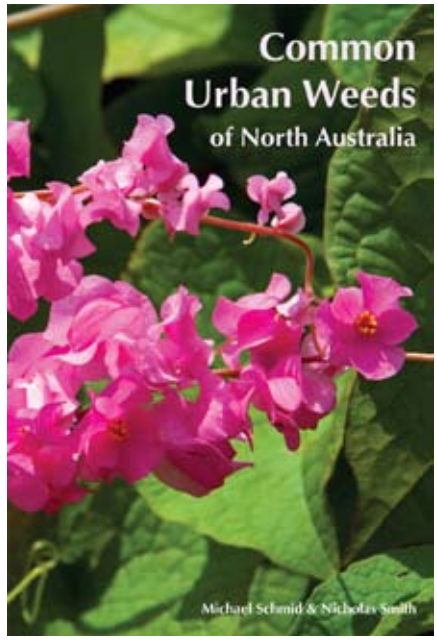
reliable source of information but, believing that a brief note on the background of the authors is appropriate, and surely of interest, I provide a few notes. Thus: Diane Napier, grew up on a cattle station in the VRD, holds a Bachelor of Applied Science in Natural Resource Management from Adelaide University and for 18 years has worked as a plant ecologist and field botanist in the N.T. Public Service; Nick Smith once worked at the State Herbarium of South Australia and the N.T. Herbarium and, among other things, has published in the field of ethnobotany and authored a guide to the noxious weeds of northern Australia (see below); Lesley Alford, also with a Bachelor of Applied Science in Natural Resource Management from Adelaide University, has worked for various organisations in the N.T., including ten years with Greening Australia, and continues to work in the field of vegetation management through her own business; Jacinda Brown works as a freelance environmental photographer and is author of children's natural history publications.



Having halted for the day, a traveller pretty well anywhere in northern Australia, whether they camp in the bush or stop in a settlement, will encounter weeds, and that's where the other book, *Common Urban Weeds of North Australia*, will come in handy for those pottering about their temporary abode. Actually, if happen to be at the designated camping spot at Wolf Creek Crater, they may also be doing more than pottering; swearing and wishing they hadn't hopped out of the vehicle in bare feet may be a fair scenario. Some years ago, without first looking around, I dropped my bedding on the ground when unpacking the vehicle at this very place, only to find on picking it up that it was covered in burrs from Khaki Weed, *Alternanthera pungens*. I subsequently spent about half an hour clearing plants from the immediate vicinity. I was reminded of this little episode as Khaki Weed is one of a number of gazetted noxious weeds which appear in this work, alongside the many non-gazetted minor weeds of urban gardens, such as *Euphorbia heterophylla*, *E. hirta*, *Oldenlandia corymbosa* and the three daisies, *Cyanthillium cinereum*, *Emilia sonchifolia* and *Tridax procumbens*. The previous six species all occur in our garden here in Palmerston, and a count indicates that at least 15 of the approximately 80 species covered in this book have been, or still occur, in it. During the wet season I could readily add another five or so species to the list of 15 by simply walking from home along University Avenue and Chung Wah Terrace to the shopping centre. Going further afield into Darwin I reckon I could also easily encounter most of the species included in this book, which is a long-winded way of saying that anyone wishing to identify a backyard weed in the Darwin area and elsewhere in northern Australia is likely to find it here. Generally they should also be able to identify the species with confidence, there usually being just the one species, well-illustrated with colour photographs and appropriate notes, per page. I say "generally" as there are a few tricky blighters, mostly sedges and a couple of grasses, to contend with, while in the case of Snakeweeds, members of the genus *Stachytarpheta*, no attempt has been made to identify individual species. In a future expanded or revised version I also suggest that *Eleutheranthera ruderalis* be considered for inclusion. In the last five years or so it has become the most common weed at 5 Chemnitz Court and I note from AVH that it is also widely distributed in northern Queensland.

While it is not a companion volume in the way of the above books (it has a different format and a different publisher to start with), *Common Urban Weeds* marries well with Nick Smith's recent publication, *Weeds of Northern Australia: a field* guide. [reviewed elsewhere in this newsletter: ed] That work concentrates on gazetted environmental

weeds, only some of which occur in *Common Urban Weeds*, and unlike the latter also has advice on how to control, if not eradicate, them. It also happens to tell you how to differentiate between the species of *Stachytarpheta*.



