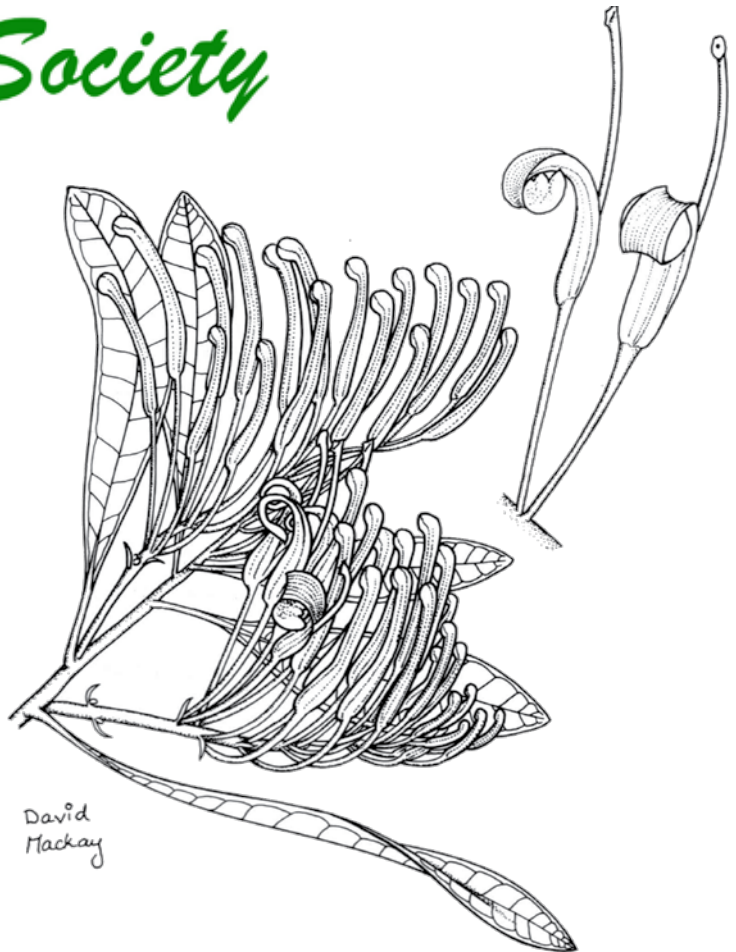


ASBS

*Australasian  
Systematic  
Botany  
Society*



# Newsletter

No. 146 March 2011

Price: \$5.00

ISSN 1034-1218

AUSTRALIAN SYSTEMATIC BOTANY SOCIETY INCORPORATED

**Council**

**President**

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

**Secretary**

Gillian Brown  
School of Botany  
The University of Melbourne, Vic. 3010  
Tel: (03) 8344 7150  
Fax: (03) 9347 5460  
Email: asbs\_secretary@anbg.gov.au

**Councillor**

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

**Public Officer**

Annette Wilson  
Australian Biological Resources Study  
Dept of Environment, Water, Heritage and the Arts  
GPO Box 787  
Canberra, ACT 2601

**Affiliate Society**

Papua New Guinea Botanical Society

**ASBS Website**

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

**Vice President**

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

**Treasurer**

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

**Councillor**

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

**Other Constitutional Bodies**

**Hansjörg Eichler Research Committee**

Bill Barker  
Betsy Jackes  
Greg Leach  
Kristina Lemson  
Chris Quinn  
Chair: Dale Dixon, Vice President  
**Grant applications close:** 14 March 2011.

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

**Publication dates of previous issue**

**Austral.Syst.Bot.Soc.Newslett. 144–5 (September–December 2010 issue)**

Hardcopy: 17 June 2011; ASBS Website: 15 June 2011

## From the President

Firstly, it is my great pleasure to draw your attention to the announcement in this issue of the ASBS Newsletter by Secretary Gillian Brown that the two special resolutions that had recently been put to members, and for which a formal vote was held at a General Meeting held on 15 March at the National Herbarium of New South Wales, were both passed overwhelmingly. ASBS is now the Australasian Systematic Botany Society and the rules governing the way that we change the Society's rules have now been brought into line with the legislation under which ASBS is incorporated.

The change to our Society's name now makes us an international society, albeit one that is still firmly rooted in Australia as a result of its incorporation in the Australian Capital Territory and the fact that the great majority of our members are Australian botanists. However, the name change sends a message to botanists based in New Zealand, New Caledonia, Vanuatu, Fiji and New Guinea that we welcome them as members and as potential office holders of ASBS. The change to Rule 30(5)b will allow future ASBS Councils to be reasonably responsive to changes in our Society's environment without having to go to the extraordinary lengths to which recent Councils have had to go to achieve sensible and sometimes mandatory rule changes.

ASBS Council had to work hard to organise the ballot for these Special Resolutions and to ensure that over 75% of financial members voted, as required by the old rule 30(5)b. In particular, Secretary Gillian Brown and Councillor (Memberships) Pina Milne, had to contribute many hours of their time to administer this process. I am very grateful to both of them for their hard and effective work and to all of the members who made the effort to participate actively in the running of ASBS by voting on the Special Resolutions, either in person at the meeting or by proxy.

