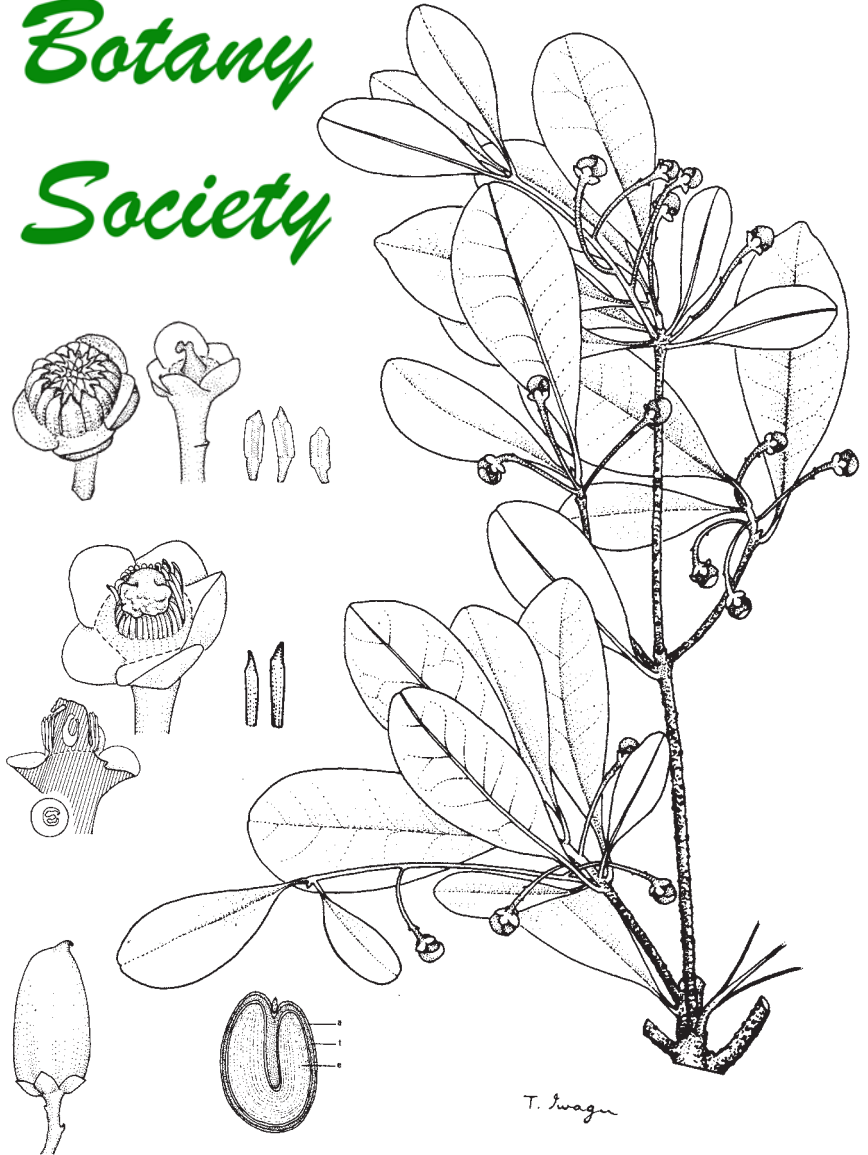


ASBS

*Australasian
Systematic
Botany
Society*



Newsletter

No. 154 March 2013

Price: \$5.00

ISSN 1034-1218

AUSTRALASIAN SYSTEMATIC BOTANY SOCIETY INCORPORATED

Council

President

Bill Barker
State Herbarium of South Australia
PO Box 2732, Kent Town, SA 5071
Australia
Tel: (+61)/(0)427 427 538
Email: bill.barker@sa.gov.au

Vice President

Mike Bayly
School of Botany
University of Melbourne, Vic. 3010
Australia
Tel: (+61)/(0)3 8344 5055
Email: mbayly@unimelb.edu.au

Secretary

John Clarkson
Queensland Parks and Wildlife Service
PO Box 156
Mareeba, Qld 4880
Australia
Tel: (+61)/(0)7 4048 4745
Mobile: (+61)/(0)437 732 487
Fax: (+61)/(0)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: (+61)/(0)7 4059 5014
Fax: (+61)/(0)7 4091 8888
Email: frank.zich@csiro.au

Councillor (Assistant Secretary - Communications)

Ilse Breitwieser
Allan Herbarium
Landcare Research New Zealand Ltd
PO Box 69040
Lincoln 7640
New Zealand
Tel: (+64)/(0)3 321 9621
Fax: (+64)/(0)3 321 9998
Email: breitwieseri@landcareresearch.co.nz

Councillor (Assistant Treasurer)

Pina Milne
National Herbarium of Victoria
Private Bag 2000
Birdwood Ave
South Yarra, Vic. 3141
Australia
Tel: (+61)/(0)3 9252 2309
Fax: (+61)/(0)3 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
Email: Annette.Wilson@environment.gov.au

Hansjörg Eichler Research Committee

Philip Garnock-Jones
David Glenny
Betsy Jackes
Greg Leach
Nathalie Nagalingum
Christopher Quinn
Chair: Mike Bayly, Vice President

Affiliate Society

Papua New Guinea Botanical Society

Grant application closing dates:

Hansjörg Eichler Research Fund:
on March 14th and September 14th each year.
Australian Conservation Taxonomy Award:
on March 14th 2013

ASBS Website

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

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

Publication dates of previous issue

Australas. Syst. Bot. Soc. Newslett. 152 (September 2012):

Printed version: 12th March 2013

Australas. Syst. Bot. Soc. Newslett. 153 (December 2012):

ASBS Web site: 12th February 2013; Printed version: 12th March 2013

From the President

The year is moving apace and there is much to be done. Council has advanced several areas since the last issue of the Newsletter, produced only a few weeks ago.

Embracing our New Zealand membership

In the ASBS business section we see evidence of Council's overtures to support an integration of our Australian and New Zealand activities. David Glenny from the Allan Herbarium, Christchurch has been newly appointed to the Research Committee. Welcome David!

We also have the great news that our 2014 Annual Conference will be held in Palmerston North on New Zealand's North Island. Thank you Jen Tate and team for taking this on with preparations already commenced.

Thanks to Mike Bayly and Ilse Breitwieser for their respective roles in these actions.

ASBS's new Facebook presence

Council agreed to a proposal by Todd McLay and Mike Bayly to launch a Facebook presence for the Society, as reported by Mike below. The Web facility was quickly established and almost as soon as it was announced we had a large number of participants on board and several grants and conferences announced.

While one day the Society may communicate, in a paperless electronic cloud, it is clear that we would lose significantly if we did that now. We have a spread across our membership from those very much at home in this medium (not only the younger) to others who have never

tried this medium – indeed, some may have no wish to try. To be relevant to a changing membership it is critical for any society that it keeps pace with the way its new members in particular communicate. However, as pointed out in the last issue, the Newsletter is seen at this point as the main vehicle for projecting and archiving announcements and articles, a view held by Council and, we believe, a significant portion of the membership. We are paralleling science generally. While projection of peer-reviewed papers is gradually extending to the web, their standard format has not changed. Science has developed a mix of both modern and traditional means of communication, with tools and infrastructure, opinion pieces and discussion groups leading the way to use of the web. Nevertheless, our web presence, may be further improved, e.g. in indexing of the Newsletter articles.

Updating the ASBS Web pages

John Clarkson and Murray Fagg, with the help of Helen Thompson and Anna Monro, have been progressively working through the web pages to bring our site up to date. Some of this work is also reflected inside the Newsletter covers in the standard information pages on conveners, institutional and council office-bearer contacts, and book and past Newsletter sales.

Progress with Newsletter

This issue sees what I hope is the start of a series on what's happening in plant systematics

Australasian Systematic Botany Society Inc.

2013 Membership Fees

These were due on January 1st.

You should have been emailed an invoice for current and any back fees.

Subscription rates:

Ordinary/Institutional members \$45 (AUS)

Full-time students / retired / unemployed \$25 (AUS)

This is also an opportunity to donate to the Research Fund

Prospective Members need to download a membership form from the membership section of the ASBS web site

Please direct enquiries to Pina Milne our Membership Officer

research and documentation and supporting infrastructure in our universities and herbaria. Thanks Jeremy and team at the University of New England for kicking off the series with a very informative contribution.

We have gone a long way to redressing the shortfall in distributing a number of issues of the Newsletter in recent years to individuals and libraries. Thanks go to Juliet Wege in Perth, Pina Milne our Membership Officer, and, in Canberra, Helen Thompson, Annette Wilson

and Brigitte Kuchlmayr for their special efforts to resolve the problem. The Canberra group printed the required numbers in their own personal time, saving the Society a significant expense.

We have engaged a new printer in Adelaide for the Newsletter. Finances dictated that we not produce pre-printed covers and the “on-demand” process meant a choice of a new cover with a glossy finish.

Bill Barker

ASBS Inc. business

Research grants and Research Committee

Applications for the latest round of Eichler grants, as well as those of the second round of the Australian Conservation Taxonomy Award, closed on March 14th. The Research Committee is currently assessing applications. Applicants will be informed of the outcome in the coming weeks and results will be published in the next issue of the ASBS Newsletter.

I am very pleased to record that David Glenny from the Allan Herbarium (CHR) has agreed to join the Research Committee and will start with the next grant round. For those who don't know David, some brief information is available through the Landcare Research website (www.landcareresearch.co.nz/about/people/staff-details?id=Z2xlbm55ZA==). David will strengthen the trans-Tasman nature of the committee, being the second New Zealand member, along with Phil Garnock-Jones. He will replace Bill Barker who, on becoming ASBS President, stepped down after the September 2012 grant round. Bill made an

excellent contribution to the committee since joining it in 2009 and I would like to thank him for his efforts.

One of the conditions of receiving a Hansjörg Eichler grant is that recipients provide ASBS with a short report on their research, at completion of the grant period, for inclusion in the Newsletter. We have been a bit lax in enforcing this requirement and students, especially in the last few years, have not been terribly proactive in producing reports. We are trying to remedy this situation and have started chasing students for outstanding reports. So far the response has been positive and we hope to have some reports in hand for the next issue of the newsletter. For those students that I haven't contacted yet (you know who you are!) you can expect an email in the near future.

Applications for the next round of Hansjörg Eichler grants close on 14th September 2013.

Mike Bayly

ASBS Facebook group

ASBS has recently established a Facebook group. The aim of the group is to facilitate communication between members, as a supplement to our usual avenues of communication, such as the Newsletter or email notifications. It also provides another means of promoting the activities of ASBS, potentially to a wider audience.

The group has been up and running for

a couple of weeks and has already seen a reasonable amount of traffic, including conference information, details of funding opportunities, a PhD studentship, new outputs from the ALA, details of a public lecture by Tim Entwisle, discussions of fern taxonomy, links to interesting blogs etc. Sadly, posts also included a link to an obituary for American botanist Tim Motley, who had a strong interest

in Pacific botany, and passed away recently at the age of 47 (see www.odu.edu/news/2013/3/timothy_j_motley_).

So far the Facebook group has 83 members and a few people actively posting content – thanks to Jim Croft, Leon Perrie, Phil Garnock-Jones and Alex Chapman for getting on board so quickly! We hope this level of activity keeps up. We want to encourage any posts relevant to plant systematics and encourage other interested ASBS members to join the group.

For those familiar with Facebook, our group is set up as an “open” group. That means details of the group are visible to all Facebook users, including the names of all group members and any content they post. You need to be a member of the group to post on the Facebook site, and requests for group membership are assessed by the administrators (at this stage Mike Bayly or Todd McLay); the administrators

will also moderate content as appropriate. We are admitting any current ASBS members to the group, and are also accepting requests from others with a genuine interest in the activities of ASBS. We figure it would be difficult to limit group membership only to ASBS members, given the logistics of assessing who is a paid-up ASBS member and who isn't, and that we might reach a wider group of people this way.

For those already on Facebook, you can find the group by searching in Facebook for “Australasian Systematic Botany Society (ASBS)” or by going to the URL (www.facebook.com/groups/434955569922530/). For those not on Facebook, you would need to create a Facebook account to join in. There are prompts on the Facebook homepage (<https://www.facebook.com/>) about how to do this.

Mike Bayly
(‘Atossa’ *sensu* Lepschi 2012,
Taller Tree of Liff?)

Coming conferences

ASBS 2014 meeting

Mark your calendars for November 2014, when the ASBS meeting will be held at Massey University in Palmerston North, New Zealand.

This will be the second meeting held in New Zealand following the success of the 2011 meeting held in Lincoln.

The Manawatu campus has a long history of biosystematic and phylogenetic research, so we look forward to hearing about the latest advancements and discoveries in systematics research from Australasia.

A field trip to the Ruahine or Tararua Ranges is anticipated following the conference.

Details about the conference dates, registration process, accommodation, and field trip will be forthcoming. If you have any questions about the conference, please contact me.

Jennifer Tate
Conference Organizer
ASBS2014NZ@gmail.com

Australasian Systematic Botany Society Inc.

Society for Australian Systematic Biologists

Invertebrate Biodiversity & Conservation

Combined Conference 2013

“Systematics without Borders”

Venue: University of Sydney

Dates: 1st-6th December 2013

For announcements see: www.systematics2013.org

Articles

The status of *Spilanthes anactina* F.Muell. (Asteraceae: Spilanthinae) in Australia

A.E.Orchard

Spilanthes was described by Jacquin (1760) to accommodate two species, *S. insipida* Jacq. and *S. urens* Jacq., both from the Caribbean. The former is now considered to belong in *Salmea*, while the second was chosen by Moore (1907) as the lectotype of *Spilanthes*. Richard (1807) described *Acmella* as a closely related genus of five species from Mauritius and the Americas, differing from *Spilanthes* in possessing ray florets, but lacking a pappus. Cassini (1822) considered that the characters separating the two genera were insufficiently consistent, and merged the two under the name *Acmella*. Candolle (1836) agreed, but treated the two under the earlier name *Spilanthes*, recognising two sections: sect. *Acmella* and sect. *Spilanthes* (as sect. *Salivaria* DC.). Moore (1907) followed Candolle in treating the whole complex as a single genus *Spilanthes*, recognising sect. *Spilanthes* (as sect. *Salivaria* DC.) with 13 species and 6 infraspecific taxa, and sect. *Acmella* with 26 species and 18 infraspecific taxa.

The most recent revisions of the taxa are those of Jansen (1981, 1985), wherein *Spilanthes* was resurrected, with six species, and *Acmella* retained, with 30 species. In the treatment of *Spilanthes* (Jansen, 1981) four species are considered native to the Americas. These are sister to a single Malesian/Australian species (*S. anactina*), and this group of five are sister to a single African species. The species *S. anactina* is the subject of this paper.

Spilanthes anactina was described by Ferdinand Mueller (1865) from “In insulis sinus Carpentaria”. Two type sheets in MEL in fact describe the locality as Sweer’s Island, but there is no collector or date. Another replicate in K though, gives the collector as Henne. It is known that Dietrich Henne collected on Sweer’s Island in September–October 1861, as part of the maritime search with Landsborough (in the ships *Victoria* and *Firefly*) for Burke and Wills (George, 2009). Bentham (1867) accepted Mueller’s species, and described it

as coming from “N. Australia. Islands of the Gulf of Carpentaria, R.Brown, Henne. Also in Borneo, Barber.”

The Brown specimen cited is in BM (1045665), with an original R.Brown manuscript label: “~~Bidens verbenacea~~, Carpentaria, Islands a, b., Novr. 18 1802.”. This label is stuck to a Bennett label numbered 2118, which also bears another manuscript label “*Spilanthes anactina* F.Muell.” in what is almost certainly Bentham’s hand. On 18 November 1802 the *Investigator* was anchored off the southern end of Sweers Island, and Robert Brown landed on the island during the afternoon (he had also landed there the previous day). Island ‘a’ of his journal was Sweer’s Island; Island ‘b’ was the adjacent Bentinck Island, on which Brown apparently did not land (although Flinders and Good did) (Vallance *et al.*, 2001). There is little doubt that Brown’s and Henne’s plants are the same species, collected at the same place nearly 60 years apart.

Bentham’s citation of Barber’s Bornean specimen is also significant. This observation was overlooked by Moore (1907), who described *Spilanthes chamaeacaula* A.H.Moore from a specimen collected by F.W.Burbidge at Flagstaff Point, Labuan in 1877–78. According to Moore, *S. chamaeacaula* differed from *S. anactina* and two similar species (*S. urens* of the Caribbean and Brasil, and *S. nervosa* from Paraguay) in having uniaristate achenes, while the other three taxa had unequally biaristate achenes. Subsequently, Jansen (1981) sank *S. chamaeacaula* into *S. anactina*, observing that the number of spines was usually 2, very unequal, rarely 1. Jansen described the distribution of *S. anactina* as “Johore, ... Sarawak, Brunei and Sweers Island, Bay of Carpentaria of northern Australia”. There was thus a major disjunction in the distribution, between northern Malesia and northern Australia. How can this be explained?

Brown noted in his journal that on Sweers Island the party found several skulls and bones,

along with signs of fire, although the bones were not burned. On Bentinck Island the party noted several trees of *Casuarina* had been cut with a hatchet, and a large piece of teak was found on Sweers Island, evidently also shaped with a sharp blade. Some natives were observed on Bentinck Island. A month later on North Island (Sir Edward Pellew Group), on 23 December, Brown and others came across a major Malay campsite where trees had been cut down, apparently for ship building, with wood heating kilns, and fragments of pottery, bamboo latticework, coconut shells, and pieces of blue striped calico. On 25 December on Vanderlin Island they found bamboo water pots and some boat wreckage. Two months later, in mid-February 1803, in the English Company Islands on the NW tip of Arnhem Land, Flinders met up with a group of six praos crewed by Macassans fishing for trepang. They were part of a large fleet of about 60 boats (Vallance *et al.*, 2001). It is therefore clear that Macassan fishermen visited large parts of the northern Australian coast, including Sweers Island, and had done so for many years. The Macassan fishermen ranged widely in what is now Indonesia and Malaysia, and their boats must on occasion have visited north Borneo if not Johore.

Macassans and native people on the northern Australian coast frequently clashed. On 24 April 1803 the French explorer Baudin (*Géographe*) came across a group of Macassan trepang-fishing praos off Cassini Island on the NW coast of Australia. The Malays on board informed him that the local natives were very savage and frequently attacked watering parties (Brown, 2004). After a skirmish with natives on Morgan Island in Blue Mud Bay on 21 January 1803, Flinders speculated in his diary on the likelihood that they were particularly aggressive as a result of previous clashes with Malays (Vallance *et al.*, 2001). It seems likely that the bones and fires seen by Flinders and his party on the shores of Bentinck and Sweers Islands were the result of one such clash, and the piece of teak a fragment of a prao or flotsam from one.

Spilanthes anactina is a plant of sandy soils on the coasts of the Malay Peninsula and Borneo, a habitat similar to the coast of Sweers Island. The most likely explanation, therefore, for

the disjunct distribution of *S. anactina* is that it was introduced to Sweers Island some time prior to 1802 by Macassans landing there during a trepang fishing expedition. Whether this was the same landing that resulted in the skeletons noted by Flinders' party, or an earlier one, will probably never be known. What is known is that the plants persisted there for 60 years at least, being collected again by Henne in 1861. The species has apparently not been collected in Australia in the 150 years since 1861, but may still be present on a beach on Sweers Island, a locality not often visited by botanists. To assist in the search, the following description and illustrations are offered.