As with the previous two volumes no references are included in this book but various botanists are acknowledged for their advice. Similarly, there are no notes regarding the background of the two authors. Michael Schmid, an NTU graduate, worked as a Regional Weeds Officer for nine years with the Weeds Management Branch of the Department of Natural Resources, Environment, the Arts and Sport here in the N.T., while Nick Smith's background has already been noted.

You may have gathered that I like these books. It isn't just because they are nicely produced, informative and very reasonably priced, but also because there simply aren't enough of this type of book available for the general naturalist or "curious" traveller. The authors and publisher deserve our congratulations for bringing them forth!

Why, may I ask, don't herbaria produce such books? Easy and quick to compile, relatively cheap to produce and containing interesting, readily accessible material they are surely one way taxonomists can engage with the broader community and, in so doing, promote the importance of their work. That they don't is unfortunate.

And finally, if you are wondering what's adorning each of the front covers, then I can tell you that *Savannah Way* has Kapok, *Cochlospermum fraseri*; *Top End* has Scarlet Gum, *Eucalyptus phoenicea*; while Coral Vine, *Antigonon leptopus* is on the front of *Urban Weeds*.

Philip Short
5 Chemnitz Court
Driver, Northern Territory, Australia

Weeds, Weeds and More Northern Weeds

Weeds of Northern Australia: A Field Guide. By Nicholas Smith. Environment Centre NT Inc. 2011. 120 pp. ISBN: 978 0 646 566 894. AU$ 25 (paperback)

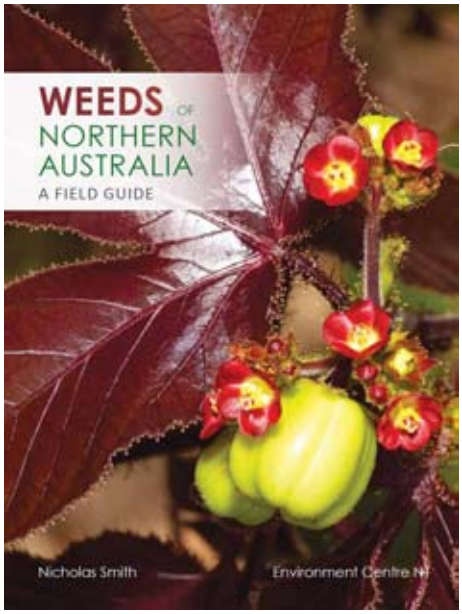
This field guide is the third in a series of very useful books on weeds by Nicholas Smith. The 1995 version was a *Field Guide to Environmental Weeds of the Northern Territory, Australia*, this was followed in 2002 by *Weeds of the Wet/Dry Tropics of Australia*. *Weeds of Northern Australia* is the latest reincarnation. Here the scope and range of species has been expanded and the layout has been changed.

If you are interested in identifying weeds, for whatever reason, then this handy, A5-sized book is the book for you. In fact I would recommend a copy for the car and one for home or office. This field guide is designed to help you readily identify the common weeds in Northern Australia without a formal knowledge of botany. Correct identification is the next step in weed control after observation and collection. Methods of plant collection and useful references are provided at the end of the book. Since a number of these references are also online, some URL's would have been a welcome addition, particularly as several of the references given are available in pdf format online.

Excluding the introductory, reference and index sections, this book is divided into 5 sections based on plant habit. Each section is readily located by a coloured code on the outer margin, indicating whether, trees, shrubs and herbs, vines, grasses and aquatics. Within each habit grouping, the high priority or 'main' species are discussed first. These

are then followed by brief descriptions of 'others'. A total of 150 species are covered including four (*Boerhavia erecta*, *Mucuna pruriens* var. *pruriens*, *Piper aduncum* and *Striga asiatica*) that have not yet been recorded for Australia. *Cleome rutidosperma* was included in the earlier volume with a note that populations were being eradicated, it seems strange that no mention of this species is included even if by now, it has been eradicated.

A full main page is assigned to each of the 'main' species, although where there are several similar species as for the five species of *Stylosanthes*, then these are treated together and extra space has been allocated for descriptions and photographs. Notes accompanying each 'main' species or grouping are divided into easily digestible descriptions including habit, leaf, flower and fruit features. Notes are provided on phenology, habitat and dispersal methods as well as some more general notes including country of origin. Detailed notes on control are not included as these are included in the introductory section. Here information is clearly presented on land management, physical, chemical and biological control methods. On average these notes on the 'main' species are accompanied by 3-4 photographs, plus line drawings and a map showing the distribution of the species, including extensions outside of the nominated area of Northern Australia. 'Other' species are arranged 3 to a page, each brief description is accompanied by 3 photographs highlighting the main features.