Some of you may have noticed a new page that Webmaster Murray Fagg has put up on the ASBS website called "Opportunities in Plant Systematics". There is a link to this in the "latest news" column on the right hand side of the ASBS

home page. The purpose of this new page is to disseminate information on advertised jobs, scholarships, fellowships and grants as well as other opportunities open to plant systematists. As well as having links to permanent, regular opportunities such as the Hansjörg Eichler Awards, this page will also feature irregular and one-off opportunities such as the notice that is presently there for the Second National Postgraduate Training Workshop in Systematics, to be held at the University of Adelaide from 25-30 September 2011. If you are aware of any such opportunities for which notices have not already been posted on this page, please email the relevant information either to me or to ASBS Secretary Gillian Brown.

ASBS Council was recently approached by the Australian office of The Nature Conservancy (TNC) to administer a postgraduate scholarship in taxonomy on its behalf. The Nature Conservancy is a Non-Government Organisation with a mission to "preserve the plants, animals and natural communities that represent the diversity of life on Earth by protecting the lands and waters they need to survive" (<http://www.nature.org/aboutus/visionmission/index.htm>). TNC was established in the USA in 1951 and now has chapters or offices in all American states and 31 other countries. It is perhaps best known for its impressive record of conserving threatened habitats by buying and managing land but it also invests a lot of money in support of conservation-related scientific research projects. ASBS Council is presently negotiating this proposal with TNC and hopefully we will be able to reach a mutually beneficial agreement in the near future.

The International Botanical Congress is fast approaching and ASBS is formally involved with the conference in several ways. Firstly, the Society is sponsoring two symposia: Sym104: Patterns and Processes in the Evolution and Biogeography of the Australasian Flora (Organisers: Dr Maria Gandolfo and Dr Mike Bayly) and Sym083: A Perspective in Species Radiation – the New Zealand Story (Organiser: Dr Ilse Breitwieser). As part of our sponsorship agreement with the IBC we will be providing at least \$6,000 in

travel assistance to ASBS student members. Applications for students presenting a poster or oral presentation are now open and need to be with the Secretary by the 31st of May 2011. Further details and application forms can be found on our website at <http://www.anbg.gov.au/asbs/student.html>. Professor Mike Crisp of the Australian National University will be delivering the Nancy Burbidge Lecture, "Evolution of the Australian flora", as one of the IBC plenary lectures. The ASBS Annual General Meeting will be held at 1.30 pm on the free afternoon of Wednesday 27th

July 2011 at the conference venue, The Melbourne Convention & Exhibition Centre. ASBS members will get an opportunity to socialize together in one place at the ASBS conference dinner, which will be held at University House (The University of Melbourne) on the evening of Friday the 29th of July at 7pm. A three course meal will be laid on with drinks included, at a cost of \$75 per person. ASBS members and other conference participants can register for it through the IBC website (<http://www.ibc2011.com/Social.htm>).

Peter Weston

## Articles

### Acacia and the IBC

**Bruce Maslin**

W.A. Herbarium, Department of Environment and Conservation, Locked Bag 104, Bentley Delivery Centre, Western Australia 6983.  
Email: [bruce.maslin@dec.wa.gov.au](mailto:bruce.maslin@dec.wa.gov.au)

Most readers will probably be aware of the ongoing *Acacia* generic name issue. In a nutshell, Orchard & Maslin (2003) proposed to change the type of *Acacia* from an African species (*A. nilotica*) to an Australian one (*A. penninervis*). Following a robust debate in literature and elsewhere the matter was assessed by the duly appointed committees of IAPT (i.e. the then-called Committee for Spermatophyta<sup>1</sup> and the General Committee) who both recommended acceptance of the proposal with the required 60% majority. The General Committee's recommendation was subsequently discussed at the Nomenclature Session of the 17th International Botanical Congress in Vienna, 2005, and following a vote the recommendation was upheld; the matter was then ratified at the Plenary Session of the IBC and *Acacia* with a conserved type is now included in the Vienna Code. Details of this history are on the WorldWideWattle website (web ref. 1). Following the IBC some people opposed the Vienna outcome, focusing their attention on the way the vote was taken at the Nomenclature Session, not on the substance of the original conservation proposal; their intention is to challenge the decision at the Melbourne IBC in July 2011. The paper by Moore *et al.* (2010)

presents these views. The paper by McNeill & Turland (2010) explains the processes adopted in Vienna and recommends that the correct way forward for those objecting to the outcome would be to make a counter conservation proposal to again move the type. This recommendation has not been taken up and the scene appears to be set for an 'interesting' discussion in Melbourne. Most recently Thiele *et al.* (2011) summarized the issues involved and concluded that (1) the "Vienna process was fundamentally sound, and that continuance of this argument in its current form is damaging to the international nomenclatural consensus", (2) "that reversing the decision except through standard processes would set a dangerous precedent and would, in the long term, encourage nomenclature by pressure group rather than nomenclature by due process" and (3) "the decision should stand and the world should move on". These are sentiments that I fully endorse.

There are significant nomenclatural, and thus practical, consequences associated with the resolution of this matter.

If the original Vienna decision is upheld then the name *Acacia* will continue to be applied to the 1000+ species (almost 1300 taxa) that occur naturally in Australia, many of which are extensively cultivated and otherwise grown, or occur which occur as significant environmental weeds, in numerous countries around the world. A number of these species form the backbone of a multi-billion dollar forest-product industries, particularly in southeast Asia and South Africa. Outside Australia 163 species of the former *Acacia*

<sup>1</sup> This Committee has since been replaced (along with the Committee for Pteridophyta) by the Nomenclature Committee for Vascular Plants.

subg. *Acacia* will be known as *Vachellia*; 83 of these species occur in Africa (Thiele *et al.* 2011). As will be discussed below, there has already been some uptake of the name *Vachellia*.