**Spilanthes anactina* F.Muell., *Fragm.* 5: 63–64 (1865)

Ceratocephalus anactinus (F.Muell.) Kuntze, *Rev. Gen. Pl.* 1: 326 (1891)

T: In insulis sinus Carpentariae; holo: Sweers Is., herb. F.Mueller, without collector or date [*D.Henne s.n.*, 1861]; syn: MEL 91062, MEL 91063; Sweers Island, Gulf of Carpentaria, *Henne s.n.*, K, (& GH, *n.v.*). [Note: the name will be formally lectotypified in Flora of Australia].

Spilanthes chamaecaula A.H.Moore, *Proc. Amer. Acad. Arts* 42: 528 (1907). T: North Borneo, 1877–1878, *F.W.Burbidge s.n.*; holo: GH, *n.v.*; iso: BM 945849, photo seen.

Illustrations: R.K.Jansen, *Syst. Bot.* 6: 236, figs 2, 6 (1981).

Prostrate herb. Stems creeping, rooting at nodes; flowering branches erect, 10–15 (–30) cm tall. Leaves opposite, sessile, linear-lanceolate, 1.7–8.0 cm long, 1.7–8.2 mm wide, blunt apically, with 3 strong primary veins arising from the base, entire, glabrous. Capitula discoid, solitary (rarely in groups of 3), broadly ovoid, 10.0–14.5 mm diam. Peduncles 3.0–13.7 cm long, glabrous. Receptacle broadly conical, elongating in fruit, shallowly pitted with margins of pits rough. Involucral bracts c. 8, 2-seriate, subequal, green; outer bracts herbaceous, broadly ovate, 4.4–6.5 mm long, glabrous; inner bracts chartaceous, broadly elliptic to obovate, 5.5–7.0 mm long, glabrous except weakly fimbriate at apex. Paleae membranous, green with purplish margins, loosely enfolding florets/achenes, slightly hooded, rounded to weakly fimbriate and slightly expanded at apex. Florets bisexual. Corollas white, flushed purple, 2.6–3.7 mm long, tubular, with an expanded lower tube and

narrower throat, 5-lobed; tube 2.1–3.1 mm long, 0.7–1.4 mm wide; throat 0.4–0.7 mm long, 0.4–0.7 mm wide; lobes 0.5–0.8 mm long. Anthers black, shortly acuminate at base. Achenes not seen mature in Australian material; elsewhere ovoid, slightly curved, 4.0–4.5 mm long, strongly compressed, 2- or 3-angled, black and ±shiny, ±glabrous with just an occasional twin hair towards base, with 3 strong longitudinal ribs on each face; angles inflated, corky, creamy-white; pappus of 2 very unequal solid unbarbed awns 1–2 mm long and seated on short conical corky bases. (Fig. 1).

Found from the Malay Peninsula (Johore State) to Sarawak and Brunei, with a disjunction to Sweers Island, Qld, in the Gulf of Carpentaria. Grows in sandy coastal habitats. Flowering throughout the year (*vide* Jansen, *op. cit.*).

Specimens examined:

JOHORE: Sungai Tuenseh, Jason Bay, 10 June 1934, *E.J.H. Corner SFN28459* (K); *loc. cit.*, 21 Mar. 1934, *E.J.H. Corner SFN28061* (K). BRUNEI: Lumut Beach, Belait District, 26 Oct. 1989, *L.L. Forman 1099 & J.B.J. Blewett* (K); Muara Beach, 5 Sep. 1960, *J. Sinclair 10549 & Kadim bin Tassim* (K). SABAH: Labuan, May 1895, *Governor Creagh s.n.* (K); Labuan, *Motley 361*, (K, ex herb. Hooker). SARAWAK: *s. loc. spec.*, 1865–68, *O. Beccari 1780* (K); Kg. Likas [?Liku], 27 July 1932, *Bayak NPF1996* (K); Bako National Park, 31 Aug. 1977, *B. Lee S39412* (K). BORNEO: *s. loc. spec.*, *Mrs Barber s.n.* (K, ex herb. Hooker). QUEENSLAND: Sweers Island, Gulf of Carpentaria, 18 Nov. 1802, *R. Brown s.n.* [Bennett no. 2118] (BM); Sweers Island, 1861, *D. Henne s.n.* (MEL, K) - TYPE.

The type specimens of this species in MEL lack a collector or date. Jansen (1981) attributed the type to “F. Mueller s.n.”, but this is certainly erroneous. Bentham recorded the species as being collected in the Gulf of Carpentaria by both R. Brown and Henne. The duplicate in K is definitely attributed to Henne. Henne’s specimens, and Brown’s earlier collection in BM, are all in young flower, lacking fruits.

The isotype of *Spilanthes chamaecaula* in BM bears a manuscript label stating that it was collected “growing on the sandy beach, Flagstaff Point, Labuan” [Sabah] in 1877–78.

As mentioned by Bentham, the achenes of the Australian material, while young, are clearly glabrous. Jansen (1981) described the achenes of *S. anactina* as moderately ciliate (although illustrating them as glabrous), and included the Bornean species *S. chamaecaula* as a synonym.

Material examined in this study showed the achenes of all specimens to be essentially glabrous, with just a few scattered twin hairs towards the base.

Vegetatively this species resembles *Acmella grandiflora* f. *linifolia* Koster, described from the Balim River, New Guinea (and now considered synonymous with *A. grandiflora* var. *brachyglossa* (Benth.) R.K. Jansen), but differs in having florets white flushed purple, not yellow, and lacks ray florets, has a pappus of awns, and a glabrous achene. Moore (1907) cited under *S. anactina* both a Sweer Island collection (lacking collector) and another from “Wallia Nova Australis: S. Mossman, 509, ad flumen Brisbane (planta per chartam delineata)”. The latter was misidentified, and is actually one of the syntypes (in K!) of *S. grandiflora* var. *calva* Benth., a name synonymised by Jansen (1981) with *Acmella grandiflora* var. *brachyglossa*.

Acknowledgements

I thank the Keeper and staff (particularly Nicholas Hind) for hosting me during a visit to K in 2012 and for access to their collections. John Hunn (BM) kindly provided images of the Robert Brown collection. Annette Wilson read an early draft and assisted with scanning of the illustration. The research was carried out as part of an ABRs consultancy to prepare treatments of the tribe Heliantheae *et al.* for *Flora of Australia*.

References

- Bentham, G. (1867) *Spilanthes*, pp. 541–542, *Flora Australiensis* vol. 3. Lovell Reeve & Co.: London.
- Brown, A.J. (2004) *Ill-starred Captains: Flinders and Baudin*, revised edn. Fremantle Arts Centre Press: Fremantle.
- Candolle, A.P. (1836) *Spilanthes*, pp. 620–626, *Prodromus Systematis Naturalis Regni Vegetabilis* vol. 5. Treuttel & Wurtz: Paris.
- Cassini, H. (1822) *Acmella*, pp. 328–331 in F. Cuvier (ed.), *Dictionnaire de Sciences Naturelles* vol. 24., Le Normant: Paris.
- George, A.S. (2009) *Australian Botanist's Companion*. Four Gables Press: Kardinya.
- Jacquin, N.J. (1760) *Enumeratio Systematica Plantarum*. T. Haak: Leiden.
- Jansen, R.K. (1981) The systematics of *Spilanthes* (Compositae: Heliantheae), *Syst. Bot.* 6: 231–257.
- Jansen, R.K. (1985) The systematics of *Acmella* (Asteraceae-Heliantheae), *Syst. Bot. Monog.* 8: 1–115.

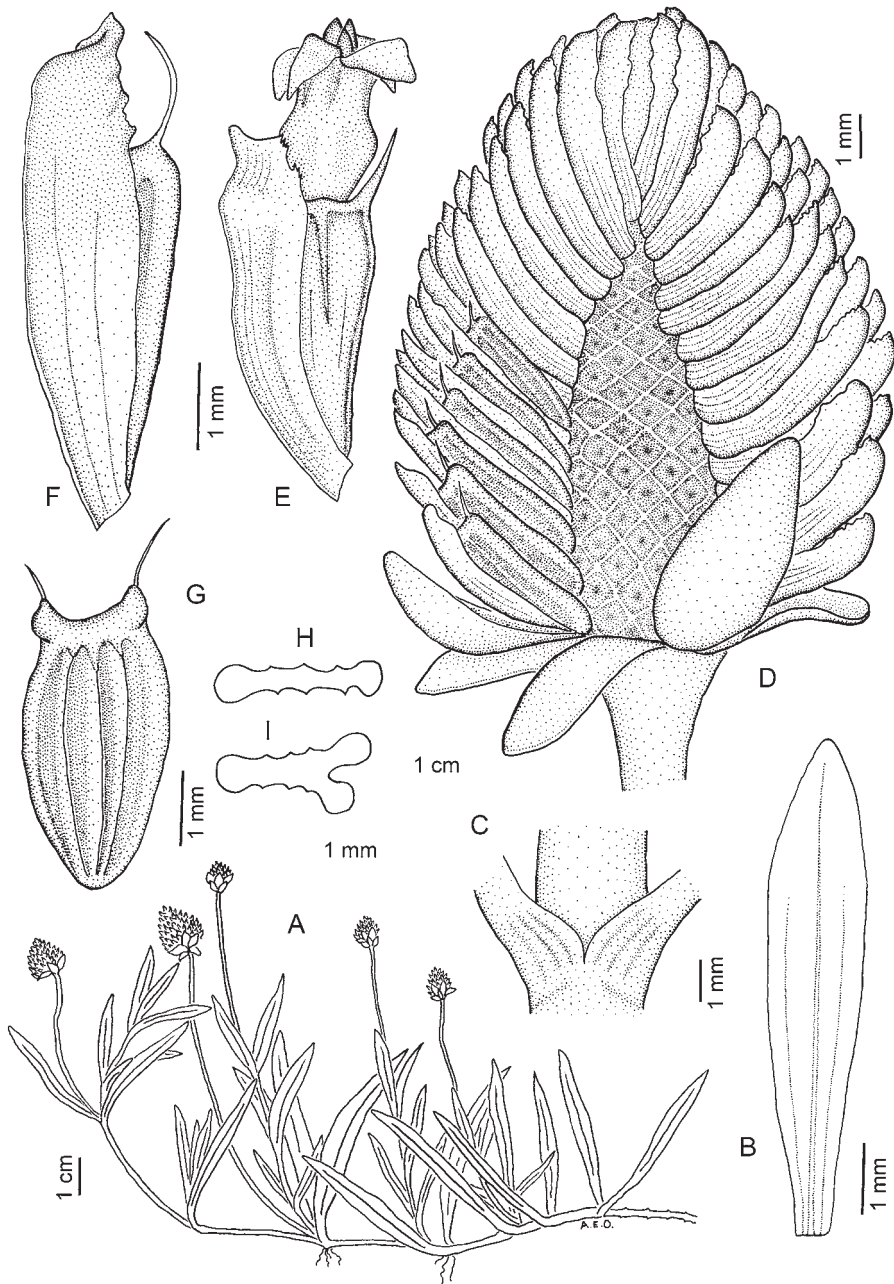


Fig. 1. **Spilanthes anactina**. A. Habit. B. Leaf. C. Leaf bases. D. Inflorescence in young fruit, some florets removed. E. Floret within palea. F. Young achene within palea. G. Mature achene. H. Transverse section of achene. I. Transverse section of rare 3-angled achene. A. from *L.L.Forman 1099 & J.B.J.Blewett* (K); B, C, G–I. from *Gov. Creagh s.n.* (K); D, F from *Mrs Barber s.n.* (K); E. from *D.Henne s.n.* (MEL 91063, syntype). Del. A.E.Orchard.

Moore, A.H. (1907) Revision of the genus *Spilanthes*, *Proc. Amer. Acad. Arts* 42: 521–569.

Mueller, F. (1865) *Spilanthes anactina*, p. 63, in *Fragmenta Phytographiae Australiae* vol. 5. J. Ferres: Melbourne.

Richard, L.C. (1807) *Acmella*, pp. 472–473, in

C.Persoon, *Synopsis Plantarum*, Vol. 2. J.G.Cottom: Paris.

Vallance, T.G., Moore, D.T. & Groves, E.W. (compilers) (2001) *Nature's Investigator: The Diary of Robert Brown in Australia, 1801–1805*. Australian Biological Resources Study: Canberra.

Botany, plant science, plant systematics and more at the University of New England

Jeremy J. Bruhl
University of New England

Here is an incomplete roundup of news and activities involving our staff, students and volunteers from UNE including the N.C.W. Beadle Herbarium (NE).

Teaching and research

A new degree, *Bachelor of Plant Science*, was introduced in 2013 at UNE aimed at knowledge of what plants are, how they function, their evolution and interactions with their environments. There are three majors, Evolutionary Biology, Physiological and Molecular Biology, and Plants in the Environment. Core units for the degree include biology, plant diversity (morphology and taxonomy), plant anatomy and physiology, genetics. The Evolutionary Biology major has a strong systematics focus. To complement the offerings already available to the degree, we are (re-)introducing a *Field Botany* unit, which will be offered in Trimester 3, i.e. during summer, aimed at integrating learning of ecological and taxonomic field skills and concepts (probably on offer from late 2014). Students can also undertake either or both WORK300, a workplace unit (some students have used WORK300 to gain credit toward their degree for botanical internships at CANB and NSW) and/or SCI395, 'Science Project' which allows the student to undertake a mini-research project at UNE or involve a different workplace such as a State Herbarium (following negotiation among the parties on a case-by-case basis). See www.une.edu.au/courses/2013/courses/BPLSC.

Research and teaching equipment

Prof. Iain Young, Head, School of Environmental and Rural Science (our School: 'Save the Planet and Feed the World') has led renewal and expansion of research and teaching equipment in the School and a focus on technicians gaining the skills to manage the equipment. Some of the great equipment we have obtained over the last two years is: a fabulous Nikon 90i fully automated compound microscope with bright field, differential interference contrast and fluorescence illumination, a high quality digital camera, wonderful lenses (including oil 100x

and an amazing high dry 60x object and an optical zoom head) and the full NIS-Elements software. We can, for example, automatically capture and stitch together a series of images to create stunning and informative cross-sections of sedge stems and leaves that are more than 1 cm diameter and then get publication quality images of chromosomes with the high dry objective!

A couple of years ago we obtained a Nikon/Jeol Neoscope benchtop Scanning Electron Microscope, which is a great routine workhorse, e.g. for great images of fruits of *Lepidosperma*. This year the School purchased a Jeol JSM-6010LA InTouchScope SEM with EDS elemental detector and cathodoluminescence detector. For us in Botany, this SEM will be great, particularly for pollen and spore, plant crystal and floral development work. These two machines are now housed within a new imaging suite building along with other gear including 3D colour, laser camera set up, and a CAT scanner (actually can fit a cow!). There is also a micro-CT scanner in another building, adjacent a multi-million set of controllable glasshouses. In Botany and the Herbarium, we have upgraded several Leica stereoscopes with digital cameras and 24" screens.

The teaching lab in Botany has had an audio-visual upgrade with lovely new large screens for display from improved computer, stereoscope, compound microscope, which makes teaching and learning much easier. We are in the process of ordering a large number of Leica EZ4 stereomicroscopes for our first year teaching labs.

People and places

In the Botany building (Fig. 1) are Dr Glenda Vaughton (studies plant reproductive and evolutionary ecology, focused on sexual and pollination systems), A/Prof. Peter Clarke (currently on sabbatical but based at UNE; plant community ecology, researches recruitment, fire responses of plants) and Prof. Jeremy Bruhl; together Adjuncts A/Prof. 'Wal' Whalley (grassland ecology and taxonomy), Dr

Dorothy Bell (wetland ecology); research associate Dr Mike Ramsay, Hon. Curator Mr Ian Telford; research fellow Dr Kerri Clarke (ecophysiology; with Dr Nigel Warwick); technicians Mr Richard Willis, Ms Theresa Choi; research students; and herbarium volunteers.

Recently, Dr David Backhouse (researches ecology of soil fungi and in the epidemiology and management of plant diseases caused by soil borne fungi) and then Nigel Warwick (currently at the Jodrell Laboratory, RBG Kew on sabbatical; studies ecophysiology and wood anatomy) moved from the Botany building to Agronomy and Soil Science. They continue to teach Botany units. Across the School there are other botanists in Ecosystem Management including Prof. Caroline Gross, a plant ecologist researching reproductive functions, rarity, rehabilitation, impacts of introduced honeybees and systematics; A/Prof. Karl Vernes is a vertebrate ecologist, who has collaborated with Dr Teresa Lebel (MEL) and others on ecology of truffle-feeding marsupials with macrofungi being lodged at MEL, NE and elsewhere. In Agronomy and Soil Science, Prof. Brian Sindel researches crop weed ecology and management; Dr Paul Kristiansen and others have just started a project on ecology of weeds on Macquarie Island. For all staff in the School see <http://www.une.edu.au/ers/>

Jeremy Bruhl's research interests in plant systematics continue to focus on Cyperaceae, together with colleagues, co-supervisors and students (see below); some projects are 1) Systematics and biogeography of Schoeneae with considerable collaboration, in particular

with A/Prof. Karen Wilson (NSW), Dr Russell Barrett (Kings Park), Dr Muthama Muasya, Dr Tony Verboom and Mr Jack Viljoen (U Cape Town), Prof. David Simpson (K), Dr Okihito Yano (U Tokyo) and others; 2) Cytology and systematics of *Carex* with A/Prof. Marcia Waterway (MTMG), Karen Wilson (NSW), Prof. Takuji Hoshino (OKAY) and Ms Tamara Villaverde Hidalgo (UPOS) and others; and 3) A second coming for an interactive identification system for the sedge genera of the world with David Simpson and Ms Odile Weber (K). Student and other projects extend well away from Cyperaceae. For example with Ian Telford (NE) and Dr Peter Heenan (CHR) and his phytochemical colleagues we have a paper under review describing new species for Australia and New Zealand in *Gingidia* (Apiaceae). Work published from Ian's MSc study on Cucurbitaceae highlights another trans-Tasman study and world collaboration (Telford et al. 2012). Thanks go to Prof. Takuji Hoshino (Fig. 2) and Ms Tomomi Masaki (OKAY) and Dr Kuo-fang Chung (NTUF; Fig. 3) and Dr Ching-I Peng (HAST) for hosting sabbatical visits to Japan and Taiwan in 2012 by Jeremy Bruhl.

The Head of School, Prof. Young, is leading a restructure of the groups within the School which will essentially change the grouping within the school from six disciplines to three interdisciplinary research themes. This process is underway so our next report will include a picture of the end point. These name/group changes, already underway, as you can tell from the above, will have no necessary impact on the offerings of units (subjects), degrees or project supervision; never a dull moment.

Figs. 1 (left), Botany building (S02), UNE, Armidale NSW. 2, Prof. Takuji Hoshino in his cytology lab preparing a 'squash' of *Carex*, Okayama University of Science, Japan



News from and about higher degree students

Paul Musili (supervised by Jeremy Bruhl and Karen Wilson, NSW) gains his PhD April 2013 for ‘Systematic studies in *Schoenus* L. (Schoeneae, Cyperaceae)’ and has taken up a position as a Research Scientist 2 (Botany) at Herbarium EA in Nairobi (Fig.4).

Margaret Stimpson commenced a PhD early 2013 on ‘Systematics, evolution and ecology of the *Banksia spinulosa* complex’ (supervised by Jeremy Bruhl, ‘Wal’ Whalley and A/Prof. Peter Weston, NSW). Her project will provide a rigorous systematic understanding of the *Banksia spinulosa* complex and provide insights into character evolution within the complex. Currently the complex comprises four described species, including one recently described (Stimpson et al. 2012) (Fig. 5), with likely five or more as yet undescribed species. Specific aims for work within the complex are: 1) Test and set species limits; 2) Reconstruct phylogenetic relationships; 3) Understand character evolution and taxonomic significance of flower colour; and 4) Understand character evolution and significance of lignotuber development. Margaret has an Australian Postgraduate Award Scholarship.