The book finishes with a list of references, a short basic glossary covering essential points, notes on how to collect and the index.

So what has changed from *Weeds of the Wet/Dry Tropics*? Within each section the species are arranged according to scientific name and the common name follows, rather than being arranged by common name. Shrubs and herbs are combined in the one section which seems sensible when many have difficulty in deciding if some plants like *Martynia annua* are shrubs or herbs. In the index both common and scientific names are combined in the one index which I liked. Family names are missing from the index but are included in the descriptions. I missed the section on 'Further weeds of concern' that featured in the previous publication. I and others found this a useful section that enabled us to keep an eye out for garden plants and to evaluate their potential to escape.

Missing, and probably sacrificed to space, were a number of the small keys identifying similar species whose range overlaps. For instance, the three species, *Senna obtusifolia, S. occidentale* and *S. planiiticola* all occur in northern Queensland. In *Weeds of the Wet/Dry Tropics* a simple key was included to distinguish these three species but now only *Senna obtusifolia* is mentioned.

This is an excellent book and a great resource for anyone interested in weeds who doesn't want to carry a large book around.

Betsy Jackes
James Cook University
Townsville, Queensland

Note

Some of Joseph Henry Maiden's botanical texts are available in PDF format on the website of the University of Sydney: http://adc.library.usyd.edu.au/index.jsp?database=maiden&page=home

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: robyn.barker@sa.gov.au

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

Brisbane
Laurie Jessup
Queensland Herbarium
Mt Coot-tha Road
Toowong, Qld 4066
Tel: (07) 3896 9320
Email: laurence.jessup@derm.qld.gov.au

Canberra
Vacant

Cairns
Mark Harrington
Australian Tropical Herbarium
PO Box 6811
Cairns QLD 4870
Tel: (07) 4042 1769
Email: mark.harrington@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
Vacant

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
Peter Weston
National Herbarium of NSW
Mrs Macquaries Road
Sydney, NSW 2000
Tel: (02) 9231 8111
Email: peter.weston@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 http://www.derm.qld.gov.au/herbarium	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/
CNS Tel: (07) 4042 1837 Fax: (07) 4042 1842 www.ath.org.au/		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 Kevin Thiele (PERTH) Kevin.Thiele@dec.wa.gov.au or www.chah.gov.au/	ABRS tel: (02) 6250 9417 fax: (02) 6250 9555 email: abrs@environment.gov.au www.environment.gov.au/biodiversity/abrs/		

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 horticulturalists, collectors and artists in the early documentation of the flora; the renowned (Mueller, Cunningham), and those whose contribution is sometimes overlooked (Buchanan, Wilhelmi).

Only a few copies left!—available only from the Treasurer.

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.

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.

AUSTRALASIAN SYSTEMATIC BOTANY SOCIETY INCORPORATED

The Society

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

Membership

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

The ASBS *annual membership subscription* is AU$45; full-time students $25. Payment may be by credit card or by cheques made out to *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 *Australas. Syst. Bot. Soc. Newslett.*

Contributions

Send copy to the editors. 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 *Australasian 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	Peter Jobson (ENV Australia) 8B High View Road Greenmount WA 6056 Email: peter.jobson@env.net.au	**Book Reviews**: John Clarkson Department of National Parks, Recreation, Sport and Racing, PO Box 156, Mareeba, Qld 4880 Tel: (07) 4048 4745 Email: John.Clarkson@qld.gov.au

Contents

Australasian Systematic Botany Society Newsletter 151 (June 2012)

From the President 1
ASBS Conference Perth 2
From the Editors 3
Articles
Allan Cunningham in Careening Bay, WA 3
It's all in the name 6
Two new postdoctoral positions at NSW 8
ABRS Report 9
David Symon – Plant systematist 10
Book reviews
A *Banksia* album 20
A tale of 1000 watercolours 21
Palm leaves, stems and spines 23
Angiosperm origins and evolution 25
Biological control of weeds in Australia 27
Encyclopedia of tropical plants 29
Microscopic worlds: bacteria, fungi, lichens and plants 31
Water regime for wetland and floodplain plants 32
Floodplain wetland biota in the Murray-Darling Basin 32
An intimate portrait 34
Rare & Curious 35
Reframing Darwin 36
A meeting of high art and public science 38
The dynamic genome 40
Threatened Plants of New Zealand 42
Top End plants 44
Plants of the Savannah Way 44
Common urban weeds 44
Weeds, weeds and more northern weeds 47
Note
Joseph Maiden texts online 48