If the Vienna decision is overturned then, at present at least, the name *Racosperma* will need to be applied to the 1000+ native Australian species and the industries that are based upon them. Furthermore, we will be faced with a double-whammy because the terminations for a large number of the species and infraspecies names will also need to change, e.g. *Acacia pycnantha* (the official Australian national flower) would become known as *Racosperma pycnanthum*. The 163 species referred to above would then become known as *Acacia*.

ASBS readers need to be mindful that in the event of a challenge occurring at the Melbourne IBC, then decisions affecting the fate of *Acacia* will most likely be determined by votes cast at that meeting. How things will exactly play out at Melbourne is unknown<sup>2</sup> but vote numbers will undoubtedly be important. Each person attending the Nomenclature Session has one vote, institutions also have voting rights (numbers of votes vary between institutions) and institutional votes can also be deployed through the use of proxies. With this in mind it is not surprising that Thiele *et al.* (2011) advised that people “should vote carefully and with due deliberation.”

It is not my intention here to recount in great detail all the issues and arguments relating to this contentious matter because these have been adequately covered by the papers referenced above. However, in view of the likely importance of vote numbers at the Nomenclature Session, there are a few points that I wish to make in the hope that at least some Members of this Society will be convinced to provide appropriate support at that meeting<sup>3</sup>.

---

2 I assume that this matter will first come on to the agenda on day one of the Nomenclature Session (18 July 2011) when a motion will be put to the Meeting to accept the Vienna Code (which contains an entry for *Acacia* with its conserved Australian type).

3 To attend the Nomenclature Session meeting you need to be registered for at least one day of the IBC Congress.

### The uptake of *Vachellia* since 2005

There have been a number of workers from a variety of disciplines who, despite the arguments of those who objected to the outcome, have accepted the umpire’s decision at Vienna and have adopted the name *Vachellia*. The following are some examples of this usage.

Taxonomic combinations have now been made for all the relevant species in the Americas (52 species) and Australia (9 species), and for some (14 species) in the African/Asian region (see Banfi & Galasso 2008, Clarke *et al.* 2009, Glass & Seigler 2006, Hurter & Mabberley in Mabberley 2008, Kodala & Wilson 2006, Seigler & Ebinger 2005 and 2010). This means that names are now available in *Vachellia* for half the species of that genus.

The name *Vachellia* has been adopted in many publications since 2005, including flora treatments, field guides, scientific research papers and books. Significantly, *Vachellia* has been accepted in *Mabberley’s plant-book* (2008) which is a primary reference source for the correct names of vascular plant genera and families of the world. *Vachellia* has also been used (instead of *Acacia*) in some recent reviews, catalogues, field guides and Floras from South America (e.g. Forero & Romero 2009, Garwood & Tebbs 2009, Hotche *et al.* 2008, Ojeda-Manjarrés & Carbonó-Delaho 2009 and de Queiroz 2009), central America (Garwood & Tebbs 2009), Australia (Purdie *et al.* 2008), and will be adopted in the forthcoming *Flora d’Italia* (Pignatti in prep.). A number of recent molecular genetic papers dealing with the phylogeny of *Acacia sens. lat.* have adopted *Vachellia*, e.g. Brown *et al.* (2008), Murphy *et al.* (2010), Newmaster & Ragupathy (2009) and Bouchenak-Khelladi *et al.* (2010). The last-mentioned of these papers is significant to the present discussion because the authors were South African. Scientific and applied publications dealing with a range of topics have also accepted *Vachellia*, e.g. Willmer *et al.* (2009: ants), Jackson (2009: spiders), Navie & Adkins (2008: environmental weeds of Australia), Adair *et al.* (2009: biological control of invasive acacias) and Bowman *et al.* (2010: biogeography).

*Vachellia* has also been used in a range of web-based resources, for example: (1) Information brochure relating to biosecurity and woody weeds in Australia (web ref. 2), (2) interactive key to the 'acacias' of the New World (web ref. 3); and (3) the Australia Plant Census which provides a list of currently accepted names for the Australian vascular flora (web ref. 4).

### **Species numbers**

When assessing conservation proposals such as that of Orchard & Maslin (2003) one of the important criteria used by the Nomenclature Committee for Vascular Plants for assessing the impact of proposed name changes is the numbers of species that will be affected. As has already been noted, if the Vienna decision is overturned in Melbourne then there are 1000+ Australian species that will have to be called *Racosperma* (if indeed, this is a legitimate name) while c. 160 pan-tropical, largely non-Australian species will be called *Acacia*. Put another way, the decision in Vienna resulted in the name *Acacia* being retained for 72% of the former genus (i.e. *Acacia sens. lat.*) whereas if the decision is overturned then the name *Acacia* will be retained for a mere 11% of *Acacia sens. lat.*