Other current PhD students in the group are Ian Telford, George Plunkett, Virgilio Linis and Chrissie Prychid. Iain Moore is an MSc student.

Ian R.H. Telford (supervised by Jeremy Bruhl and Prof. Peter van Welzen, L) studying the ‘Taxonomy, phylogeny and biogeography of *Synostemon* F.Muell. (Phyllanthaceae)’ *Synostemon* is a mainly Australian genus of annual herbs, subshrubs and shrubs with centres of diversity in the monsoonal tropics. Preliminary morphological studies have shown the genus to consist of 41 species, 39 of which are endemic to Australia. The 31 named species are currently placed in *Sauropus* Bl. Our recent molecular analyses (Pruesapan et al. 2008; Pruesapan et al. 2012) have shown the genus to be monophyletic, sister to an enlarged *Breynia*. The project’s aims are: (1) delimitation of species in *Synostemon* F.Muell.; (2) phylogenetic analysis of an expanded molecular data matrix (nuclear ITS, PHYC and plastid accD-psaI, trnS-trnG sequence data) to include all 41 species; (3) phylogenetic analysis

using morphological (including palynological) data to test congruence with the molecular phylogeny; (4) analysis using combined molecular and morphological datasets; (5) historical biogeography of the genus. Ian has an Australian Postgraduate Award Scholarship and a Botany Top-up Scholarship (Fig. 6).

George Plunkett (supervised by Jeremy Bruhl and Karen Wilson, NSW) is studying ‘Systematics, evolution and ecology of eastern Australian *Lepidosperma* (Cyperaceae)’ *Lepidosperma* is a morphologically distinct genus but few obvious characters differentiate species and intra-specific variation is often high (as shown by Russell Barrett for WA). It is clear that more informative characters and denser sampling are needed, utilising data from multiple sources to resolve systematic issues in this genus. George’s PhD work attempts to resolve species complexes, set limits of species and construct a robust phylogeny in eastern Australian *Lepidosperma*. Phenetic analysis of morphological and anatomical data has already been used to delimit new taxa, such as the western Tasmanian endemic *Lepidosperma monticola ined.* (Fig. 7). To resolve the more difficult groups, particularly the *L. laterale* complex, he plans to supplement morphometric data with molecular data using next-generation sequence multiplexing. This will also allow the construction of a robust phylogeny. For the *L. viscidum* complex he is collaborating with colleagues at the Faculty of Pharmacy (U. Sydney) to test the taxonomic utility of resin chemistry in *Lepidosperma*. In addition to my systematic work he is conducting controlled experiments to investigate myrmecochory (ant dispersal of seeds) in local populations of *Lepidosperma* to assess structure-function relationships. George has an Australian Postgraduate Award Scholarship and both ABRs and Botany Top-up Scholarships.

Virgilio Linis (supervised by Jeremy Bruhl and Dr Elizabeth Brown, NSW; Fig. 8) from the National Herbarium of the Philippines, funded by AusAid, studies ‘Systematics of *Ectropothecium* (Hypnaceae)’. Mosses of this family have received relatively little modern systematic study. The project will address the 1) monophyly and relationships of *Ectropothecium* via molecular systematics across and beyond the Hypnaceae; 2) species



Figures. Anticlockwise from top left. 3, Dr Kuo-fang Chung, photographing *Bolboschoenus*, Taiwan. 4, Paul Musili collecting *Schoenus*, Lee's Pinch, NSW. 5, Margaret Stimpson with *Banksia neoanglica*, Northern Tablelands, NSW. 6, Ian Telford collecting *Doryanthes excelsa*, Glenreagh area, NSW. 7, George Plunkett collecting *Lepidosperma monticola ined.*, Mt Sprent, Tasmania.

limits and taxonomy of the Australasian species of *Ectropothecium*. Extensive morphological (stereoscopic, compound light and scanning electron microscopy) study is developing a morphological database of information at the specimen level. A multi-gene dataset will provide the basis for analysis of phylogenetic relationships. Direct examination of type material is critical to understanding the application of names in this group of mosses. During his current PhD studies, Virgilio has won a Singapore Botanic Gardens Fellowship and spent three months based at SING investigating their herbarium collection and undertaking fieldwork in Singapore and peninsular Malaysia. He has also presented a paper at the MOSS2012 international conference and participated in a molecular systematics workshop there.

Chrissie Prychid (supervised by Jeremy

Bruhl and David Simpson, K) working on 'Relationships and reproduction—floral development and phylogeny in sedges (Cyperaceae, Mapanioideae): implications for the evolution of the monocot flower' Why and how have the reproductive units in Mapanioideae evolved differently from the stereotypical monocot floral plan? 1) What are the evolutionary relationships among Mapaniid taxa and which primary processes—genetic, ecological, climatic—best explain the observed floral biodiversity? 2) Are Mapaniid gene expression patterns during the course of floral growth different to those in other taxa, thereby reflecting disparate underlying developmental mechanisms? To address these questions, the project aims to generate the first comprehensive, robust, time-calibrated molecular and morphological phylogeny of the subfamily, uncovering the ancestral relationships between

genera. Crucially for addressing comparative evolutionary questions, the tree will be used as a framework for hypothesis testing. Detailed studies, via electron microscopy, are already producing data on the ontogeny of the developing reproductive units from initial inflorescence primordia to mature fruiting stages (Fig. 9). Floral genes will be isolated and 3-D maps of their expression generated using a unique methodology, combining X-ray tomography with heavy metal labelled gene specific antibodies. New cytological and floral gene sequence data will be used to assess possible changes in function of specific floral regulatory proteins, leading to resolution of which genetic controls are responsible for dramatically altering floral form. This project will allow a better understanding of the origin of Mapaniid flowers, resulting in an increased ability to examine the large-scale evolutionary processes that have driven the diversification of the Angiosperm flower. Chrissie has an International Postgraduate Research Scholarship and an Australian Postgraduate Award. She also holds a Hermon Slade grant (with Jeremy Bruhl; see www.hermonslade.org.au/projects/HSF_12_4/hsf_12_4.html).

Iain Moore is in the last year of a part-time MSc on the taxonomy of the *Bulbine glauca* complex (supervised by Jeremy Bruhl, Ian Telford, and Elizabeth Brown; Fig. 10). He has been analysing morphometric data including seed characters, as well as using cytology and

gene sequencing to address species limits and relationships of his study group. Iain has had funding from ABRS and ASBS.

Systematics bootcamp: Joining forces in November 2012 at New England National Park were Prof. Michael Crisp (ANU), Dr Lyn Cook (UQ) and Jeremy Bruhl and most of their research students for discussions and botanical/entomological walks in the Park (Fig. 11)! Each student and staff member made a short presentation.

News from N.C.W. Beadle Herbarium (NE)
www.une.edu.au/herbarium

The product of a UNE–Intersect project to **redevelop the NE database** (first started in the mid-1980s) was launched in October 2012 (www.une.edu.au/herbarium/herbarium-ne-database/). The new database provides for improved data integrity, compatibility with AVH/ALA and access via the Internet for users, finally allowing all users contributing records to the database access from any location convenient to them (e.g. students and staff at work or at home or even on fieldwork). A ‘clone’ of the database has been made, with its own identity (Assignment Herbarium at UNE) for use by UNE students undertaking coursework herbarium projects (e.g. the students of BOTY203/403, Plant Diversity). This will ensure our undergraduates have a real sense of and skill with herbarium databases and have the ready means of producing high quality,

Figures, left to right. 8, Virgilio Linis (left) and Elizabeth Brown (right) looking at mosses in the rain in New England National Park. 9, Chrissie Prychid preserving material of *Lepironia articulata* for study of floral development. Atherton Tablelands, Queensland. 10, Iain Moore collecting *Bulbine*, Mt Coree, ACT.



standard herbarium labels for their herbarium assignments which are focused on quality and process. Thanks to the eResearch organisation Intersect, particularly Johan Boshoff (their person at UNE) (Fig. 12).

In a bold and brave move, following some testing, we have just taken delivery of rolls of synthetic paper (actually polypropylene), resin coated ribbons and a Datamax-O'Neill DMX-M-4308 thermal transfer, 300 dpi printer, to produce and cut labels. Our tests on printed samples included weeks in the sun and rain without deterioration of paper or print, durability against sustained erasing (with some deterioration but not obliteration of printing), testing durability in a commercial Miele dishwasher at 94 C for 40 min with dishwashing detergent with no damage to paper or print (it has been suggested that dishwashers are not a good place for herbarium specimens, and we would reassure all that we do not store or clean our specimens in dishwashers), and use of several acid free glues to test the effectiveness of attaching the synthetic paper labels to our acid free, archival mounting sheets. Expect to see replicates with these labels arriving at your herbarium in the future!

We are currently finalising an Australian National Data Service (ANDS: www.ands.org.au/) project which will deliver various datasets from Herbarium NE to ANDS and thus the wider research community. We also hope to deliver data directly from our NE-db to AVH/ALA very soon. A current goal in NE is the return in 2013 of as many loans as possible! With the new printing system, we also envisage an upsurge in exchange and gift material from NE.

Images of good examples of each species in our Herbarium NE collection using a Nikon D700 with 60 mm ultraflat macro lens and soft box Elinchrom flash lights are being accumulated and we will soon be turning to best delivery of these over the Internet.

Users of the herbarium are, of course, not restricted to staff and students of Botany. Here we highlight use of NE by and collaboration with PhD student Nicholas Sadgrove (supervisor A/Prof. Graham Lloyd Jones, Human Biology, School of Science and Technology). Nick's study is focused on characterisation of essential

oils in Australian native plants, including novel compounds. His use of the herbarium and discussions with Ian Telford have led to value to his project and application of phytochemical data to taxonomic problems (see Sadgrove *et al.* 2011; Sadgrove *et al.* 2012; Sadgrove *et al.* 2013b; Sadgrove *et al.* 2013c; Sadgrove *et al.* 2013a; Sadgrove *et al.* 2013d; Sadgrove *et al.* 2013e)

Current active and dedicated volunteers in the N.C.W. Beadle Herbarium are Mrs Liisa Atherton (mounting, databasing), Dr John Nevin (digitising representatives of the NE collection); Mr Phil Rose (databasing); Penelope Sinclair (mounting); Mr Ray South (databasing and users' guide to the new NE-db), Hans Wissmann (laying in of specimens), Mr John Burne (NE-db), and of course, Ian Telford (Honorary Curator). Technician, Theresa Choi assists as NE's loan and exchange officer.

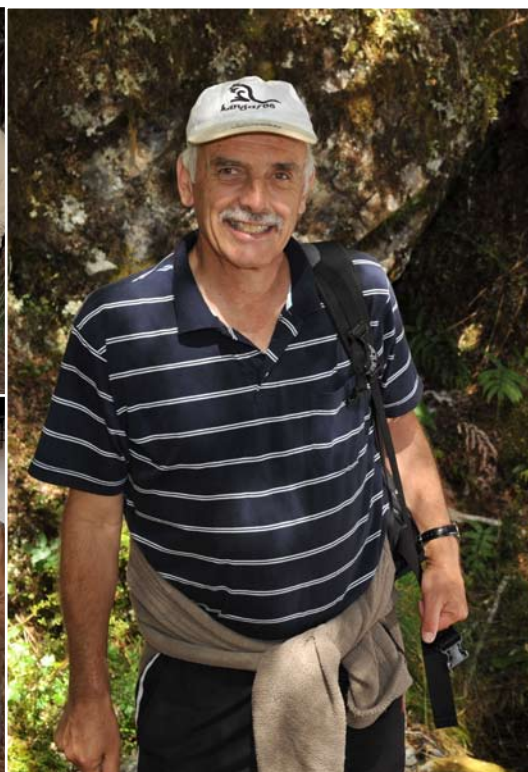
Dr John Hosking is finishing up at NSW Department of Primary Industries, Tamworth, at the end of May and will be operating out of NE after this date. He will continue to pursue his interest in collecting specimens from species complexes and of previously uncollected taxa. He will also continue collecting naturalised exotics and species from areas of interest to him, for example species from ultramafic areas. John also hopes to spend more time checking and correcting identifications of plants in the NE collection. Writing up of past research conducted while working for NSW DPI will also continue (Fig. 12).

Acknowledgments

I thank George Plunkett, Chrissie Prychid, Margaret Stimpson, Nicholas Sadgrove, Ian Telford and John Hosking for their contributions, but any complaints come to me, as the compiler!

References

- Pruesapan K, Telford IRH, Bruhl JJ, Draisma SGA, Van Welzen PC (2008) Delimitation of *Sauropus* (Phyllanthaceae) Based on Plastid matK and Nuclear Ribosomal ITS DNA Sequence Data. *Annals of Botany* **102**, 1007-1018.
- Pruesapan K, Telford IRH, Bruhl JJ, van Welzen PC (2012) Phylogeny and proposed circumscription of *Breynia*, *Sauropus* and *Synostemon* (Phyllanthaceae), based on chloroplast and nuclear DNA sequences. *Australasian Systematic Botany* **25**, 313-330.
- Sadgrove NJ, Hitchcock M, Watson K, Jones GL (2012) Chemical and biological characterization of



Figures, clockwise from top left. 11, Systematics bootcamp group, Nov 2012, New England National Park, NSW. 12, Gordon White (past Professional Officer, Botany), Jeremy Bruhl (Director, NE), Jon Burne (NE database volunteer), Phil Rose (NE volunteer), Ian Telford (Hon. Curator, NE) at launch of NE-db software. 13, John Hosking, ASBS2010 post-conference fieldtrip, Arthur's Pass, New Zealand.

- novel essential oils from *Eremophila bignoniiflora* F.Muell. (Myoporaceae): a traditional Aboriginal Australian bush medicine. *Phytotherapy Research* DOI: 10.1002/ptr.4889.
- Sadgrove NJ, Jones GL (2013a) Antimicrobial activity of essential oils and solvent extracts from *Zieria* species (Rutaceae). *Natural Product Communications* **In Press**.
- Sadgrove NJ, Jones GL (2013b) Chemical and biological characterisation of solvent extracts and essential oils from leaves and fruit of two Australian species of *Pittosporum* (Pittosporaceae) used in Aboriginal medicinal practice. *Journal of Ethnopharmacology* **145**, 813-821.
- Sadgrove NJ, Jones GL (2013c) A possible role of partially pyrolysed essential oils in Australian Aboriginal traditional ceremonial and medicinal smoking applications of *Eremophila longifolia* (R.Br.) F.Muell. (Scrophulariaceae). *Journal of Ethnopharmacology* **In Press**.
- Sadgrove NJ, Mijajlovic S, Tucker DJ, Watson K, Jones GL (2011) Characterization and bioactivity of essential oils from novel chemotypes of *Eremophila longifolia* F.Muell. (Myoporaceae): a highly valued traditional Australian medicine. *Flavour and Fragrance Journal* **26**, 341-350.
- Sadgrove NJ, Telford IRH, Greatrex BW, Dowell A, Jones GL (2013d) Dihydrotagetone, an unusual fruity ketone, is found in enantiopure and enantioenriched forms in additional Australian native taxa of *Phebalium* (Rutaceae: Boronieae). *Natural Product Communications* **In Press**.
- Sadgrove NJ, Telford IRH, Greatrex BW, Jones GL (2013e) Composition and antimicrobial activity of the essential oils from the Australian *Phebalium squamulosum* species complex (Rutaceae) in New South Wales. *Phytochemistry* **In review**.
- Stimpson M, Weston P, Telford I, Bruhl J (2012) First instalment in resolution of the *Banksia spinulosa* complex (Proteaceae): *B. neoanglica*, a new species supported by phenetic analysis, ecology and geography. *PhytoKeys* **14**, 57-80.
- Telford IRH, Sebastian P, de Lange PJ, Bruhl JJ, Renner SS (2012) Morphological and molecular data reveal three rather than one species of *Sicyos* (Cucurbitaceae) in Australia, New Zealand and Islands of the South West Pacific. *Australian Systematic Botany* **25**, 188-201.

Issues

Sustaining Australasian plant systematics, a more detailed proposal for going forward

Kevin Thiele (Kevin.Thiele@dec.wa.gov.au)

Bill Barker (bill.barker@sa.gov.au)

Ilse Breitwieser (BreitwieserI@landcareresearch.co.nz)

“It was the best of times, it was the worst of times, it was the age of wisdom, it was the age of foolishness, it was the epoch of belief, it was the epoch of incredulity, it was the season of Light, it was the season of Darkness, it was the spring of hope, it was the winter of despair, we had everything before us, we had nothing before us, we were all going direct to heaven, we were all going direct the other way - in short, the period was so far like the present period, that some of its noisiest authorities insisted on its being received, for good or for evil, in the superlative degree of comparison only.”

Charles Dickens, *A Tale of Two Cities*

As discussed in the last ASBS Newsletter, one could be forgiven for thinking, with Dickens's protagonists in his *Two Cities*, that we in Australasian plant systematics live and work in the best and the worst of times. We have never had it so good in our technologies and information base for doing great taxonomy and systematics, and yet the reality and prospects for our discipline are neither rosy nor assured.

Since our last article, we have been exploring and progressing with some of our colleagues ideas and questions around how best to position Australasian plant systematics in these challenging times. In particular, we have been wondering how best to demonstrate the value proposition¹ of Australasian taxonomy and systematics to our respective governments and community, in order to build support, or at least arrest the decline, and in order to put systematics and taxonomy on a sustainable footing.

There is a diversity of views on this, ranging from a sense that the questions have been asked so many times that it's probably not worth revisiting, or a fear that continuing to raise these

questions could alienate our community even more, to a sense that we are on the cusp of such great things that now is a good time to promote our discipline and grow it. The proposal of a review has led to a lot of discussion and various views. We acknowledge this diversity, and as usual in such matters, all these opinions have some foundation and merit.

Nevertheless, a number of us are keen to try again to organise as a community to promote our discipline in a positive light, to highlight our successes and strengths while defining our problems and structural weaknesses, all with the aim of seeking solutions and a sustainable future. We propose the following as a staged approach to develop a useful set of documented and justified proposals for use in lobbying, promotion and to help build support:

- On behalf of our community we propose as a first step to draft a Green Paper on Australasian Taxonomy. Like government and business Green Papers, this will aim to provide core data on where we're at and what our capacities and shortfalls are, and to provide initial options and ideas as the basis for an informed consultation, both within our community and with stakeholders.
- Depending on the reception of and feedback from community and stakeholders on the Green Paper, we propose to develop this to a White Paper with a concise statement of the main issues, an options analysis, and an agreed set of preferred options or proposals for sustaining our discipline.
- Depending on the outcome of the White Paper, some aspects and issues may require independent assessment and review. This may take the form of either or both an independent Peer Review of some aspects of our discipline, or a formal business analysis or cost-benefit appraisal.