Because this debate often focuses on Australia vs African species it is instructive to look at differences between these two continents with respect to species numbers. There are about 80 species of 'Acacia' (following the Vienna decision these should be called *Vachellia*) in Africa and 1020 species of *Acacia* in Australia (Thiele *et al.* 2011). These figures show that Australia has about 14 times as many *Acacia* species as does Africa. This point was originally made by Brummitt (2004) when he delivered the reasons why the Spermatophyta Committee voted in favour of the Orchard & Maslin (2003) proposal to conserve *Acacia* with an Australian type. Since the 2005 Vienna Congress 43 new Australian taxa of *Acacia* have been described (37 species and 6 subspecies) with another seven new species currently in press. To put these numbers into perspective it will be seen that in the past six years the number of just new *Acacia* taxa described for Australia exceeds half the total number of *Acacia* species that occur on the entire African continent! Furthermore, many more new species for Australia await description;

conservatively I would estimate that number to be around 100. The above not only emphasizes the incredible richness of *Acacia* in Australia but also vindicates the decision by the Spermatophyta Committee to recommend the retypification of the genus with an Australian species in order to preserve the name *Acacia* for the demonstrably much larger group.

### **Economic matters**

The impact on industry and commerce is another of the important factors that the Nomenclature Committee for Vascular Plants must take into account when making its decisions. Unlike African acacias there are a numerous Australian *Acacia* species that are extensively cultivated or otherwise utilized in many countries around the world. Excellent overviews and documentation of the global commercial and applied importance of the Australian species of *Acacia* are provided by Midgley & Turnbull (2003) and Griffin *et al.* (in press). The following points are relevant to the present debate.

Since 2005 the name *Acacia* has become more firmly embedded in the world of commerce. In international trade the names 'Acacia Wood' or simply 'Acacia' are now used to brand furniture and other wood products made primarily from plantation-grown Australian *Acacia*, in particular *A. mangium* and some close relatives (web ref. 5). This industry is centered on Southeast Asia (most notably Indonesia, Malaysia and Viet Nam) where there exists about 2 million hectares of *Acacia* plantations producing about 36 million cubic metres of wood fibre annually. This wood is worth over US\$900 million to the growers or over US\$7 billion as finished products (S. Midgley, pers. comm.). Indonesia is by far the largest producer of *Acacia* pulp, producing an estimated 3.3 million metric tonne worth \$US2.7B at current market price (Griffin *et al.*, in press). Changing the name *Acacia* will have potential negative impacts relating to marketing, product branding and commercial contracts in these operations; also technical manuals for plantations and pulp mills will need to be revised. As most of these commercial costs will need to be carried by the developing countries of Asia it is but one demonstration that this *Acacia* generic matter is not just about Africa vs Australia!

Australian Acacias are also commercially important in a number of countries outside of Asia. For example, in South Africa, Brazil and India there is an estimated 600 000 ha of *A. mearnsii* grown in plantations for tannin (Griffin *et al.*, in press). This species was characterized by Roux *et al.* (2000) as “The most profitable forestry species in South Africa...”. *Acacia saligna* is widely cultivated around the world for fodder and a wide range of other purposes (web ref. 6). This species is also a significant environmental weed in many countries, including South Africa where considerable resource is devoted to its control and eradication. As discussed by Ratnayake & Joyce (2010) Australian acacias are highly prized both within Australia and abroad for their horticultural value and as amenity plants. For example, species such as *A. dealbata*, *A. retinodes*, etc. are grown as commercial cut flower and perfume crops in France, Italy, Israel and the USA. In dollar terms the horticulture and floriculture of Australian Acacias species does rival that of the timber industry, but Ratnayake & Joyce (l.c.) consider that our Wattles represent a relatively underexploited resource for both export and domestic market opportunities.

### ***Racosperma*.**

Although most combinations have been made in *Racosperma* there has been virtually no uptake of this name in literature or commerce. A quick web search using the comprehensive *Plant Finder* databases provided by the Royal Horticultural Society of the United Kingdom (<http://apps.rhs.org.uk/rhsplantfinder/>), Gardening Australia (<http://www.abc.net.au/gardening/plantfinder/>) and the National Gardening Association of the USA (<http://www.garden.org/home>) returned not a single entry where *Racosperma* was used as an accepted name for any plant in the horticultural industry. The web dictionary Wikipedia entry for *Racosperma* is essentially correct in characterizing this name in the following way: “The name [*Racosperma*] did not gain wide acceptance and has fallen into disuse following the decision to vote on a new Type species for *Acacia* which has resulted in the vast majority, including all Australian species, as *Acacia*. The decision was not an uncontroversial one.”

### **Conclusion**

Not unexpectedly my view is that the Vienna decision was intrinsically sound, well-considered and unbiased, and was based on compelling argument that was comprehensively considered by the duly appointed Committees. A collateral attack on the process that led to the conservation of *Acacia* with a new type, like that which is being planned for the Melbourne IBC, is destabilizing to say the least. McNeill & Turland (2010) have indicated the appropriate way forward for those who feel disaffected by the Vienna outcome, namely, make a counter conservation proposal and let that be assessed in the normal way. This too is the view of Thiele *et al.* (2011). However, no such proposal has materialized. As I have shown above many people from a range of disciplines globally have in good faith accepted the Vienna outcome and have adopted *Vachellia*. Apart from this there are significant commercial industries that use the name *Acacia* in its post-Vienna sense. In my view at least it would reflect badly on botanical nomenclatural practices and procedures if now there was to be yet another change, and particularly one for which there is no sound taxonomic or nomenclatural justification.

### **Endnote**

At the time of writing there is a draft proposal under development which aims to effect a ‘compromise’ with respect to the *Acacia* issue at Melbourne. An early version of this proposal that I have seen is worthy of support. However, I have not seen the final version and do not know if indeed it will be presented at (or before) the Nomenclatural Session.

### **References**

- Adair, R.J., Burgess, T., Serdani, M. and Barber, P. (2009). Fungal associations in Asphondylia (Diptera: Cecidomyiidae) galls from Australia and South Africa: implications for biological control of invasive acacias. *Fungal Ecology* 2(3): 121–134. (Publisher: Elsevier)
- Banfi, E. and Galasso, G. (2008). New combinations in *Vachellia* Wight & Arn., formerly *Acacia* Mill. ss. (Fabaceae). *Della Societa Italiana di Scienze Naturali* 149(1): 149–150.
- Bouchenak-Khelladi, Y., Maurin, O., Hurter, J. and van der Bank, M. (2010). The evolutionary history and biogeography of Mimosoideae (Leguminosae): An emphasis on African acacias. *Molecular Phylogenetics and Evolution* 57(2): 495–508

- Bowman, D., Brown, G.K., Braby, M.F., Brown, J.R., Cook, L.G., Crisp, M.D., Ford, F., Haberle, S., Hughes, J., Isagi, Y. and others (2010). Biogeography of the Australian monsoon tropics. *Journal of Biogeography* 37(2): 201–216.
- Brown, G.K., Murphy, D.J., Miller, J.T. and Ladiges, P.Y. (2008). *Acacia* ss and its Relationship Among Tropical Legumes, Tribe Ingeae (Leguminosae: Mimosoideae). *Systematic Botany* 33(4): 739–751.
- Brummitt, R.K. (2004). Report of the Committee for Spermatophyta: 55. Proposal 1584 on *Acacia*. *Taxon* 53(3): 826–829.
- Clarke, H.D., Seigler, D.S. and Ebinger, J. (2009). Taxonomic revision of the *Vachellia acutifera* species group (Fabaceae: Mimosoideae) in the Caribbean. *Systematic Botany* 34(1): 84–101.
- de Queiroz, L.P. (2009). Leguminosae da Caatinga. 467 pp. (Universidade Estadual de Feira de Santana: Editora da Feira de Santana, Brazil.)
- Forero, E. and Romero, C. (2009). Sinopsis de las Leguminosae: Mimosoideae de Colombia. In E. Forero (ed.) Estudios en Leguminosae Colombianas II. pp. 9–235 (Instituto de Ciencias Naturales, Facultad de Ciencias, Universidad Nacional de Colombia: Bogotá, Colombia).
- Garwood, N.C. and Tebbs, M. (2009). Seedlings of Barro Colorado Island and the Neotropics, pp. 656. (Cornell University Press, Published in Association with the Natural History Museum, London.)
- Glass, C.E. and Seigler, D.S. (2006). A new combination in *Senegalia* and typification of six New World *Acacia* names. *Taxon* 55(4): 993–995.
- Griffin A.R., Midgley S., Bush D., Cunningham P. and Rinaudo T. (2011, in press). Global uses of Australian acacias – recent trends and future prospects. *Diversity and Distributions* 17 (special issue on Australian *Acacia* introductions).
- Hotche, O., Berry, P.E. and Huber, O. (2008). Nuevo Catálogo de la Flora Vasculare de Venezuela. pp. 859. (Fundación Instituto Botánico de Venezuela Dr. Tobias Lasser: Caracas, Venezuela.)
- Jackson, D.E. (2009). Nutritional Ecology: A First Vegetarian Spider. *Current Biology* 19(19): R894–R895 (Publisher: Elsevier)
- Kodala, P.G. and Wilson, P.G. (2006). New combinations in the genus *Vachellia* (Fabaceae: Mimosoideae) from Australia. *Telopea* 11(2): 233–244.
- Mabberley, D.J. (2008). *Mabberley's plant-book*. pp. 1021. (Cambridge: England., Cambridge University Press.)
- McNeill, J. and Turland, N.J. (2010). The conservation of *Acacia* with *A. penninervis* as conserved type. *Taxon* 59(2): 613–616.
- Midgley, S. J. and J. W. Turnbull (2003). Domestication and use of Australian acacias: case studies of five important species. *Australian Systematic Botany* 16(1): 89–102.
- Moore, G.; Smith, G.F.; Figueiredo, E.; Demissew, S.; Lewis, G.; Schrire, B.; Rico, L.; van Wyk, A.E. (2010). *Acacia*, the 2011 Nomenclature Section in Melbourne, and beyond. *Taxon* 59(4): 1188–1195.
- Murphy, D.J., Brown, G.K., Miller, J.T. and Ladiges, P.Y. (2010). Molecular phylogeny of *Acacia* Mill. (Mimosoideae: Leguminosae): Evidence for major clades and informal classification. *Taxon* 59(1): 7–19.
- Navie, S. & Adkins, S. (2008). *Environmental Weeds of Australia*. DVD publication. (CRC for Australian Weed Management: Brisbane.)
- Newmaster, S. G. and S. Ragupathy (2009). Testing plant barcoding in a sister species complex of pantropical *Acacia* (Mimosoideae, Fabaceae). *Molecular Ecology Resources* 9 (Suppl. 1): 172–180.
- Ojeda-Manjarrés, L. and E. Carbonó-Delaho, E. (2009). Leguminosae: Mimosoideae del Departamento del Magdalena, Colombia I (Área plana), pp. 237–324. In E. Forero (ed.) Estudios en Leguminosae Colombianas II (Instituto de Ciencias Naturales, Facultad de Ciencias, Universidad Nacional de Colombia: Bogotá, Colombia.)
- Orchard, A.E. and Maslin, B.R. (2003). Proposal to conserve the name *Acacia* (Leguminosae: Mimosoideae) with a conserved type. *Taxon* 52(2): 362–363.
- Purdie, J., Materne, C. & Bubb, A. (2008). *A Field Guide to Plants of the Barkly Region, Northern Territory*. pp. 383, (Barkly Landcare and Conservation Association: Alice Springs.)
- Pignatti S. (in prep., to be published in 2112). *Flora d'Italia*, vol. 2. (Edagricole: Bologna.)
- Ratnayake, K. and D. Joyce (2010). Native Australian Acacias: Unrealised Ornamental Potential. *Chronica Horticulturae* 50(3): 19–22.
- Roux, J., Dunlop, R. and Wingfield, M.J. (2000). Development of disease tolerant *Acacia mearnsii*. Forest Genetics for the next Millennium. Proceedings of IUFRO Working Party 2.08.01 Conference, 8–13 October 2000, Durban. pp. 200–202. (Institute for Commercial Forestry Research: Scottsville, South Africa.)
- Seigler, D.S. and Ebinger, J.E. (2005). New combinations in the genus *Vachellia* (Fabaceae: Mimosoideae) from the New World. *Phytologia* 87(3): 139–178.
- Seigler, D.S. and Ebinger, J.E. (2010). New combinations in *Senegalia* and *Vachellia* (Fabaceae: Mimosoideae). *Phytologia* 92(1): 90–93.
- Willmer, P.G., Nuttman, C.V., Raine, N.E., Stone, G.N., Patrick, J.G., Henson, K., Stillman, P., McIlroy, L., Potts, S.G. and Knudsen, J.T. (2009). Floral volatiles controlling ant behaviour. *Functional Ecology* 23(5): 888–900. (Publisher: John Wiley & Sons)