We recognise that a critical issue upon which the success or failure of this idea depends

¹ *Value proposition*. A business term indicating “a promise of value to be delivered and a belief from the customer that value will be experienced.”- see http://en.wikipedia.org/wiki/Value_proposition

is getting the balance right, being objective and reasonable, neither defensive nor overly ambitious without justification, stating baldly the areas where we perceive problems while avoiding a perception of whinging or special pleading, and ensuring that we highlight our successes, strengths and confidence as well as our concerns and fears for the future. We see the most important elements that need to be delivered by this overall process are:

- A formal value proposition for taxonomy (including a cost/benefit analysis)
- A clearly articulated, measurable, justifiable and achievable set of goals for Australasian taxonomy
- A capability review, and state of knowledge report
- A risk analysis

- An achievable and clearly articulated sustainability model

We see the resulting White Paper, with or without a formal review, as providing the necessary contextual basis for lobbying and promotion of our discipline in all jurisdictions. This lobbying could be through normal administrative channels, through political avenues, or to other organisations (sponsors, philanthropists, etc), performed when appropriate to each group and jurisdiction. Though more complex to progress, seeking a collaborative approach to funding (e.g., Country-Commonwealth-States partnerships) might lock in an ongoing commitment from parties involved. Furthermore, as suggested above, the White Paper may provide a template for other groups of organisms and further jurisdictions within (and outside) our region.

Obituaries

Vale Donald John (Don) McGillivray

R.O. (Bob) Makinson
National Herbarium of New South Wales

Former National Herbarium of New South Wales botanist Don McGillivray passed away on 17 August 2012 after a long battle with Parkinson's Disease.

Don was born on 20 August, 1935 in Griffith, New South Wales, and up to the age of ten lived in the Riverina area (Griffith, Batlow, Wagga) before the family moved to Gosford, where he attended Gosford High School, graduating in 1952. He enjoyed sport at school and university, playing grade cricket, school rugby league, and athletics, with a speciality in the long jump.

After a taking a science degree at Sydney University, he attended the School of Forestry at the Australian National University in Canberra. While at university, Don became involved in the fencing club (épées, not pliers), becoming so proficient that he seriously considered becoming a fencing master. Instead he went to work for the NSW Forestry Commission in 1959, initially at Moss Vale and Wingello in the NSW Southern Highlands, then in Sydney from 1960. Don married June in 1958, and they had daughter Leanne (born 1963) and son

Andrew (1969).

From 1964 until retirement he was employed as a botanist at the National Herbarium of New South Wales. Here he published taxonomic work on a wide range of genera, including *Apatophyllum*, *Dodonaea*, *Conospermum*, *Galium*, and New South Wales orchids, but increasingly his work gravitated to the Proteaceae and his eventual revision (1993) of *Grevillea*, Australia's third largest plant genus.

In parallel with his taxonomic work he developed a deep interest in and knowledge of Australian botanical history and nomenclature, publishing on the activities of Banks, Domin, Preiss, Gandoger and Salisbury, and contributing to the domestic and international literature on nomenclatural matters.

His breadth of interest and expertise contributed to his posting from 1968–70 as Australian Botanical Liaison Officer at the Royal Botanic Gardens, Kew, where he laid much of the groundwork for the *Grevillea* revision, his main focus on return to Australia. In this period he was also foundation Secretary (1973–5) of



Fig. 1. Don McGillivray at the WA Herbarium, Perth in about 1976.

Ph. Alex George

the Australian Systematic Botany Society.

By the late 1970s, Don became aware of health problems and was eventually diagnosed with Parkinson's Disease, leading to his retirement in 1985.

Don's work on *Grevillea* continued in retirement, in collaboration with Bob Makinson, and his massive revision of the genus – the first since Meisner's - was published by Melbourne University Press in 1993. He was awarded the 1993 Engler Medal by the International Association for Plant Taxonomy for this opus. Don's work in defining morphological characters and gathering primary data was meticulous, exhaustive, and extremely accurate. It has been the foundation of nearly all subsequent alpha work on the genus, and for the selection of taxa for DNA studies. Don's species concepts were explicitly broad,

but he recognised many infraspecific taxa at formal and informal ranks – arguing that one of his aims in doing so was to provoke others to do follow-up studies. Whilst many of these infraspecific taxa have since been re-ranked by other workers, they have usually done so with few or no changes to circumscription, except as enabled by the vastly improved specimen base that Don's work stimulated.

In retirement he fought the Parkinson's by staying remarkably active on fronts ranging from casual office work and delivering newspapers, to volunteer maths tutoring of schoolkids. Above all other interests, apart from his beloved family, was fishing, particularly fly fishing for trout, at which he became proficient, often making his own flies. As his health deteriorated, he switched to estuary fishing (eventually from a wheelchair) near his

home on the New South Wales Central Coast, and only months before his death fulfilled a longstanding goal by landing his first jewfish.

ASBS extends its condolences to the McGillivray family. Don was held in great affection by his colleagues – the phrases ‘a sweet man’ and ‘a true gentleman’ have seldom been more used and never been more true. And I add on a personal note – a great mentor.

Acknowledgments

The assistance of Andrew McGillivray, Robyn Barker and Alex George in preparing this material is greatly appreciated.

D.J. McGillivray: selected publications

- Pryor, L.D., Johnson, L.A.S., Whitecross, M.I. & McGillivray, D.J. (1967), The perianth and the taxonomic affinities of *Eucalyptus cloeziana* F. Muell., *Austral. J. Bot.* 15(1) 145–149.
- McGillivray, D.J. (1969), Supplement, pp. v–viii, 153–177, in H.M.R. Rupp, *The Orchids of New South Wales*, facsimile edn, National Herbarium of New South Wales, Sydney.
- McGillivray, D.J. (1971), *Apatophyllum*: An interesting new Australian genus in the family Celastraceae, *Kew Bulletin* 25 (3): 401–406.
- McGillivray, D.J. (1971), Joseph Banks: “a tolerable botanist”, *J. Roy. Austral. Hist. Soc.* 57 (1): 10–16.
- McGillivray, D.J. (1972), Nomenclature proposals for the Leningrad Congress (1975): Gandoger: a front-door exit?, *Taxon* 21 (5-6): 717–719.
- McGillivray, D.J. (1972), A nomenclatural tour (*Ixora queenslandica* Fosberg), *Contrib. New S. Wales Natl Herb.* 4 (5): 262–264.
- McGillivray, D.J. (1973), Michel Gandoger’s names of

- Australian plants, *Contrib. New S. Wales Natl Herb.* 4 (6): 319–365.
- McGillivray, D.J. (1973), Domin’s “Beiträge zur Flora und Pflanzengeographie Australiens”, *Contrib. New S. Wales Natl Herb.* 4 (6): 366–368.
- McGillivray, D.J. (1973), The handwriting of Richard Salisbury (1761-1829) (and some incidental notes), *Contrib. New S. Wales Natl Herb.* 4 (6): 369–372.
- McGillivray, D.J. (1973) Australian Systematic Botany Society. *Taxon* (22) 4: 521.
- McGillivray, D.J. (1975), Johann August Ludwig Preiss (1811–1883) in Western Australia, *Telopea* 1 (1): 1–18.
- McGillivray, D.J. (1975), Australian Proteaceae: New taxa and notes, *Telopea* 1 (1): 19–32.
- McGillivray, D.J. (1975), *Billardiera* Sm. and *Rhytidosporum* F.Muell. (Pittosporaceae) in New South Wales, *Telopea* 1 (1): 55–57.
- Johnson, L.A.S. & McGillivray, D.J. (1975), *Conospermum* Sm. (Proteaceae) in Eastern Australia, *Telopea* 1 (1): 58–65.
- McGillivray, D.J. (1975), *Dodonaea* (Sapindaceae): Taxonomic notes, *Telopea* 1 (1): 66–67.
- Smith, R.V. & McGillivray, D.J. (1975), *Grevillea willisii* (Proteaceae) a new Victorian species, *Muelleria* 3 (2): 102–111.
- McGillivray, D.J. (1983), A revision of *Galium* (Rubiaceae) in Australia and New Zealand. *Telopea* 2 (4): 355–377.
- McGillivray, D.J. (1985), (794) Proposal to amend 2045 *Grevillea* R.Br. ex Knight, nom. cons. (Proteaceae), *Taxon* 34 (3): 536–537.
- McGillivray, D.J. (1986), *New names in Grevillea* (Proteaceae), pp ii, 16, D.J. McGillivray, Castle Hill, New South Wales (limited circulation; reproduced in facsimile in McGillivray & Makinson 1993, q.v.)
- McGillivray, D.J. & Makinson, R.O. (1993), *Grevillea Proteaceae: A Taxonomic Revision*. Melbourne

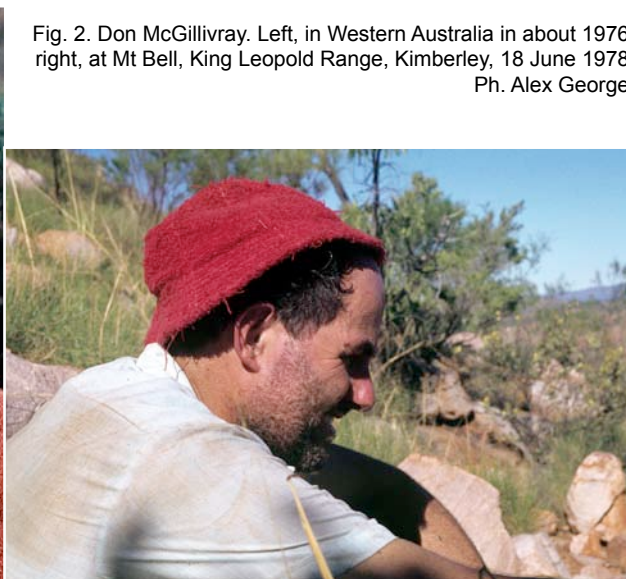


Fig. 2. Don McGillivray. Left, in Western Australia in about 1976; right, at Mt Bell, King Leopold Range, Kimberley, 18 June 1978. Ph. Alex George.

Univ. Press at the Miegunyah Press, Carlton, Vic.

Taxa named for D.J. McGillivray

¹*Acacia macgillivrayi* orth. var. Tindale (Tindale, *Phytochemistry* 13: 831 (1974) as 'mcgillivrayi', *nom. nud.*; synonymised under *Acacia penninervis* var. *longiracemosa* Domin (Maslin, B.R. et al. in Orchard, A.E. & Wilson, A.J.G. (Ed) (2001), *Flora of Australia* 11A: 250).

Apatophyllum macgillivrayi Cranfield & Lander

Leptospermum macgillivrayi Joy Thomps.

Grevillea donaldiana Kenneally

Taxa named by D.J. McGillivray

Celastraceae

Apatophyllum McGill.

Apatophyllum constablei McGill.

Apatophyllum olenii McGill.

Pittosporaceae

Rhytidosporem alpinum McGill.

Rhytidosporem prostratum McGill.

Proteaceae

Conospermum burgessorum

L.A.S. Johnson & McGill.

Conospermum longifolium subsp.

mediale L.A.S. Johnson & McGill.

Grevillea acacioides C.A. Gardner ex McGill.

Grevillea acerata McGill.

Grevillea acrobotrya subsp. *uniformis* McGill.

Grevillea adenotricha McGill.

Grevillea aneura McGill.

Grevillea baileyana McGill.

Grevillea barklyana subsp. *macleayana* McGill.

Grevillea baueri subsp. *asperula* McGill.

Grevillea beadleana McGill.

Grevillea beardiana McGill.

Grevillea benthamiana McGill.

Grevillea byrnesii McGill.

Grevillea cagiana McGill.

Grevillea christineae McGill.

Grevillea coriacea McGill.

Grevillea curviloba McGill.

Grevillea cyranostigma McGill.

Grevillea decipiens McGill.

Grevillea didymobotrya subsp. *involuta* McGill.

Grevillea diffusa subsp. *filipendula* McGill.

Grevillea disjuncta subsp. *dolichopoda* McGill.

Grevillea diversifolia subsp.

subtersericata McGill.

Grevillea drummondii subsp.

centristigma McGill.; basionym of:

Grevillea centristigma (McGill.)

Keighery

Grevillea dryandri subsp. *dasycarpa* McGill.

Grevillea formosa McGill.

Grevillea georgeana McGill.

Grevillea glabrata subsp. *dissectifolia*

McGill.; basionym of: *Grevillea*

manglesii subsp. *dissectifolia*

(McGill.) McGill.

Grevillea glossadenia McGill.

Grevillea goodii subsp. *pluricaulis*

McGill.; basionym of: *Grevillea*

pluricaulis (McGill.) Olde &

Marriott

Grevillea granulosa McGill.

Grevillea iaspicula McGill.

Grevillea infecunda McGill.

Grevillea johnsonii McGill.

Grevillea kenneallyi McGill.

Grevillea leptopoda McGill.

Grevillea leucoclada McGill.

Grevillea linsmithii McGill.

Grevillea lissopleura McGill.

Grevillea longicuspis McGill.

Grevillea lullfitzii McGill.

Grevillea makinsonii McGill.

Grevillea manglesioides subsp. *papillosa*

McGill.; basionym of: *Grevillea*

papillosa (McGill.) Olde & Marriott

Grevillea maxwellii McGill.

Grevillea minutiflora McGill.

Grevillea molyneuxii McGill.

Grevillea murex McGill.

Grevillea myosodes McGill.

Grevillea nana subsp. *abbreviata*

McGill.

Grevillea newbeyi McGill.

Grevillea obtusiflora subsp. *granulifera*

McGill.; basionym of: *Grevillea*

granulifera (McGill.) Olde &

Marriott

Grevillea obtusiflora subsp. *kedumbensis*

McGill.; basionym of: *Grevillea*

kedumbensis (McGill.) Olde &

Marriott

Grevillea oldei McGill.

Grevillea pauciflora subsp. *psilophylla*

McGill.

Grevillea pauciflora subsp. *saxatilis*

McGill.

Grevillea petrophiloides subsp.

magnifica McGill.; basionym of

Grevillea magnifica (McGill.) Olde

& Marriott

Grevillea petrophiloides subsp.

oligomera McGill.; basionym of

Grevillea oligomera (McGill.) Olde

& Marriott

Grevillea phillipsiana McGill.

Grevillea pilosa subsp. *dissecta* McGill.;

basionym of *Grevillea dissecta*

(McGill.) Olde & Marriott

Grevillea polyacida McGill.

Grevillea prasina McGill.

Grevillea psilantha McGill.

Grevillea rivularis L.A.S. Johnson &

McGill.

Grevillea rosieri McGill.

Grevillea roycei McGill.

Grevillea sarissa subsp. *anfractifolia*

McGill.

Grevillea sarissa subsp. *bicolor* McGill.

Grevillea sarissa subsp. *rectitepala*

McGill.

Grevillea sarissa subsp. *succincta*

McGill.

Grevillea secunda McGill.

Grevillea spinosa McGill.

Grevillea spinosissima McGill.

Grevillea subtiliflora McGill.

Grevillea tetrupleura McGill.

Grevillea thelemanniana subsp. *delta*

McGill.; basionym of *Grevillea delta*

(McGill.) Olde & Marriott

Grevillea thelemanniana subsp. *fililoba*

McGill.; basionym of: *Grevillea*

fililoba (McGill.) Olde & Marriott

Grevillea uncinulata subsp. *florida*

McGill.; basionym of *Grevillea*

florida (McGill.) Makinson

Grevillea velutinella McGill.

Grevillea versicolor McGill.

Grevillea vestita subsp. *isopogoides*

F. Muell. ex McGill.

Grevillea whiteana McGill.

Grevillea wickhamii subsp. *aprica*

McGill.

Grevillea willisii R.V. Sm. & McGill.

Grevillea willisii subsp. *pachylostyla*

McGill.; basionym of: *Grevillea*

pachylostyla (McGill.) Olde &

Marriott

Grevillea wittweri McGill.

Isopogon mnoraifolius McGill.

Isopogon prostratus McGill.; ;

basionym: *Isopogon anemonifolius*

var. *tenuifolius* F. Muell. ex Benth.

Rubiaceae

Galium compactum Ehrend. & McGill.

Galium curvihirtum Ehrend. & McGill.

Galium migrans Ehrend. & McGill.

Galium roddii Ehrend. & McGill.

Galium terrae-reginae Ehrend. &

McGill.

Sapindaceae

Dodonaea serratifolia McGill.

1 It seems very likely, though not certain in absence of clarity in the Tindale publication, that this taxon was intended to be named after Don. While no voucher is cited by Tindale, on p. 839 there is acknowledgement of Don as one of the collectors of samples for the study. Phil Kodela confirms that there is a D.J. McGillivray specimen at NSW of the taxon, though it lacks annotation by Mary Tindale as to any intended Type status.

New combinations

Proteaceae

- Conospermum longifolium* subsp. *angustifolium* (Meisn.) L.A.S.Johnson & McGill.
Grevillea acanthifolia subsp. *stenomera* (F.Muell. ex Benth.) McGill.; basionym: *Grevillea acanthifolia* var. *stenomera* F.Muell. ex Benth.
Grevillea arenaria subsp. *montana* (R.Br.) McGill. [comb. nov.]; basionym: *Grevillea montana* R.Br.
Grevillea buxifolia subsp. *phylicoides* (R.Br.) McGill. [comb. nov.]; basionym: *Grevillea phylicoides* R.Br.
Grevillea buxifolia subsp. *sphacelata* (R.Br.) McGill.
 McGillivray, D.J., (1986) *New Names in Grevillea (Proteaceae)*: 3 [comb. nov.]; basionym: *Grevillea sphacelata* R.Br.
Grevillea concinna subsp. *lemanniana* (Meisn.) McGill. [comb. nov.]; basionym: *Grevillea lemanniana* Meisn.
Grevillea diffusa subsp. *evansiana* (MacKee) McGill. [comb. nov.]; basionym: *Grevillea evansiana* MacKee
Grevillea drummondii subsp. *pimeleoides* (W.Fitzg.) McGill. [comb. nov.]; basionym: *Grevillea pimeleoides* W.Fitzg.
Grevillea eriostachya subsp. *excelsior* (Diels) McGill. [comb. nov.]; basionym: *Grevillea excelsior* Diels
Grevillea glabrata subsp. *ornithopoda* (Meisn.) McGill. [comb. nov.]; basionym: *Grevillea ornithopoda* Meisn.
Grevillea goodii subsp. *decora* (Domin) McGill. [comb. nov.]; basionym: *Grevillea decora* Domin
Grevillea hakeoides subsp. *commutata* (F.Muell.) McGill. [comb. nov.]; basionym: *Grevillea commutata* F.Muell.
Grevillea integrifolia subsp. *biformis* (Meisn.) McGill. [comb. nov.]; basionym: *Grevillea biformis* Meisn.
Grevillea integrifolia subsp. *ceratocarpa* (Diels) McGill. [comb. et stat. nov.]; basionym: *Grevillea ceratocarpa* Diels
Grevillea integrifolia subsp. *incrassata* (Diels) McGill. [comb. nov.]; basionym: *Grevillea incrassata* Diels
Grevillea integrifolia subsp. *shuttleworthiana* (Meisn.) McGill. [comb. nov.]; basionym: *Grevillea shuttleworthiana* Meisn.
Grevillea manglesii (Graham) McGill. comb. superfl. [comb. nov.]; basionym: *Anadenia manglesii* Graham
Grevillea manglesii subsp. *dissectifolia*

- (McGill.) McGill. [comb. nov.]; basionym: *Grevillea glabrata* subsp. *dissectifolia* McGill.
Grevillea manglesii subsp. *ornithopoda* (Meisn.) McGill. [comb. nov.]; basionym: *Grevillea ornithopoda* Meisn.
Grevillea scortechinii subsp. *sarmentosa* (Blakely & McKie) McGill. [comb. nov.]; basionym: *Grevillea sarmentosa* Blakely & McKie
Grevillea speciosa (Knight) McGill. [comb. nov.]; basionym: *Lysanthe speciosa* Knight
Grevillea speciosa subsp. *dimorpha* (F.Muell.) McGill. [comb. nov.]; basionym: *Grevillea dimorpha* F.Muell.
Grevillea speciosa subsp. *oleoides* (Sieber ex Schult. & Schult.f.) McGill. [comb. nov.]; basionym: *Grevillea oleoides* Sieber ex Schult. & Schult.f.
Grevillea thelemanniana subsp. *obtusifolia* (Meisn.) McGill. [comb. nov.]; basionym: *Grevillea obtusifolia* Meisn.
Grevillea thelemanniana subsp. *pinaster* (Meisn.) McGill. [comb. nov.]; basionym: *Grevillea pinaster* Meisn.
Grevillea thelemanniana subsp. *preissii* (Meisn.) McGill. [comb. nov.]; basionym: *Grevillea preissii* Meisn.
Hakea eyreana (S.Moore) McGill. [comb. nov.]; basionym: *Grevillea eyreana* S.Moore

Rutaceae

- Acronychia simplicifolia* (Endl.) McGill. & P.S.Green [nom. illeg.] nom. superfl. [comb. nov.]; basionym: *Vepris simplicifolia* Endl.