### Web references.

- Acacia name issue*. <http://www.worldwidewattle.com/infogallery/nameissue/>. (WorldWideWattle: Department of Environment and Conservation, Perth.)
- Karoo thorn and giraffe thorn. <http://new.dpi.vic.gov.au/agriculture/pests-diseases-and-weeds/weeds/spotters/weed-alert-species/karoo-and-giraffe-thorn>. (Victorian Department of Primary Industries.)
- AcaciaID*: interactive *Acacia* identification keys. <http://cgg.biology.uiowa.edu/jmiller/acaciaID.php>. (Iowa State University.)
- Australian Plant Census*. <http://www.anbg.gov.au/chah/apc/index.html>. (Council of Heads of Australian Herbaria.)
- Acacia mangium*. <http://www.kew.org/plants-fungi/Acacia-mangium.htm>. (Royal Botanic Gardens, Kew.)
- Acacia saligna*. <http://www.worldwidewattle.com/infogallery/projects/saligna.php>. (Department of Environment and Conservation, Perth.)
- Racosperma*. <http://en.wikipedia.org/wiki/Racosperma> (Wikipedia, the free encyclopedia)



## AusGrass2

Bryan Simon

Queensland Herbarium

AusGrass (Sharp & Simon 2002), the first interactive key and information system on Australian grasses, was published by ABRS, Queensland EPA, and CSIRO Publishing as a saleable product on CD. It has been widely used in Australia and elsewhere and received a favourable review in the botanical literature both within Australia (Walsh 2003, Lorimer 2004) and internationally (Fish 2003, Snow 2003, Kellogg 2006).

In the intervening nine years there has been much taxonomic and phylogenetic work published on the grass family, in addition to the publication of two grass volumes of the *Flora of Australia* (Mallett 2005; Wilson 2009). As a result some of the grass names have changed and more will be in the grass volumes yet to be published on the panicoid and andropogonoid grasses. Some new taxa of the tribe Paniceae have been published recently (Simon 2010) so that they can be used before the corresponding *Flora* volume is published.

Due to financial constraints, there are currently no plans for ABRS to undertake a second edition of AusGrass. The CSIRO Publishing Website indicates that the CD is out of stock and the preparation and publication of a second edition is not under consideration, although new copies of the CD have probably been made many times for new customers. A Google search of "AusGrass", however, indicates that the CD is still being sold at a number of other outlets:

NSW Primary Industries  
ANBG Bookshop  
Andrew Isles Natural History Books  
The Lawn Shop  
Weed Information  
New South Books  
Emporium Books  
Koeltz Scientific Books  
NHBS  
Alibris  
Amazon  
The Book Depository UK  
WHSmith  
The Wildflower Society of Western Australia

Waterstones.com  
Arboriculture Australia Ltd.

It is also interesting that the price for the CD varies from ca. \$100 at most outlets, although one at Alibris was selling for \$266.

Since the publication of *AusGrass* I have maintained two Delta databases of updates to the data that constituted the core of this publication, one for genera and one for species and infra-specific taxa. It has always been my intention to keep the data updated for whenever an opportunity may arise for another edition to be produced.

In addition to an Australian database I have developed and am updating a global Delta dataset *GrassWorld* (Simon 2007). At the 4th International Monocot Conference in Copenhagen in 2008, I presented the status of this project (Simon 2008) in the E-Taxonomy Session. The talk that preceded mine was by Vincent Smith of the Natural History Museum (Smith *et al* 2008) on the Scratchpads web application <http://scratchpads.eu/>. Vince subsequently won the Ebbe Nielsen prize in 2008, awarded annually to a promising researcher who combines biosystematics and biological diversity informatics research, for the Scratchpads project. I realised the advantages of Scratchpads to share taxonomic information and published both of these data sets under the names of **GrassWorld** <http://grassworld.myspecies.info/> and **AusGrass2** <http://ausgrass2.myspecies.info/>. There are currently 206 Scratchpads covering a range of animals and plants from all parts of the world as well as a couple on Alfred Russell Wallace.

It is planned that *AusGrass2* will have all the information of *AusGrass* (common names, descriptions of genera and species, dichotomous keys to genera and species, distribution maps, scanned images, synonyms, references, glossary) as well as new information and new images that will be added from time to time. The dichotomous keys to genera and species hyperlink to the relevant descriptions as they do with *AusGrass*. At present the interactive identification component of *AusGrass* that operates using Lucid, is not planned to be part of the Scratchpad although it seems possible eventually to do so when looking at other Scratchpads (Gateway to African Plants <http://gateway.myspecies.info/>). In the meantime interactive sets of both *AusGrass2* and *GrassWorld*

will be launched on the Delta Website using Intkey, but not in the immediate future.

*AusGrass2* is functional at present in terms of accessing the dichotomous keys, generic and species descriptions. Images of generic and species distributions are being downloaded from AVH to the fact sheets from current data on the AVH site. Although this database requires further scrutiny for some records (an example being five records of the coastal genus *Spinifex* from inland localities) nevertheless their presence on the fact sheets depict present distribution of taxa better than the *AusGrass* maps which are about ten years old. However the *AusGrass* map images will also be inserted under a separate directory to indicate how distributional data has changed in some cases since *AusGrass* was published. There is also a direct link to the AVH website under Useful Links, so that real time distributions are also available. All the *AusGrass* scanned images will be attached to the fact sheets in addition to many new ones that have become available since then.

It is hoped that many users and testers of the keys and data will register as members of the *AusGrass2* Scratchpad. In this way this facility can develop to become a multi-authored website for the maintenance of current and future taxonomic data on Australian grasses.

As an example of the rapid progress of taxonomic research in some groups, a recent new classification of the danthonioid grasses has been published (Linder *et al.* 2010) where the names already supercede those published in the *Flora of Australia* volume (Mallet 2005). The main change in this paper as it applies to Australia, is the sinking of *Austrodanthonia*, *Notodanthona* and *Joycea* into *Rytidosperma* following the molecular cladistic analysis of a new wide sampling of danthonioid material following recent intensive field work in the Southern Hemisphere (Humpheys *et al.* 2010).

Two other notable examples of large genera with many name changes since *AusGrass* are the transfer of most species of *Brachiaria* to *Urochloa* and the synonymising of all species of *Pennisetum* into *Cenchrus*.

In the case of *Brachiaria* and *Urochloa*, although the name transfers had been made earlier than

*AusGrass* (references in Torres Gonzales & Morton 2005) at the time we considered it premature to follow this nomenclature, pending a cladistic analysis of the whole group. This has been done for a limited sample size based on molecular data (Torres Gonzales & Morton 2005), where species formerly placed in *Brachiaria* and *Urochloa* are mixed together in one cladogram, although it must be pointed out so are species that are still regarded as belonging to other genera that are currently recognised (*Melinis*, *Eriochloa*, *Moorochloa* (as *U. eruciformis*), *Megathyrsus* (as *U. maxima*).

The phylogeny of the bristle clade of the panicoid grasses that includes both *Cenchrus* and *Pennisetum* has been researched for about ten years by a number of authors, summarised in the recent amalgamation of the two genera (Chemisquy *et al.* 2010). This applies to all Australian taxa formerly placed in *Pennisetum* (Simon 2010), although some other species had prior names under *Cenchrus*. These included the buffel grasses that had only recently been transferred to *Pennisetum* (Simon, Sharp and Thompson 2007, 2010) based solely on morphological spikelet characters (Wipff 2001).

In *AusGrass2* there is a link to the Poaceae of The Australian Plant Census (APC <http://www.anbg.gov.au/chah/apc/>) (Lepschi *et al.* 2011). All names of APC link to the Australian Plant Name Index (APNI) <http://www.cpbr.gov.au/apni/index.html>, whereby a complete synonymy for Australia grasses can be found. At present some of the APC names do not reflect some current taxonomic treatments (Linder *et al.* 2010 for a new danthonioid classification; Chemisquy *et al.* 2010 and Simon 2010 for the synonymising of *Pennisetum* in *Cenchrus*; Barkworth & Jacobs 2011 for Australian Triticeae) but will do so in future versions.

Under Useful Links I have set up links to some other Australian based sites connected with grass distribution, including AVH, FloraBase, PlantNet, eFlora. SA, and GrassWorld.