Sapindaceae

- Dodonaea coriacea* (Ewart & O.B.Davies) McGill. [comb. nov.]; basionym: *Dodonaea peduncularis* var. *coriacea* Ewart & O.B.Davies

Type specimens collected by D.J. McGillivray

Proteaceae

- Conospermum burgessiorum* L.A.S.Johnson & McGill.: D.J. McGillivray 2403 and L.A.S. Johnson, 20.9.1966
Grevillea aurea Olde & Marriott: D.J.McGillivray 3934 & C.Dunlop 17 July 1978
Grevillea benthamiana McGill.: D.J. McGillivray 3922, 15.vii.1978
Grevillea byrnesii McGill.: D.J. McGillivray 3902, 7.vii.1978
Grevillea cagiana McGill.: D.J. McGillivray 3534 & A.S. George, 26.vi.1976
Grevillea diffusa subsp. *filipendula*

- McGill.: D.J. McGillivray 3097, 14.ix.1968
Grevillea disjuncta subsp. *dolichopoda* McGill.: D.J. McGillivray 3521 & A.S. George, 26.vi.1976
Grevillea dolichopoda (McGill.) Olde & Marriott: D.J.McGillivray 3521 & A.S.George.
Grevillea dryandri subsp. *dasycarpa* McGill.: D.J.McGillivray 3937 & C.R.Dunlop, 18 July 1978
Grevillea georgeana McGill.: D.J. McGillivray 3673 & A.S. George, 4.vii.1976
Grevillea glabrata subsp. *dissectifolia* McGill.: D.J.McGillivray 3468 & A.S.George, 23 June 1976
Grevillea iaspicula McGill.: D.J. McGillivray 3962, 16.5.1980
Grevillea leucoclada McGill.: D.J. McGillivray 3348 & A.S. George, 13.vi.1976
Grevillea minutiflora McGill.: D.J. McGillivray 3434 & A.S. George 17.vi.1976
Grevillea nana subsp. *abbreviata* McGill.: D.J. McGillivray 3434 & A.S. George 17.vi.1976
Grevillea newbeyi McGill.: D.J. McGillivray 3516 & A.S. George, 26.vi.1976
Grevillea pauciflora subsp. *psilophylla* McGill.: D.J. McGillivray 3608 & A.S. George, 30.vi.1976
Grevillea pauciflora subsp. *saxatilis* McGill.: D.J. McGillivray 3617 & A.S. George, 1.vii.1976
Grevillea spinosissima McGill.: D.J. McGillivray 3418 & A.S. George, 17.vi.1976
Grevillea tetrapleura McGill.: D.J.McGillivray 3667 & A.S. George, 3.vii.1976
Grevillea vestita subsp. *isopogoides* F.Muell. ex McGill.: D.J. McGillivray 3326 & A.S. George
Isopogon mnoraifolius McGill.: D.J.McGillivray 2705 and J. de S. Disney, 27.ix.1967

Myrtaceae

- Leptospermum macgillivrayi* Joy Thomps.: D.J. McGillivray 3678 & A.S. George, 4.vii.1976

Olacaceae

- Olax angulata* A.S.George: J. de S. Disney & D.J. McGillivray 2717, 28 Sept. 1976

Rutaceae

- Philotheca salsolifolia* subsp. *pedicellata* Paul G.Wilson: L.P. McGillivray & D.J.McGillivray 2145, 30 June 1966

Robert William (Bob) Johnson (1930-2012)

Bryan Simon & Gordon Guymer
Queensland Herbarium

Born: July 27, 1930, Brisbane

Died: August 13, 2012, Brisbane

Bob was born at Newmarket, Brisbane to parents Leonard and Lotti-Rose. It is reported that as a boy he developed an early interest in morning glories in the back yard of his home. This laid the foundation for his focus on botany and the family *Convolvulaceae* later during his professional career, among many other things.

He attended Brisbane Grammar School and achieved academically and on the sporting field. However he was reluctant to display any signs of his achievements, to the extent that his parents would find award certificates in his wastepaper bin. This manifestation of his humility and a focus on the other person, would remain throughout his life. He was so tuned in to what other people were saying to the extent that he became more interested in their accounts than they were themselves.

He joined the Qld Dept of Agriculture & Stock (later Qld Dept of Primary Industries) as a cadet in 1948, while studying part time for a BSc in botany and soil science at the University of Queensland. He graduated in 1953 and was appointed botanist at the Botany Branch and Queensland Herbarium, where he worked on many research projects before embarking on the ecological survey of brigalow lands.

Bob earned his nickname 'Brigalow Bob' when undertook the brigalow survey from 1958 to 1962. He inspected every accessible patch of brigalow in the state and visited many landholders who had never seen a QDPI officer on their properties. Bob developed strategies for the clearing of brigalow country,

prevention and control of brigalow regrowth and sound agricultural and pastoral systems. This underpinned Queensland's best land development scheme: the Fitzroy Basin. Bob was instrumental in the selection and establishment of the Brigalow Research Station at Theodore to conduct research to support the brigalow scheme.

He met his wife Toni at the Herbarium in 1959 and they married in 1962. Later that year he was appointed Officer-in-Charge of the newly

established Brigalow Research Station, where the family moved with their first child. He completed his MSc on the ecology of brigalow in 1963.

The Johnson family moved to Logan, Utah, USA for four years in 1970 for Bob to undertake his PhD in multivariate methods for the analysis of botanical data under David Goodall, on a scholarship from the Australian Wool Board. When Bob returned to Australia in 1974 he was appointed Assistant Director, Botany Branch (Queensland

Herbarium) to Selwyn Everist, succeeding Selwyn as director in 1976.

Bob was a multi-skilled botanical scientist and his expertise extended over many areas. His main interests were the ecology and control of brigalow (*Acacia harpophylla*), the design and maintenance of databases, a taxonomic specialist in the morning-glory family *Convolvulaceae* (in which he described 28 new taxa), a talented manager of research institutions and scientific staff and the conservation of plants and animals.

He published widely in all these fields more than 90 publications. These include scientific papers,



Fig. 1. Bob Johnson in the 1970s.

books and book chapters in ecology, taxonomy, biographical, managerial, weeds, conservation . He collected widely with 5000 herbarium specimens from throughout Australia and 4000 from Queensland. He is recognised by the following Queensland species that were named in his honour: *Acacia johnsonii*, *Commersonia johnsonii*, *Paspalidium johnsonii*, *Psydrax johnsonii* and *Solanum johsonianum*.

He had a major role in the early stages of databasing the 600,000 specimens of the Queensland Herbarium (HERBRECS), at that stage being only one of two major world herbaria to have databased their label information. During his 14 years as Director, the three volume *Flora of South-eastern Queensland* was published (Fig. 2), as were a number of vegetation surveys and mapping reports.

Bob's managerial skills were widely recognised by his being appointed Officer-in Charge of the Agricultural Research Laboratories at Indooroopilly (1984-1990), and by his position as presidents of two Australian scientific societies (Royal Society of Queensland (1981-1982) and the Ecological Society of Australia (1985-1986). He was also instrumental in the founding of the Federation of Australian Scientific and Technological Societies (FASTS) (board member 1986-89) to improve the profile of scientists in Australia. He was also an active member of CHAH (Council of the Heads of Australasia Herbaria), ASBS (Australasian Systematic Botany Society), the Bridled Naitail Wallaby Recovery Team, the

Scientific Advisory Committee for the Nature Conservation Act, Chair of the Protected Plants Management Advisory Committee and Chairman of Public Library Review Consultative Committee (1991).

He continued to work on his projects at the Queensland Herbarium for the 22 years since his retirement, often coming to the Herbarium a couple of days a week. He had 17 unfinished projects upon retirement, and although he has completed some of these, he did commence others. He was so regular he would ask management if he could take leave to go on overseas trips. His dedication to thorough ecological scientific research is reflected in the continual monitoring of a transect of his 'beloved' brigalow woodland at the Brigalow Research Station for 46 years, the last of which was undertaken during a heatwave a couple of years ago. On the taxonomic front work was continuing on the study of Australian Convolvulaceae and at the time of his death there were still loans arriving from other herbaria to be studied by Bob.

Bob will be best remembered for his contribution to the Queensland Herbarium, and for passing on its traditions and adding to them. Bob was a kind and considerate person who had many talents – his upbeat, positive, cheerful, encouraging, energetic approach to life and botany, his mentoring and willingness to share his wealth of knowledge, including invaluable advice to all the exotic places he and Toni visited in recent years. He had a wide knowledge on many

Fig. 2. The three volumes of the *Flora of Southeast Queensland* displayed by Bob Johnson, Will Smith, Estelle Ross, Margaret Saul, Gillian Rankin and Trevor Stanley, in 1989 celebrating publication of the third volume.





Fig. 3. Above, Staff of Botany Branch, 1985: *front row*: June Sawyer, Les Pedley, Bob Johnson, Monica Humphrey, John McDonald, Estelle Ross, Trevor Stanley, James Elsol, George Batianoff, Rod Henderson; *in rear*: Gordon Guymer, John Neldner, Ailsa Holland, Paul Robins, Bill McDonald, Laurie Jessop, Gwen Smit, Bryan Simon, Cathy Watkins, Aileen Wood, Ralph Dowling, Glenda Phillips, Hans Dillewaard, Sally Reynolds. Right, Tree planting celebrating 21st Anniversary of Botany Branch's Indooroopilly building, 1989; Bob with Peter Bostock, Paul Forster and George Batianoff.



things and would readily discuss with enthusiasm subjects ranging from Australian Rules Football to the intricacies of a Mahler symphony.

Bob is survived by his wife Toni and their children, Brett, Kim and Jodie and their families.

New taxa described by R.W. Johnson

One new genus (*Davenportia*) and 23 new species, 6 new subspecies and 4 new combinations, as follows.

Bonamia alatisemina R.W.Johnson
Bonamia deserticola R.W.Johnson
Bonamia erecta R.W.Johnson
Convolvulus angustissimus subsp.
omnigracilis R.W.Johnson
Convolvulus angustissimus subsp.
peninsularum R.W.Johnson
Convolvulus eyreanus R.W.Johnson
Convolvulus graminetinus R.W.Johnson
Convolvulus microsepalus R.W.Johnson
Convolvulus recurvatus R.W.Johnson
Convolvulus recurvatus subsp.
nullarborensis R.W.Johnson
Convolvulus tedmorei R.W.Johnson
Convolvulus wimmerensis R.W.Johnson

Davenportia R.W.Johnson
Duperreya halfordii R.W.Johnson
Ipomoea antonschmidii R.W.Johnson
Ipomoea argillicola R.W.Johnson
Ipomoea bracteolata R.W. Johnson
Ipomoea densivestita R.W. Johnson
Ipomoea dunlopii R.W. Johnson
Ipomoea funicularis R.W. Johnson
Ipomoea kalumburu R.W. Johnson
Ipomoea limosa R.W. Johnson
Ipomoea polpha R.W.Johnson
Ipomoea polpha subsp. *latzii*
 R.W.Johnson
Ipomoea polpha subsp. *weirana*
 R.W.Johnson

Ipomoea saintronanensis R.W.Johnson
Ipomoea tolmerana R.W. Johnson
Ipomoea tolmerana subsp. *occidentalis*
 R.W. Johnson
Ipomoea versipellis R.W. Johnson
Merremia kimberleyensis R.W.Johnson

New combinations

Convolvulus angustissimus subsp.
fililobus (Wawra) R.W.Johnson
Davenportia davenportii (F.Muell.)
 R.W.Johnson
Operculina aequisejala (Domin)
 R.W.Johnson
Stictocardia queenslandica (Domin)
 R.W.Johnson

Publications of

Robert William Johnson

- Johnson, R.W. (in press). The family Convolvulaceae, *Flora of Australia* 30.
- Johnson, R.W. (in press). Changes over 46 years in community structure and properties from a site-specific chronosequence in a cleared brigalow (*Acacia harpophylla*, Mimosaceae) woodland. *Austral Ecology*
- Johnson, R.W. (2012). New species and subspecies of *Ipomoea* L. (Convolvulaceae) from northern Australia and a key to the Australian species. *Austrobaileya* 8(4): 699-723.
- Johnson, R.W. (2011). Convolvulaceae (version 1). In, Kellermann, J. (Ed), *Flora of South Australia*, (ed 5). 20 pp. State Herbarium of South Australia, Adelaide. www.florasa.gov.au/ed5
- Ngugi, M.R., Johnson, R.W. & McDonald, W.J.F. (2011). Restoration of ecosystems for biodiversity and carbon sequestration: Simulating growth dynamics of brigalow vegetation communities in Australia. *Ecological Modelling* 222: 785-794.
- Johnson, R.W. (2010). *Davenportia* R.W. Johnson, a new genus of Convolvulaceae (*Merremieae*) from central Australia. *Austrobaileya* 8: 171-176.
- Johnson, R.W. and McDonald, W.J.F. (2010). The Brigalow Reference Area - a Unique Linear Remnant. *Australasian Plant Conservation: Journal of the Australian Network for Plant Conservation* 19(2): 18-19.
- Johnson, R.W. (2009). *Duperreya* Gaudich. (Convolvulaceae) revisited. *Austrobaileya* 8(1): 47-54.
- Johnson, R.W. (2009). A conspectus of *Merremia* Dennst. ex Endl. (Convolvulaceae) in Australia with the addition of two species. *Austrobaileya* 8(1): 55-63.
- Johnson, R.W. (2007). 'Everist, Selwyn Lawrence (1913-1981)', *Australian Dictionary of Biography*, volume 17, National Centre of Biography, Australian National University, Canberra.
- Johnson, R.W. (2006). The enigmatic *Ipomoea polpha* R.W. Johnson (Convolvulaceae). *Austrobaileya* 7(2): 311-317.
- Johnson, R.W. (2006). Woodlands and Open-forests of Eastern Australia. In, P. Attiwill & B. Wilson (Eds.) *Ecology - an Australian Perspective Second Edition*. Oxford University Press: Melbourne.
- Johnson, R.W. (2006). Cyril Tenison White (1890-1950). *Queensland Naturalist* 44: 68.
- Johnson, R.W. & McDonald, W.J.F. (2005). *Understanding Biological and ecological processes as a means of managing remnant brigalow communities*. In A. Exelby and A. Melzer (eds), *Remnant Vegetation in the Brigalow Belt Management and Conservation*. Central Queensland University, Rockhampton, pg. 14-21.
- Johnson, R.W. (2004). *Stictocardia* Hallier f. (Convolvulaceae) in Queensland. *Austrobaileya* 6: 631-637.
- Johnson, R.W. (2004). Vegetation survey of the Brigalow Research Station, Theodore, Queensland. *Proceedings of the Royal Society of Queensland* 111: 39-61.
- Johnson, R.W. (2003). Woodlands and Open-forests of Eastern Australia. In, P. Attiwill & B. Wilson (Eds.) *Ecology - an Australian Perspective*, pp. 295-314. Oxford University Press: Melbourne.
- Groves, R.H., Hosking, J.R., Bationoff, G.N., Cooke, D.A., Cowie, I.D., Johnson, R.W., Keighery, G.J., Lepschi, B.J., Mitchell, A.A., Moerkerk, M., Randall, R.P., Rozefelds, A.C., Walsh, N.G., Waterhouse, B.M. (2003). *Weed categories for natural and agricultural ecosystem management*. Bureau of Rural Sciences Canberra, available online at affashop.gov.au/PdfFiles/PC12781.pdf
- Groves, R.H., Hosking, J.R., Cooke, D.A., Johnson, R.W., Lepschi, B.J., Mitchell, A.A., Moerkerk, M., Randall, R.P., Rozefelds, A.C., and Waterhouse, B.M. (2002). *The naturalised non-native flora of Australia: its categorisation and threat to*

Fig. 4. Celebrating Phil Sharpe's 90th birthday at the Queensland Herbarium, August 2005. Left, Bob Johnson, Les Pedley, Bryan Simon, Gordon Guymer, George Bationoff, Phil Sharpe, Sally Reynolds. Right, Making his point.



- agricultural ecosystems. Unpublished report to Agriculture, Fisheries and Forestry Australia by the CRC for Weed Management Systems.
- Johnson, R.W. (2001). A taxonomic revision of *Convolvulus* L. (Convolvulaceae) in Australia. *Austrobaileya* 6: 1–39.
- Johnson, R.W. and McDonald, W.J.F. (2000). Brigalow Research Station vegetation monitoring. *Brigalow Research Station Technical Report 1999-2000*, pp 17-18. Queensland Department of Primary Industries: Brisbane.
- Johnson, R.W. and Anderson, E. (1999). Brigalow Research Station vegetation monitoring. *Brigalow Research Station Technical Report 1998-1999*, pp 12-18. Queensland Department of Primary Industries: Brisbane.
- Johnson, R.W. and Anderson, E. (1998). Brigalow Research Station vegetation monitoring. *Brigalow Research Station Technical Report 1997-98*, p 13. Queensland Department of Primary Industries: Brisbane.
- Johnson, R.W. (1998). Weeds of the Musselbrook area. Musselbrook Reserve Scientific Study Report, *Geography Monograph Series 4, Royal Geographical Society of Queensland*, pp 155-157.
- Johnson, R.W. (1998). Convolvulaceae of the Musselbrook Reserve. Musselbrook Reserve Scientific Study Report, *Geography Monograph Series 4, Royal Geographical Society of Queensland*, pp 153-154.
- Thomas, M.B., Clarkson, J.R and Johnson, R.W. (1998). Vascular Plants collected during the Musselbrook Reserve Scientific Study. Musselbrook Reserve Scientific Study Report, *Geography Monograph Series 4, Royal Geographical Society of Queensland*, pp 245-260.
- Johnson, R.W. (1997). The impacts of clearing on brigalow communities and consequences for conservation. In, Hale, P. & Lamb, D. (Eds), *Conservation outside Nature Reserves. Centre for Conservation Biology*, University of Queensland, Brisbane, pp 359-363.
- Johnson, R.W. (1997). Joan Cribb. In, Mackay, J. (ed), *Brilliant Careers: Woman collectors and illustrators in Queensland*. Queensland Museum: Brisbane.
- Austin, D.F., Jarret, R.L. and Johnson, R.W. (1993). *Ipomoea gracilis* R.Brown (Convolvulaceae) and its allies. *Bulletin of the Torrey Botanical Club* 120(1): 49-59.
- Johnson, R.W. (1992). Convolvulaceae and weeds of Heathlands. *Royal Geographical Society of Queensland, Cape York Peninsula Scientific Expedition Report*, pp. 51-54.
- Johnson, R.W. (1992). Convolvulaceae. In, Harden, G.J. (ed), *Flora of New South Wales* volume 3, pp 373-384. New South Wales University Press, Kensington.
- Johnson, R.W. and Burrows, W.H. (1992). *Acacia* open-forests woodlands and shrublands. In, R.H. Groves (2nd ed.), *Australian Vegetation*, pp 257-290. Cambridge University Press: Cambridge.
- Johnson, R.W. (1991). HERBRECS – the Queensland Herbarium records system – its development and use. *Taxon* 40(2): 285-300.
- Anderson, D. and Johnson, R.W. (1989). *Review of the Research Function of the Australian National Botanic Gardens*.
- Kleinschmidt, H.E. and Johnson, R.W. (1987). *Weeds of Queensland*, rev. ed. Queensland Department of Primary Industries, Brisbane.
- Johnson, R.W. (1988). Brigalow Country, rags to riches. In, *Harvests and Heartaches*, Queensland Department of Primary Industries, Brisbane.
- Johnson, R.W. (1988). Bailey, the botanist. In, *Harvests and Heartaches*, Queensland Department of Primary Industries, Brisbane.
- Johnson, R.W. (1987). Two new species of *Convolvulus* L. (Convolvulaceae) from South Australia. *Austrobaileya* 2(4): 408-411.
- Johnson, R.W. (1987). Two new species of *Convolvulus* L. (Convolvulaceae) from Central Australia. *Austrobaileya* 2(4): 405-407.
- Goodall, D.W. and Johnson, R.W. (1987). Maximum-likelihood ordination – some improvements and further tests. *Vegetatio* 73: 3-12.
- Johnson, R.W. (1986). Future Botanical Research in Queensland – Ecology. In, H.T.Clifford and R.L. Specht (eds), *Tropical Plant Communities* pp. 207-213. Department of Botany, University of Queensland, St Lucia.
- Johnson, R.W. (1986). Functioning of Tropical Plant Communities – Weeds. In, H.T.Clifford and R.L. Specht (eds), *Tropical Plant Communities* pp. 104-112. Department of Botany, University of Queensland, St Lucia.
- Johnson, R.W. (1986). *Proposal for the organization of botanical services in the Northern Territory*, 104 pp. Report to the Director, Conservation Commission of the Northern Territory.
- Johnson, R.W. (1985). Floristic data base implications, deficiencies and recommendations. In *Report of Recreation Management workshop*, pp 303-306. Brisbane Forest Park, Brisbane.
- Johnson, R.W. (1985). Impact of agricultural development on the vegetation of the brigalow lands of Queensland. In, J. Gasteen, D. Henry and S. Page (eds): *Agriculture and Conservation in Inland Queensland*. Wildlife Preservation of Queensland, Brisbane.
- Johnson, R.W. (1985). Definition and broad geographic outline of savanna lands. In, J.C.Tothill and J.J. Mott (eds), *Ecology and Management of the World's savannas*, pp 1-13. Australian Academy of Science, Canberra.
- Johnson, R.W. (1984). Weeding on exotics. In, W. Davies (ed.), *Plant a Tree: a Working Guide to Greening of South-east Queensland*, p 91. Ecos Educational Publishers, Nambour.



Fig. Bob Johnson, 2013.

- Johnson, R.W. (1984). Flora and vegetation of the brigalow belt. In, A. Bailey (ed.), *The Brigalow Belt of Australia*, pp. 41-59.
- Johnson, R.W. (1983). Methods of studying woody weed problems in arid and semi-arid regions. In, *Proceedings of Workshop on Woody Weeds of Northern Summer Rainfall Areas*, October 1983.
- Johnson, R.W. (1983). Cuscutaceae. In, B.D. Morley and H.R. Toelken (eds.), *Flowering Plants in Australia*, pp. 261-262. Rigby: Adelaide.
- Johnson, R.W. (1983). Convolvulaceae. In, B.D. Morley and H.R. Toelken (eds.), *Flowering Plants in Australia*, pp. 259-261. Rigby: Adelaide.
- Johnson, R.W. (1983). Queensland Herbarium Records Data Base Project. In, *Workshop on data bases in the National Sciences*, pp. 46-53. CSIRO: Brisbane.
- Johnson, R.W. (1983). The Queensland Flora and its Collection. *Proceedings of the Royal Society of Queensland* 94: 1-18.
- Johnson, R.W. (1983). Selwyn Lawrence Everist 1913-1981. *The Queensland Naturalist* 24: 68-71.
- Goodall, D.W. & Johnson, R.W. (1982). Non-linear ordination in several dimensions. A maximum likelihood approach. *Vegetatio* 48: 197-208.
- Johnson, R.W. (1982). Effect of weighting and size of the attribute set in numerical classification. *Australian Journal of Botany* 30: 161-174.
- Johnson, R.W. (1981). New records and notes – Two button weeds in Queensland. *Australian Weeds* 1:34.
- Johnson, R.W. (1981). Obituary – Selwyn Lawrence Everist 1913-81. *Australian Weeds* 1: 42.
- Johnson, R.W. and Goodchild, P. (1981). *Current Plant Taxonomic Research on the Australian Flora 1980-81*. 125 pp. Queensland Department of Primary Industries, Brisbane.
- Johnson, R.W. (1981). Choice of attributes to study succession in brigalow (*Acacia harpophylla*) communities. In, A.N.Gillison and D.J. Anderson (eds.), *Vegetation Classification in Australia*, pp 66-77. CSIRO and Australian National University, Canberra.
- Johnson, R.W. (1981). Convolvulaceae. In, J.P. Jessop (ed.), *Flora of Central Australia*, pp 284-289. Sydney: A.H. and A.W. Reed.
- Johnson, R.W. and Burrows, W.H. (1981). Acacia open-forests woodlands and shrublands. In, R.H. Groves (ed.), *Australian Vegetation*, pp 198-226. Cambridge University Press, Cambridge.
- Johnson, R.W. and Back, P.V. (1981). Some studies in the control of Dawson gum or blackbutt (*Eucalyptus cambageana*) II Basal bark and cut stump treatment of multistemmed regrowth. *Queensland Journal of Agricultural and Animal Sciences* 38: 33-42.
- Johnson, R.W. and Purdie, R.W. (1980). The role of fire in the establishment and management of agricultural systems. In, A.M. Gill, R.H.Groves and I.R. Noble (eds.), *Fire and the Australian Biota*, pp 497-528. Canberra: Australian Academy of Science.
- Johnson, R.W. (1980). Studies of a vegetation transect through brigalow (*Acacia harpophylla*) forest in central Queensland. *Australian Journal of Ecology* 5: 287-307.
- Johnson, R.W. (1980). The Queensland palm flora. *The Queensland Naturalist* 23: 10-20.
- Johnson, R.W. (1980). A new combination in *Operculina* (Convolvulaceae). *Journal of the Adelaide Botanic Gardens* 2: 355.
- Johnson, R.W. and Goodall, D.W. (1979). A maximum likelihood approach to non-linear ordination. *Vegetatio* 41: 133-142.
- Johnson, R.W. and Back, P.V. (1977), Relationship between burning and spraying in the control of brigalow (*Acacia harpophylla*) regrowth II Burning as a post-spraying treatment. *Queensland Journal of Agricultural and Animal Sciences* 34: 189-196.
- Johnson, R.W. and Back, P.V. (1977), Relationship between burning and spraying in the control of brigalow (*Acacia harpophylla*) regrowth. I Burning as a pre-spraying treatment. *Queensland Journal of Agriculture and Animal Science* 34: 179-188.
- Johnson, R.W. and Back, P.V. (1977). Combination of cropping and spraying to control brigalow (*Acacia harpophylla*) suckers. *Queensland Journal of Agricultural and Animal Sciences* 34: 197-204.
- Johnson, R.W. and Back, P.V. (1977). Control of brigalow (*Acacia harpophylla*) in cattle country by two aerial spraying applications, 10 months apart. *Queensland Journal of Agricultural and Animal Sciences* 34: 9-24.
- Johnson, R.W. (1977). *Current Plant Taxonomic Research in Australia 1975-76*, 55 pp. Queensland Department of Primary Industries, Brisbane.
- Johnson, R.W. (1976). Competition between brigalow (*Acacia harpophylla*) suckers and establishing pastures following pulling and burning. *Queensland*

Journal of Agricultural and Animal Sciences 33: 43-66.

- Johnson, R.W. and Back, P.V. (1974). Control of brigalow (*Acacia harpophylla*) regrowth by single and double ploughing. *Queensland Journal of Agricultural and Animal Sciences* 31: 351-361.
- Johnson, R.W. and Back, P.V. (1974). Some studies into the chemical control of Dawson gum or blackbutt (*Eucalyptus cambageana*). Part II – Stem injection of sapling trees. *Queensland Journal of Agricultural and Animal Sciences* 31: 300-31.
- Johnson, R.W. and Back, P.V. (1974). Some studies into the chemical control of Dawson gum or blackbutt (*Eucalyptus cambageana*). Part I – Introduction and stem injection of virgin trees. *Queensland Journal of Agricultural and Animal Sciences* 31: 263-269.
- Johnson, R.W. (1973). *A Study of some Multivariate Methods for the analysis of Botanical Data*, 357 pp. PhD thesis, Utah State University.
- Johnson, R.W. and Back, P.V. (1973). Influence of environment on methods used to control brigalow (*Acacia harpophylla*). *Queensland Journal of Agricultural and Animal Sciences* 30: 119-211.
- Johnson, R.W. (1970). Vegetation Survey of Brigalow Research Station. In, *Brigalow Research Station Soil and Vegetation Surveys*. Queensland Department of Primary Industries, Brisbane.
- Johnson, R.W. (1968). Brigalow Research Station and its research programme. *Tropical Grasslands* 2: 111-114.
- Johnson, R.W. (1968). Brigalow Clearing and the Control of Regrowth. *Tropical Grasslands* 2: 115-118.
- Johnson, R.W. (1966). Where brigalow scrubs grow. *Queensland Agricultural Journal* 92: 662-667.
- Johnson, R.W. (1966). Brigalow clearing must be planned. *Queensland Agricultural Journal* 92: 712-725.
- Johnson, R.W. (1965). Influence of age and environment on control of brigalow. *Australian Weed Conference Proceedings* 1: 2-5.
- Johnson, R.W. (1964). *Ecology and Control of Brigalow in Queensland*, 92 pp. Queensland Department of Primary Industries, Brisbane.
- Johnson, R.W. (1964). Knowing the country. *Queensland Agricultural Journal* 88: 720-726.
- Johnson, R.W. (1963). *The Ecology and Control of Brigalow (Acacia harpophylla F.Muell. ex Benth.) in Queensland*. 220 pp. MSc thesis, University of Queensland, Brisbane.
- Johnson, R.W. (1962). Clearing the scrub. *Queensland Agricultural Journal* 88: 736-750.
- Fox, N.F. and Johnson, R.W. (1957). Effects of 2,4-D and 2,4,5-T derivatives on bloodwood (*Eucalyptus dichromophloia* F.Muell.). *The Queensland Journal of Agricultural Science* 14: 119-123.



Coates Wildlife Tours

Specialists in Nature Tours since 1986

- ◆ Informative naturalist/botanist leaders
- ◆ Small groups (6 - 12 participants)
- ◆ Private charters available
- ◆ Fully accommodated & camping tours

Kimberley Discovery

15 Day Camping/Accommodated Tour
Departs 15th June 2013

Explore the wildlife & gorges of this unspoiled wilderness area.

Kimberley Wonders

12 Day Camping Tour
Departs 26th June 2013

See spectacular gorges, Gibb River Rd, Mitchell Plateau, El Questro & more.

Rudall River Expedition

14 Day Camping Tour
Departs 17th July 2013

Experience the very remote, harsh yet beautiful Rudall River National Park.

Western Explorer

14 Day Camping Tour
Departs 30th July 2013

Explore the botanical highlights of the Kennedy Ranges, Mt Augustus & Karijini.

Holland Track & Great Western Woodlands

12 Day Camping Tour
Departs 28th August 2013

Experience the biodiversity of the world's largest temperate woodland.

Contact us for our full 2013 tour program:

Free Call: 1800 676 016

Web: www.coateswildlifetours.com.au

Email: coates@iinet.net.au

GSA Coates Tours Licence no 9ta1135/36

ABRS report

Flora of Australia

As stated in my last report *Flora of Australia Volume 26* is at press. I still don't have details of the retail price, but a publication date in May is predicted.

Editing is progressing well with the first of the Asteraceae volumes, which I am now intending to produce as Volume 37, with an introduction and synoptic classification for the family in Australia, and taxonomic treatments for most of the tribes, excluding Gnaphalieae and Astereae which will each be treated in a separate volume.

Grants

The Capacity Building Grants for 2013–14 have been awarded, applicants notified, and details provided on the ABRS website at: www.environment.gov.au/biodiversity/abrs/funding-and-research/capacity-grants/awarded-cbg.html

Research grants are still being reviewed, and applicants can expect to hear the outcome of their applications in May.

Student Travel Bursaries

The ABRS Student Travel Bursary round for 2013 is now open. Amounts available are \$1,000 for an international conference/workshop and \$500 for travel within Australia. Applications close on 26 April 2013.

You can find more information regarding the Bursaries and an application form at: www.environment.gov.au/biodiversity/abrs/funding-and-research/bursaries/index.html.

Bush Blitz

The next Bush Blitz survey will be in May, at Henbury Station south of Alice Springs.

Annette Wilson
Editor, *Flora of Australia*
February 2013

Miscellanea

Changes to *Nuytsia*

The year 2012 was a demanding one for the editorial team at *Nuytsia*, with Volume 22 (at 483 pages) amongst the largest produced for *Nuytsia* over the course of a calendar year. 2013 is shaping up as a similarly productive year, with five papers published in early February and a plethora of manuscripts currently undergoing editorial markup. The large number of manuscripts, combined with our desire to facilitate their rapid turnaround, has created a sizeable workload for the editorial committee. Therefore, in order to streamline the editing and page-setting process, we have made changes to both our electronic publication model and our guidelines for authors.

We are now electronically publishing single papers or small batches of papers on a regular basis—these remain freely available for download at <http://florabase.dec.wa.gov.au/nuytsia/>. Please subscribe to our Publication Alert newsfeed to be informed when new papers become available online. A printed volume will be produced at the end of each calendar year for distribution to our exchange partners, and will be made available for purchase by subscription

following a call for expressions of interest. Please get in touch if you want to be added to our end of year hard copy email alert.

Authors are now being asked to assist the editorial committee by submitting papers formatted using a *Nuytsia* MS-Word template (available at <http://florabase.dec.wa.gov.au/nuytsia/authors>). The *Nuytsia* styles are embedded in a mock paper (co-authored by the legendary (Miss) Anne Elk), which acts as a visual supplement to our author guidelines. The *Nuytsia* styles can be imported into an existing Word document, although it is simpler to paste existing text into the mock and to then apply the *Nuytsia* styles to this text. Instructions for both approaches have been provided on our website. We recognise that this will create additional work for authors, but we feel that this is a fair exchange for a colour publication that is made freely available in a timely fashion. Finding reviewers is an ongoing challenge and so, in the spirit of reciprocity, submitting authors will also be approached to review papers for *Nuytsia*.

On behalf of the *Nuytsia* editorial team and all those who have published in *Nuytsia* over the past 11 years, I extend heartfelt thanks to Beng Siew



Fig. 1. Former Managing Editor Beng Siew Mahon (L) and Curation Editor Meriel Falconer have made exceptional contributions to *Nuytsia* in recent years.

Mahon (Fig. 1), who stepped down from her position as Managing Editor at the end of 2012

(she remains a librarian at DEC's Science Division Conservation Library). Beng Siew has been involved with *Nuytsia* since 2001 when, as an Editorial Assistant, she had the thankless task of finding reviewers, managing manuscripts and organising print runs. Her role was rebadged as Managing Editor in 2008 to reflect her extensive involvement in the publication process, which was expanded to include desktopping of manuscripts—an undertaking that she embraced with her characteristic fortitude and proficiency. Many of these thankless tasks now fall to me, with Kelly Shepherd having taken on the desktopping component as of November 2012. We are left wondering how Beng Siew managed both roles last year!

Juliet Wege
Managing Editor *Nuytsia*
Western Australian Herbarium

News

People on the move

While some of these events are dated, most had not been reported in these pages and may have escaped the attention of interested members. We encourage further such news for future issues. Eds.

New Zealand

Since retiring in 2009 Phil Garnock-Jones is now Emeritus Professor at Victoria University, Wellington, and part time researcher at Museum of New Zealand Te Papa Tongarewa (WELT). His task there is to write the treatment of New Zealand's largest genus *Veronica* for the new on line Flora (www.nzflora.info/about.html).

Northern Territory

Dave Albrecht resigned and moved from Alice Springs (NT) to Tasmania in June 2012. In Darwin at DNA Donna Lewis is on maternity leave for 2 years as of August 2012 following on from resignations of collection manager Ben Stuckey in February 2012, followed by botanist Philip Short. Despite ongoing recruitment freezes, Deb Bisa has been appointed collection manager and Peter Jobson to Alice Springs, leaving one botanist in Darwin and one in Alice, roughly 650,000 km² for each botanist!

Adelaide

It's now 18 months since Michelle Waycott

was appointed to jointly head up the State Herbarium of South Australia and take up a professorship in plant systematics at the University of Adelaide. Artist Gilbert Dashorst and data capture operator Jean Steele-Henderson took voluntary retirement in 2012 in a continued push to reduce Public Service numbers. Ainslie Calladine has been made an Honorary Research Associate.

Queensland

Bill McDonald, Bryan Simon, Kathy Stephen and John Thompson at the Queensland Herbarium and Gary Wilson in the Australian Tropical Herbarium "retired" in 2012 as part of the wide-ranging cuts to the Queensland Public Service. Bill, Bryan and John are continuing as research associates.

Australia Day Honours

Congratulations to Des Nelson, formerly of the Northern Territory Herbarium at Alice Springs, for his recent OAM for service to conservation and the environment, particularly in central Australia. We recently published in the Newsletter his memories of John Maconochie and more recently he has produced a large unpublished manuscript on his times with George Chippendale.

Book reviews

A new Monocot volume of *Flora of Australia*

M. L. Moody

University of Texas at El Paso, El Paso, Texas, USA

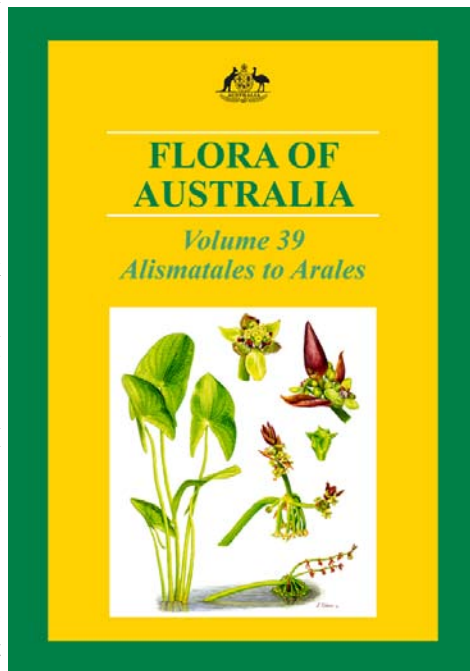
Flora of Australia Volume 39.
Alismatales to Arales
Australian Biological Resources
Study, CSIRO Publishing,
Collingwood, Victoria. 2011320 pp.
ISBN: 9780643104235, AU \$130
(hardback); ISBN: 9780643104242,
AUS\$ 110 (paperback).
www.publish.csiro.au/pid/6816.htm

This volume of the *Flora of Australia* is another fine contribution covering an eclectic group of monocots ranging from the minute aquatic duckweeds (Lemnaceae) to the largest of the monocots, the palms (Arecaceae), as well as seagrasses, pondweeds and arums. This volume is the work of 30 authors, illustrators, and photographers. With aquatic monocots featuring predominantly, it includes a considerable contribution by the late Dr Surrey Jacobs and stands as a fine tribute to his work on some the difficult plant groups he found most fascinating.

As another volume of the *Flora of Australia* in print form (adding to the 32 before it), we are all quite familiar with the general style and structure, including a number of representative illustrations and photographs complimenting the text along with distribution maps. The format works well and I still find it one of the easier floras of the world to use for its practicality and in a size that can be taken to the field, given you are looking for a specific plant group. As for most volumes, this one could benefit from more illustrations, but again the size of these volumes could quickly become unwieldy.

As an added bonus Dowe and Jones contribute an interesting discussion to the pollen morphology of the Arecaceae and its great diversity in the family, while noting the relative lack of diversity for species level identification within Australian genera. The pollen micrographs are unusual for a volume of a flora, but an appealing contribution as a brief interlude into scanning electron microscopy is always welcome.

As to the practical use of this volume, I was able to give some of the keys in this volume a go and found them relatively unambiguous, no small feat given the ambiguous nature of many of the groups of aquatic plants included. The keys were particularly useful for the minute annual *Triglochin* (Juncaginaceae) and some of the generally perplexing groups such as *Lepilaena*, *Vallisneria*, and *Najas*. Illustrations of fruit characteristics among the Juncaginaceae and Alismataceae, as well as whole plant illustrations of Lemnaceae, are particular helpful.



There has been plenty of contention among plant systematists as families and genera have come and gone among these monocot groups with the onset of molecular data and phylogenetic methods. The authors generally do justice to the debates, discussing and referencing these matters (e.g. Juncaginaceae and Zosteraceae) with the exception of Lemnaceae (now included within Araceae). It is important to note that the discussion of taxonomic boundaries has not subsided and more changes are foreseeable. This brings me to the unfortunate limitations

of the hard copy of the *Flora of Australia*, in that there will still inevitably be changes to the nomenclature that are not accommodated here. Electronic versions of the *Flora of Australia* will be particularly important as we look to the future.

In conclusion this volume of the *Flora* comes highly recommended. While these volumes might be taken for granted by some, it is important to recognize the unique contributions these experts are sharing and the lifetimes of knowledge provided for these groups of Australian plants.

A comprehensive guide to medicinal plants

Beth Gott
School of Biological Sciences
Monash University, Clayton, Victoria

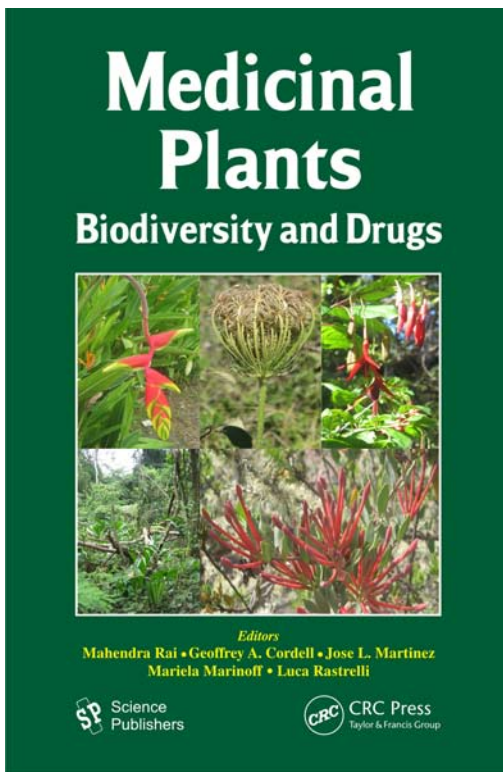
Medicinal Plants: Biodiversity and Drugs. Edited by Mahendra Rai, Geoffrey A. Cordell, Jose L. Martinez, Mariela Marinoff and Luca Lastrelli. CRC Press, Boca Raton, FL, USA. 2012. 688 pp. ISBN: 9781578087938. RRP AU \$195 (hardback). www.crcpress.com/product/isbn/9781578087938

Products Inc. USA, who writes:

“only by establishing a broad and deep evidence base for traditional medicines which will withstand critical scientific scrutiny and pass the criteria of quality, safety and efficacy, will traditional medicine develop as an integral and essential aspect of effective public health care”.

This comprehensive book covers a world-wide range of countries in twenty-one chapters involving sixty-six authors. Most chapters involve chemical analysis of the active substances. Information comes from Amazonian and other South American tribes, the Indian sub-continent, and traditional European medicinal plants. Some chapters review particular species or diseases – malaria, diabetes, neurological diseases, while others cover the bioactivity of essential oils from many sources, or the diversity and use of *Croton* species. One chapter surveys herbal drugs used for domestic animals, another the medicinal properties of propolis, the resinous hive product of honeybees.

Methods to develop the wider acceptance of herbal medicine are realistically discussed in Chapter 1, ‘New Strategies for Traditional Medicine’ by Geoffrey Cordell of Natural



The Convention on Biological Biodiversity, signed by all countries of the world with the notable exception of USA, says that plants used by Indigenous people are owned by them. It specifies that “a known plant with a known medicinal use cannot be patented, neither can a new compound from that plant” but pharmaceutical companies and individuals find ways of getting around this. An Australian example is the patenting in the USA of a standard method of making an extract of *Centipeda cunninghamii*, Old Man Weed, a well-known Indigenous medicine in Victoria. As far as I know, this USA patent has never been enforced in Australia. Knowledge of medicinal plants is often taken from indigenous people and utilised without compensation. In this Chapter, Cordell acknowledges the help of Professor David Briggs, Centre for Complementary Medicine

Research, University of Western Sydney.

Three Australian authors are represented: Peter Mahon, Enzo Palombo and Bitá Zaferanloo (all Swinburne University), who contribute an interesting Chapter on the medicinal potential of fungi and bacteria which live harmlessly as endophytes in various plant hosts. The chemistry of substances produced by the endophytes and their bioactivity is well surveyed.

While in some cases authors are dealing with botanically identified lists of species obtained from traditional users, other articles which

systematically explore the properties of certain families or genera, are more useful to the general ethnobotanist. One chapter is devoted to the Euphorbiaceae of North-eastern Brazil. From the ninety-four species of *Croton* from the area, sixty-six have been examined for their use as medicines. In some cases genetic data is available.

This book is well worth the attention of practitioners of herbal medicines, as well as others interested in the topic. Its comprehensive coverage recommends it to libraries.

A showcase of palms

Bee Gunn

Evolution, Ecology and Genetics,
The Australian National University, Canberra

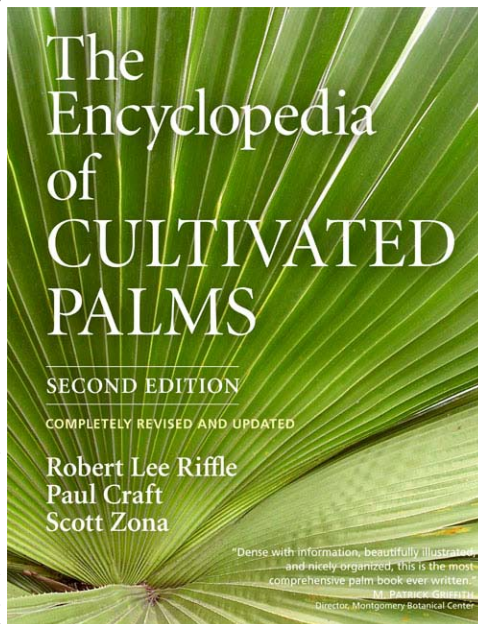
The Encyclopedia of Cultivated Palms. By Robert Lee Riffle, Paul Craft and Scott Zona. Timber Press, Portland, Oregon, USA. (Second Edition). 2012.

528pp. ISBN 9781604692051. RRP AU \$69.99 (hardcover).

www.timberpress.com/books/encyclopedia_cultivated_palms/riffle/9781604692051
Available in Australia from Capricorn Link (<http://warehouse.capricornlink.com.au/>)

Palms have intrigued botanists, horticulturists and collectors for centuries because of their unique recognizable morphology, extraordinary biology and economic significance. The iconic Palm House at the Royal Botanic Gardens, Kew was erected between 1844-48 by Richard Turner specifically for cultivating palms collected and introduced into Europe during Victorian times. I have been very fortunate to have visited the Fairchild Tropical Botanic Gardens, Montgomery Botanical Centers, Kew and the

Royal Botanic Gardens, Sydney throughout my graduate studies for research and sampling from their exotic palm collections. The magnificent living palm specimens, so well nurtured and curated outside of their native range, were awe-inspiring experiences.



Palms are very versatile plants. There are species which are tolerant of drought, some which are water-loving while others are able to thrive in alkaline soils and habitats with high salinity. Some palms are scandent such as the rattans, others creep by above or below ground stems forming ground covers such as the clustering *Licuala sarawakensis* or are erect and solitary like *Roystonea regia*. Most palms are long-lived and slow growing compared to other angiosperms but, within the group, some are faster growing than

others. This useful information is provided under the landscape section of the book followed by additional information on palm internet resources and global institutions with significant palm collections.

Descriptions given for the species included in the book are interesting and contain sufficient taxonomic information. Translations of the Latin epithets allude to the uniqueness of each palm. The specific epithet for the Australian rattan, *Calamus moti* comes from the Aboriginal name for the palm and its common name is “yellow-wait-a-while” or the infamous “bush lawyer” familiar to bush walkers. The landscape suggestions for the palms, even for those highly spiny species, are commendable. The formidable spines themselves become an aesthetic feature, as in the beautiful spiral arrangement of the “long black spines” of *Astrocaryum vulgare* garlanded around its trunk. The authors also highlight the unusual beauty of *Washingtonia filifera* and *W. robusta* whose picturesque shag, sometimes called a *petticoat*, consisting of the adherent dead leaves whose leaf bases refuse to leave the trunk, is often an abode for wildlife like owls, moths, roaches and rats. The wonderful usefulness of palms is unparalleled in the coconut, which has been domesticated and cultivated widely throughout the tropics from the Indo-Atlantic to the Pacific Oceans since the dawn of exploration by early

Austronesian, Arab and European navigators. This quintessential emblem of the tropics reproduces entirely by seed and is relatively easy to grow below 1000m and within the humid subtropics.

Palms endemic to many parts of the tropical world are under threat due to deforestation for agriculture and development. This publication missed the opportunity to include IUCN status information on these species. This information would have highlighted the need for conservation of the high category listed palms and also alerted palm enthusiasts to the illegal trade of seeds and potential over-collecting of IUCN listed species from their wild sources.

This book whets one’s appetite for learning about the palm world and succeeds in showcasing the amazing beauty of palms and their potential as features in landscape designs. The well-organized, easily referenced photographic plates and descriptions coupled with morphological sketches of trunks and leaves, and a glossary make this a truly valuable encyclopedia for any landscape gardener, scholar, horticulturalist or palm enthusiast.

A threatened plant Flora of Western Australia’s Avon Wheatbelt

Margaret T. Collins
School of Plant Biology,
University of Western Australia, Crawley, Western Australia.

Threatened Flora of the Western Central Wheatbelt. By Joel Collins. Department of Environment and Conservation, Bentley, Western Australia. 2009. 160 pp. ISBN 978-0-7307-5597-5 RRP AU\$20.00 (paperback). Available from the Western Australia Wildflower Society at their website: <http://members.ozemail.com.au/~wildflowers> Downloadable as a pdf from the Department of Environment and Conservation website: www.dec.wa.gov.au/publications/doc_download/4767-threatened-flora-of-the-western-central-wheatbelt.html

The wildflower state of Western Australia is renowned for the beauty of its native plants and the South West Botanical Province known

for its high biodiversity and endemism. Placed centrally within this province, the Western Australian Wheatbelt, forms a broad arc around the northern and central Perth metropolitan area. The region extends from the coast north of Perth to the western boundary of the Goldfields and south from the Darling Scarp to the northern boundary of the Great Southern Region. This book describes threatened flora of the central part of the IBRA region known as the Avon Wheatbelt, an area of approximately 2.9 million hectares.

Most of the indigenous vegetation in the agricultural areas of Western Australian has been cleared for farming leaving scattered and highly fragmented remnants surviving in roadside verges, small reserves and occasional patches on private property. Indeed, there are large areas of the wheatbelt where one can

drive for many kilometres where the only sign of natural vegetation is the occasional tree in a paddock or on a roadside reserve. The result of this extensive land clearing is that many indigenous plant species now have very narrow distribution ranges or are present as multiple small localized populations separated by great distances. This makes them very vulnerable to land clearance, rising water tables, soil salinity, soil acidity, erosion, frequent fire and other habitat threatening processes. The toll this has taken on the flora is provided in the introduction to *Threatened Flora of the Western Central Wheatbelt* where it states:

“Approximately 450 plant species are at risk of extinction in the Western Australian Agricultural Zone (which includes the Wheatbelt)”.

A number of recovery actions and management plans have been implemented by the Western Australian Department of Environment and Conservation (DEC) to counteract these threats. These include monitoring of known populations of rare or threatened flora. This book is a field guide to 70 plant species listed as declared rare flora within the central wheatbelt at the time of publication (2009) and has been prepared as an aid to the process of monitoring and discovery for both professionals and non-botanists.

This is a typical of DEC publications on rare or endangered flora. It contains information useful to a wide variety of readers, including definitions of flora conservation categories, but not enough detail for the unscrupulous to identify sites precisely. Each species is

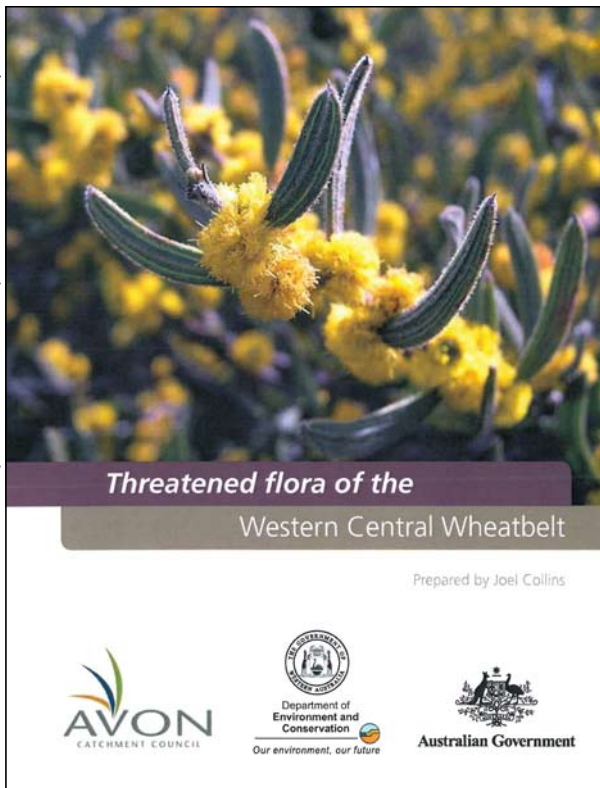
described in a double page spread with a description and distribution map indicating current records of occurrences on the left hand side a series of photographs showing different physical characteristics of the taxon concerned on the facing page. These vary but often include: a photograph of a herbarium specimen, close-ups of those characteristics of the flowers and fruits necessary for identification and often at least one of the growth habits of the plant in its natural habitat. The descriptions use clear and concise terminology that does not require expertise in botany and include items such as flowering period, descriptions of

soil preferences and associated vegetation. There is also a section listing similar species and the characteristics that separate these from the rare taxon.

Identification of these rare species in the field would be greatly assisted by use of this book and it would be an extremely useful addition to the field library of wildflower enthusiasts, land managers, farmers and indeed anyone undertaking flora surveys in the central wheat-belt. I would have been very happy to have had it with me in 2008 when I was surveying the vegetation of basin

wetlands of the Avon Catchment for DEC.

At \$20.00 the book is inexpensive for 160 pages but it is quite difficult to find hard copies. I contacted DEC and found it was unavailable from the Department and that print runs had been made for the demands of particular community groups. However, it can be downloaded as a pdf from the DEC website and is sold through the Western Australian Wildflower Society website.



An accessible introduction to forensic botany

James Indsto
Forensic Botanist, NSW Health Pathology

Forensic Botany: A Practical Guide
Edited by David W. Hall and Jason H. Byrd. Wiley-Blackwell, Chichester, West Sussex, UK 2012. 216pp. ISBN: 978-0-470-66123-9. RRP AU \$77.95/NZ \$87.99 (paperback). http://au.wiley.com/WileyCDA/WileyTitle/productCd-0470661232_descCd-description.html

At just over 200 pages and a recommended retail price of AU \$77.95, the soft cover edition of this book is clearly aimed at providing an accessible introduction to forensic botany to a wide audience. Practicing crime investigators and forensic scientists from other disciplines will benefit from an overview of how modern forensic botany can contribute to a crime investigation and how to collect and preserve evidence. Trained botanists, who may be asked to assist in a crime investigation but may have a limited background in crime investigation and forensics, will find this book helps them develop a forensic

focus. A forensic botanist, who is well read, should have encountered much of the content of this book during training or from later reading of botanical, forensic or legal literature. This book, which is necessarily an introduction, may inspire botanists to expand their skills in forensics. Given that specialist forensic botanists are a rare breed, this is important.

As a botanist is rarely the first person to examine a crime scene, it is crucial that

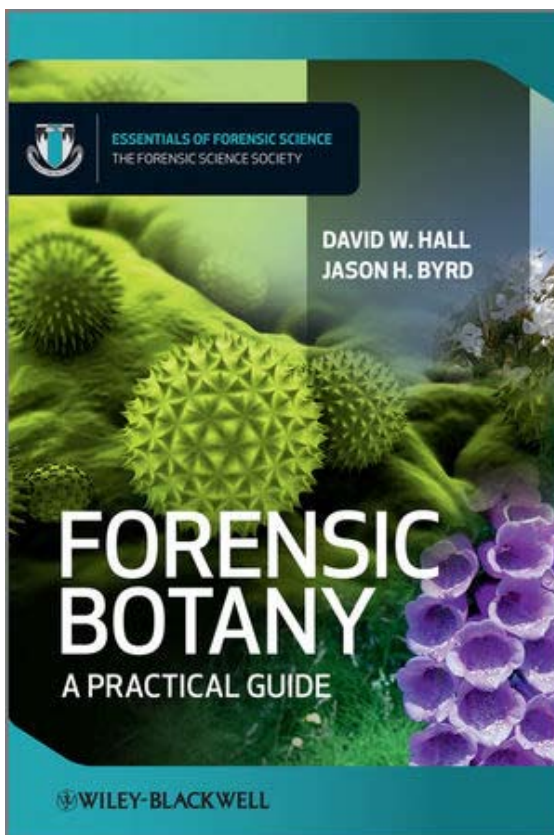
crime scene officers and detectives have the background knowledge and contacts to be able to recognise, and appropriately collect, botanical evidence. Additionally, forensic scientists trained in other disciplines may come across botanical evidence, so they too will need to be able to recognise the value of botanical evidence to ensure it is not overlooked. This is an area where this book excels as it provides a

very readable overview in the first 2 chapters, with further chapters developing practical applications. Chapter 3 covers crime scene and evidence collection which will be especially useful for crime scene personnel seeking to adapt their expertise to botanical evidence as well as for botanists new to forensic casework. Importantly, crime investigators are given advice on how to track down a suitable botanical expert to assist with their case. Hopefully, this book will also impress upon crime investigators the need to get a botanist involved early in an investigation, ideally while evidence is being collected. All too often botanical evidence is

the last to be considered and is often dealt with for completeness as a case is going to trial.

Forensic botany is a field requiring opinion evidence in court. These issues are well covered in Chapter 4 titled 'Expert Evidence', a subject of particular value to the botanists who will be required to provide expert evidence.

DNA technology has already revolutionised many disciplines within botany. Chapter 5:



'Use and guidelines for plant DNA analyses in forensics' will be of value to the botanist, but will be especially valuable to those many who would wish to bridge the large gap between high school biology and genetics, general university biology courses, and recent advances in plant molecular biology. Many botanists will be aware of DNA methods in plant systematics and their application to plant identification. This book does not attempt to be a 'how to' manual for botanists as they will already have this knowledge from reading the scientific literature and, in many cases, from research and publication of research findings. I found this chapter a lucid and enjoyable read. Given that DNA methods in plant identification have yet to make a significant impact in forensics it is encouraging to see this subject so capably introduced.

Chapter 6 provides an introduction to microscopes and other tools needed for forensic botany work. This is well covered, but could have been expanded to include photographic

techniques in casework. The famous Lindbergh case (chapter 7) is particularly well covered as an example of the application of wood anatomy in solving a crime. Forensic palynology, the study of pollens and similar microscopic evidence (chapter 8) is ably covered. Chapter 9, concerning algae in forensic investigations, is very comprehensive, both scientifically and in terms of procedures and case applications. This is a really useful contribution to forensic botany. Finally, chapter 10 provides numerous examples of botanical evidence in criminal investigation. This is well covered, but similar examples can be found elsewhere in the forensic literature.

In summary, this book is to be highly recommended. It provides a sound introduction to forensic botany to non-botanists who need this knowledge (crime investigators and forensic scientists) and also botanists with limited knowledge of crime scene investigations and forensics.

Cultural tradition in managing a Tibetan biodiversity hotspot

Hongyan Xie

Research School of Biology, The Australian National University, Canberra

Khawa Karpo: Tibetan traditional knowledge and biodiversity conservation. By *Jan Salick and Robert K. Moseley*. *Missouri Botanical Garden Press, St Louis (MO)*. 2012. 276 pp. ISBN 978-1-935641-06-3 US\$50.00 (softcover). www.mbgpress.info/index.php?task=id&id=12112

For most botanists and readers, Mt Khawa Karpo in the Hengduan ranges of southwest China, is a remote and exotic place. The perpetually snow clad 6,740 m peak, the highest in Yunnan, has been a focus of Tibetan culture and reverence for centuries. The Hengduan ranges became famous in the late 19th - early 20th century from the accounts of intrepid plant collectors who sent back many plants to western gardens. These included ornamental species of *Gentiana*, *Meconopsis*, *Paeonia*, *Pedicularis*, *Primula*, *Rhodododron*, *Saussurea*, and *Syringa*. Since then the

Hengduan Ranges have been recognized as a global biodiversity hotspot (Myers *et al.* 2000), with about 3,500 endemics in a flora of 12,000 species (Web reference 1). This book focuses on how current management of ecosystems, vegetation and plant species around Khawa Karpo is affecting their sustainability, and suggests how traditional management skills may be harnessed to improve outcomes. A particular focus is upon medicinal plants collected from wild populations.

The book primarily summarises the results of research by the two principal authors, some of which has previously been published in journals. Professor Jan Salick is an ethnobotanist at the Missouri Botanical Garden (MBG). She has been conducting research on Tibetan medicinal plants at Khawa Karpo since 2000, especially the impacts of harvesting. Dr Robert Moseley is currently Director of Conservation at The Nature Conservancy (TNC). From 2000 to 2005 he was the regional director of TNC,

based in Dechen, at the heart of the Hengduan Ranges, and conducted research on recent vegetation changes. Many villagers and several traditional medical practitioners and Chinese botanists were involved in the research projects that underlie this book, including Zhengdong Fang and his team from the Shangri-La Alpine Botanical Garden at Zhongdian, and Xiaokun Ou from Yunnan University. This co-operation allowed multi-lingual communication between

speakers of local Tibetan and Chinese dialects, Mandarin and English. Three substantial appendices were compiled by Xiaokun Ou (Vegetation), Zhendong Fang (Flora) and Robert Moseley (Birds and Mammals). The book is illustrated with rich photographs, maps and several figures. The bibliography lists sources (in English) used in writing the book but there is minimal citation of sources in the text, which a serious reader may find somewhat frustrating. Another potential short-coming of the book is that, other than floras and species lists, there is little reference to other studies on the

Hengduan or Tibetan regions written in Chinese or Tibetan, and the book does not provide an overview of research in the region. The foreword by Professor Peter Raven, Emeritus President of MBG, applauds the use of ethnobotanical, ecological and landscape scale analyses to suggest how local people can achieve conservation objectives.

Chapter one gives a good introduction to the project and the geography, biodiversity, land use and scientific exploration around Khawa Karpo. Conservation of such biodiversity hotspots is a priority of TNC and MBG that supported this project. It highlighted that humans have impacted the region for millennia

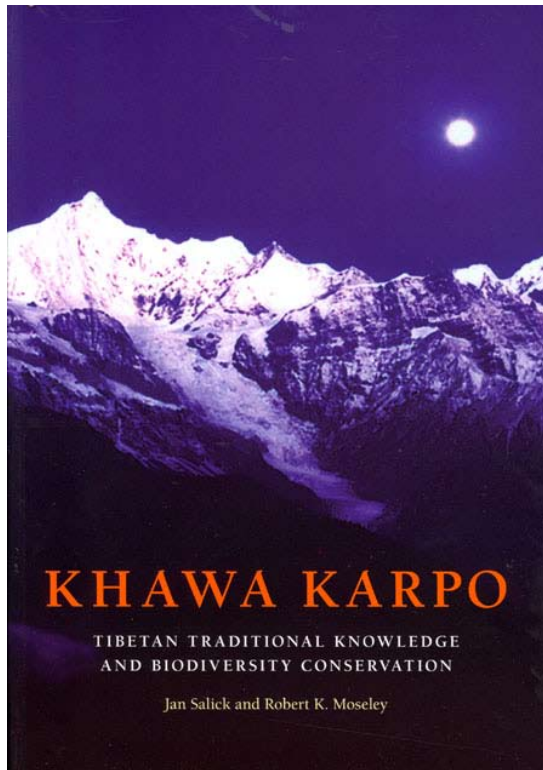
and virtually the entire vegetated landscape is utilized as a source of plant and fungal products and/or for grazing.

Chapter 2 and the appendices present the results of project surveys and also an overview of Tibetan traditional knowledge. Vegetation was mapped from satellite images interpreted using floristic surveys of plots along an elevation transect (1,997 – 4,460 m). Species

composition changes markedly along the elevation gradient, contributing to high regional biodiversity, however plot-level diversity was less variable and correlated inversely with size of the dominant species. An interesting element of the work was that three local Tibetan medical practitioners and three university-trained botanists independently assessed which species were threatened. Short-lists differed but nine species were on most lists (species of *Saussurea*, *Fritillaria*, *Megacodon*, *Corydalis*, *Stebbinsia* and *Meconopsis*).

A case study of *Saussurea laniceps* is

interpreted as showing that harvesting over the last century has selected for the evolution of smaller plants. However it would seem that the trend is confounded by differences in sampling procedures that could also explain the pattern. Reported declines in availability of various medicinal herbs suggest that populations are being adversely affected by continuous over harvesting. Social surveys at six villages around Khawa Karpo were used to map land use, in particular to identify sacred areas that are subsequently given protection by local villagers in many decades, especially against damage to trees. Such protection may assist survival of some species, though little difference was noted when comparing adjacent



sacred and other sites within a vegetation type. Comparison of current vegetation with old photographs suggests that cultivation of steep land has declined, and that fire is less often utilized in management resulting in expansion of woody vegetation. Road construction in recent decades has opened up markets for cash crops and assisted the sale of wild collected produce such as the fungi *Ophiocordyceps sinensis* (Winkler, 2008) and *Tricholoma matsutake* (Yang *et al.* 2008; Amend *et al.* 2010). Recently tourism has become a booming industry (Hillman 2010), and trekking into the Khawa Karpo region is becoming popular. The IPCC Fourth Assessment Report (IPCC 2007) is cited as evidence for dramatic climate change in the Himalaya, however this section has been discredited. Never-the-less, retreat of the Minyong glacier is evidence of considerable and ongoing climate change. One interesting tool used in the study was Photovoice cameras. These were issued to villagers who were asked to provide photographic documentation of activities and relevant events that might have been missed by surveys. This powerful tool is now being widely used by many participatory-based conservation and development projects currently being undertaken in China.

Chapter 3 addresses priorities for future conservation around Khawa Karpo. For millennia local people have managed the landscape. A general conclusion is that central government policy, however well intentioned, should be implemented utilising the strength of local expert knowledge and commitment to a sustainable future such that conservation outcomes are improved. Tibetan sacred places provide a conceptual and practical basis for conservation reserves. Tibetan medical practitioners know much about the threats to medicinal plants but they receive little official recognition. Ungulates were a key component in the evolution of the flora, especially in alpine regions, and while overgrazing by domesticated stock requires control, extensive bans on alpine grazing are likely to have adverse effects. Likewise, banning hunting had increased populations of wolves and deer, which impact adversely on local farmers. Re-forestation programs have removed some long-established arable terraces from cultivation, and replaced this with trees that may contribute little to local

economies or conservation. The expansion of tourism is bringing new impacts but also an influx of interest and money into the region that could support conservation. Conservation practitioners will find these recommendations not very surprising.

In a summary, this book provides detailed, informative reading for ethnoecologists, conservationists, and specialists interested in natural history and ethnography at Khawa Karpo and the Hengduan Range. It is an authoritative work that will be the one of best references on any ethnobotany and conservation work for this region. It is also a good case study for interplay between cultural and biodiversity conservation at a very wide elevation transect.

References

- Amend, A., Fang, Z. D., Yi, C. & McClatchey, W. C. (2010). Local Perceptions of Matsutake Mushroom Management, in Nw Yunnan China. *Biological Conservation* 143: 165-172.
- Hillman, Ben (2010). China's Many Tibets: Diqing as a Model for 'Development with Tibetan Characteristics'? *Asian Ethnicity* 11: 269-277.
- IPCC (2007). *Climate Change (2007). The Physical Science Basis. In: Solomon, S., Qin, D., Manning, M., Chen, Z., Marquis, M., Averyt, K.B., Tignor, M. & Miller, H.L. (eds.) Contribution of Working Group I to the Fourth assessment report of the Intergovernmental Panel on Climate Change.* Cambridge, United Kingdom and New York, NY, USA.: Intergovernmental Panel on Climate Change.
- Myers, N., Mittermeier, R. A., Mittermeier, C. G., Da Fonseca, G. A. B. & Kent, J. (2000). Biodiversity Hotspots for Conservation Priorities. *Nature* 403: 853-858.
- Winkler, Daniel (2008). Yartsa Gunbu (*Cordyceps Sinensis*) and the Fungal Commodification of Tibet's Rural Economy. *Economic Botany* 62: 291-305.
- Web Reference 1. *Biodiversity Hotspots: Mountains of Southwest China* [Online]. Conservation International. www.conservation.org/where/priority_areas/hotspots/asia-pacific/Mountains-of-Southwest-China/Pages/default.aspx (accessed 5 March 2013).
- Yang, X. F., He, J., Li, C., Ma, J. Z., Yang, Y. P. & Xu, J. C. (2008). Matsutake Trade in Yunnan Province, China: An Overview. *Economic Botany* 62: 269-277.

Chapter Conveners

Adelaide

Robyn Barker
State Herbarium of South Australia
Department for Environment and Heritage
PO Box 2732
Kent Town, SA 5071
Tel: (+61)/(0)8 8222 9348
Email: robyn.barker@sa.gov.au

Armidale

Jeremy Bruhl
Department of Botany
University of New England
Armidale, NSW 2351
Tel: (+61)/(0)2 6773 2429
Email: jbruhl@une.edu.au

Brisbane

Laurie Jessup
Queensland Herbarium
Mt Coot-tha Road
Toowong, Qld 4066
Tel: (+61)/(0)7 3896 9320
Email: laurence.jessup@qld.gov.au

Canberra

Vacant

Cairns

Dr Katharina Schulte
Australian Tropical Herbarium (CNS)
James Cook University Cairns Campus
PO Box 6811
Cairns Qld 4870
Tel: (+61)/(0)7 4042 1686
Email: katharina.schulte@jcu.edu.au

Christchurch

Ilse Breitwieser
Allan Herbarium, Landcare Research New Zealand Ltd
PO Box 69040, Lincoln 7640, New Zealand
Tel: (+64)/(0)3 321 9621; Fax: (+64)/(0)3 321 9998
Email: breitwieseri@landcareresearch.co.nz

Darwin

Vacant

Hobart

Vacant

Melbourne

Frank Udovicic
National Herbarium of Victoria
Private Bag 2000
South Yarra, Vic. 3141
Tel: (+61)/(0)3 9252 2313
Email: frank.udovicic@rbg.vic.gov.au

Perth

Juliet Wege
Western Australian Herbarium
Department of Environment & Conservation
Locked Bag 104,
Bentley Delivery Centre, WA 6983
Ph: (+61)/(0)8 9219 9145
Email: Juliet.Wege@dec.wa.gov.au

Sydney

Peter Weston
National Herbarium of NSW
Mrs Macquaries Road
Sydney, NSW 2000
Tel: (+61)/(0)2 9231 8111
Email: peter.weston@rbgsyd.nsw.gov.au

Contacting Major Australasian Herbaria and Systematics Institutions

International calls. Australia +61, New Zealand +64, then drop leading zero from bracketed area code

AD tel: (08) 8222 9307 fax: (08) 8222 9353 www.flora.sa.gov.au	HO tel: (03) 6226 2635 fax: (03) 6226 7865 www.tmag.tas.gov.au/ Herbarium/Herbarium2.htm	MEL tel: (03) 9252 2300 fax: (03) 9252 2350 www.rbg.vic.gov.au/	NSW tel: (02) 9231 8111 fax: (02) 9251 7231 www.rbgsyd.gov.au/conservation _research/herbarium_&_services
CANB tel: (02) 6246 5108 fax: (02) 6246 5249 www.anbg.gov.au/	BRI tel: (07) 3896 9321 fax: (07) 3896 9624 www.derm.qld.gov.au/herbarium	DNA tel: (08) 8999 4516 fax: (08) 8999 4527 www.nt.gov.au/pwcnt	PERTH tel: (08) 9219 8000 fax: (08) 9334 0327 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	AK tel: (09) 306 7060	<i>Australian University Herbaria</i> Contact CHAH representative: Murray Henwood, University of Sydney
<i>Council of Heads of Australasian Herbaria</i> (CHAH) Chair: Dr Kevin Thiele (PERTH). kevin.thiele@dec.wa.gov.au www.chah.gov.au	CHR tel: (03) 321 9999 fax: +(03) 321 9997 www.landcareresearch.co.nz	WELT tel: (04) 381 7261 fax: (04) 4 381 7070 http://collections. tepapa.govt.nz/	ABRS tel: (02) 6250 9417 fax: (02) 6250 9555 email: abrs@environment.gov.au www.environment.gov.au/ biodiversity/abrs

ASBS Publications

Australasian Systematic Botany Society Newsletter

Back issues

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

Australian Systematic Botany Society Newsletter No. 53

Systematic Status of Large Flowering Plant Genera

Edited by Helen Hewson, 1987

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

Cost: Free for all newsletters except Number 53

Cost: Number 53: \$5, plus \$1.75 postage (in Australia)

Cheques payable to “ASBS Inc.” Mastercard & Visa payments accepted.

For back issues of **ONLY** the newsletter contact:

Helen Thompson

ASBS Sales

ABRS

GPO Box 787

Canberra, ACT 2601, Australia

Or fax credit card details to:

Helen Thompson Fax: (02) 6250 9448

Enquiries: helen.thompson@environment.gov.au. Tel: (02) 6250 9445

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

Edited by W.R. Barker & P.J.M. Greenslade. Peacock Publications, ASBS & ANZAAS, 1982

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

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

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

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

History of Systematic Botany in Australia (book)

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

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

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

Cheques payable to “ASBS Inc.” Mastercard & Visa payments accepted.

Only a few copies left!

To order a copy of this book email Frank Udovicic at Frank.Udovicic@rbg.vic.gov.au

AUSTRALASIAN SYSTEMATIC BOTANY SOCIETY INCORPORATED

The Society

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

Membership

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

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

The Newsletter

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

Contributions

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

Formatting of submitted copy. Please use Word formatting buttons for paragraph indents, bullets, etc. and for tables. All text must be in upper and lower case; e.g., do not use upper case for titles, headings or authors in reference lists. 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., Qld) 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. Send images individually with captions in accompanying text document or email, not arranged in composite. Do not include them embedded in a text file. If you do, you will be asked for them separately. Inclusion of images supplied may depend on space being available. Resolution needs to suit press as well as web publication. So 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. 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.

Reproduction of items. Newsletter items should not be reproduced without the permission of the author of the material. Any unsigned articles are attributable to the Editors.

Advertising

Advertising space is available for products or services of interest to ASBS members. The current fee is AU\$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

Bill Barker State Herbarium of South Australia PO Box 2732 Kent Town SA 5079 Tel. (+61)/(0) 427 427 538 Email; bill.barker@sa.gov.au	Book Reviews editor: John Clarkson Queensland Parks & Wildlife PO Box 156 Mareeba, Qld 4880 Tel: (+61)/(0) 7 4048 4745 Email: John.Clarkson@qld.gov.au
---	---

Contents

From the President

Embracing our New Zealand membership	1
ASBS's new Facebook presence	1
Updating the ASBS Web pages	1
Progress with Newsletter	1
<i>Notice. 2013 Membership Fees</i>	1

ASBS Inc. business

Research grants and Research Committee	2
ASBS Facebook group	2

Coming conferences

ASBS 2014 meeting	3
<i>Notice. Combined Conference 2013 "Systematics without Borders"</i>	3

Articles

The status of <i>Spilanthes anactina</i> F.Muell. (Asteraceae: Spilanthininae) in Australia	4
Botany, plant science, plant systematics and more at the University of New England	8

Issues

Sustaining Australasian plant systematics, a more detailed proposal for going forward	15
---	----

Obituaries

Vale Donald John (Don) McGillivray	16
Robert William (Bob) Johnson (1930-2012)	21
<i>Advertisement. Coates Wildlife Tours</i>	27

ABRS report

	28
--	----

Miscellanea

Changes to <i>Nuytsia</i>	28
---------------------------	----

News

People on the move	29
New Zealand	29
Northern Territory	29
Adelaide	29
Queensland	29
Australia Day Honours	29

Book reviews

A new Monocot volume of <i>Flora of Australia</i>	30
A comprehensive guide to medicinal plants	31
A showcase of palms	32
A threatened plant Flora of Western Australia's Avon Wheatbelt	33
An accessible introduction to forensic botany	35
Cultural tradition in managing a Tibetan biodiversity hotspot	36

<i>Chapter conveners</i>	39
--------------------------	----

<i>Contacting major Australasian herbaria and systematics institutions</i>	39
--	----

<i>ASBS publications</i>	40
--------------------------	----