In addition to specific entry points to the various categories of information found within *AusGrass2* that will be familiar to *AusGrass* users, the data are supplemented with information from high quality web accessible databases, to

automatically construct content rich web pages about any documented taxon. Currently these sources include Genbank, Morphbank, GBIF, Biodiversity Heritage Library, Yahoo! Images, flickr, Google Scholar and Wikipedia. However sometimes information is presented on some of these panels that bears no relation to grasses and future versions will require a judicious screening of some of these panels.

### Acknowledgements

Assistance from Kehan Harman and Irina Brake of the Scratchpad team is much appreciated during the process of learning about and becoming familiar with the Scratchpad environment. Many thanks also to Yucely Alfonso for her meticulous data entry work.

### References

- Barkworth, M.E. & Jacobs, S.W.L. (2011). The Triticeae (Gramineae) in Australasia. *Telopea* 13: 37-50.
- Chemisquy, M. A., Giussani, L.M., Scataglini, M.A., Kellogg, E. A. & Morrone, O. (2010). Phylogenetic studies favour the unification of *Pennisetum*, *Cenchrus* and *Odontelytrum* (Poaceae): a combined nuclear, plastid and morphological analysis, and nomenclatural combinations in *Cenchrus*. *Annals of Botany* 106: 107-130.
- Fish, L. (2003). AusGrass - Grasses of Australia. *South African Journal of Botany* 69: 452.
- Humphreys, A.M., Pirie, M.D. & Linder, H.P. (2010). A plastid tree can bring order to the chaotic generic taxonomy of *Rytidosperma* Steud. s.l. (Poaceae). *Molecular Phylogeny and Evolution* 55: 911-928.
- Kellogg, E.A. (2006). Beyond Taxonomy: Prospects for Understanding Morphological Diversity in the Grasses (Poaceae). *Darwiniana* 44 (1): 7-17.
- Lepschi, B., Monro, A. & Orchard, T. (2011 and ongoing). Australian Plant Census. <http://www.anbg.gov.au/chah/apc/index.html>
- Linder, H.P., Baeza, C.M., Barker, N., Galley, C.A., Humphreys, A., Lloyd, K.M., Orlovich, D.A., Pirie, M.D., Simon, B.K., Walsh, N.G & Verboom, G.A. (2010). A generic classification of the Danthonioideae (Poaceae). *Annals of the Missouri Botanical Garden* 97 (3): 307-364.

## Special Resolutions Outcome

The second General Meeting to decide the outcome of two Special Resolutions to change the Society's rules took place on Tuesday, 15 March 2011 at the National Herbarium of New South Wales. Twenty members and four councillors were present at the meeting. Prior to the meeting, 86% of financial members had voted, with two additional members voting at it in person.

- Lorimer, G.S. (2004). AusGrass: Grasses of Australia. *Austral Ecology* 29 (2): 238-239.
- Mallett, K. (2005). *Flora of Australia. Volume 44B, Poaceae 3*, Australian Government: Dept of Environment and Heritage: 486 pp.
- Sharp, D. & Simon, B.K. (2002). AusGrass. Grasses of Australia, CD-Rom Version 1.0. (Australian Biological Resources Study, Canberra and Environmental Protection Authority Queensland. CSIRO Publishing.
- Simon, B.K. (2007). GrassWorld - interactive key and information system of world grasses. *Kew Bulletin* 62: 475-484.
- Simon, B.K. (2008). Update of GrassWorld - information system and interactive key to world grasses. 4th International Conference: The Comparative Biology of the Monocotyledons: 5th International Symposium: Grass Systematics and Evolution. Copenhagen, Monocots IV: 56.
- Simon, B.K. (2010). New taxa, nomenclatural changes and notes on Australian grasses in the tribe Paniceae (Poaceae: Panicoideae). *Austrobaileya* 8 (2): 187-221.
- Simon, B.K., Sharp, D. & Thompson, E.J. (2007). *Pennisetum*. In P.D.Bostock & A.E.Holland (eds.), *Census of the Queensland Flora 2007*, pp. 161-162. Environmental Protection Agency: Brisbane.
- Simon, B.K., Sharp, D. & Thompson, E.J. (2010). *Pennisetum*. In P.D.Bostock & A.E.Holland (eds.), *Census of the Queensland Flora 2007*, pp. 156. Department of Environment and Resource Management: Brisbane.
- Smith, V., Rycroft, S.D. & Roberts, D. (2008). Scratchpads: getting biodiversity online, redefining publication. 4th International Conference: The Comparative Biology of the Monocotyledons: 5th International Symposium: Grass Systematics and Evolution. Copenhagen, Monocots IV: 57.
- Snow, N. (2003). AusGrass: a model for the efficient dissemination of taxonomic data. *Taxon* 52: 398-400.
- Torres Gonzalez, A.M. & Morton, C.M. (2005). Molecular and morphological phylogenetic analysis of *Brachiaria* and *Urochloa* (Poaceae). *Molecular Phylogenetics and Evolution* 37: 36-44.
- Walsh, N. (2003). AusGrass: Grasses of Australia. *Austr. Syst. Bot. Soc. Newsletter* 114: 23-25.
- Wilson, A. (2009). *Flora of Australia. Volume 44A, Poaceae 2*, Australian Government: Dept of Environment and Heritage: 410 pp.
- Wipff, J.K. (2001). Nomenclatural changes in *Pennisetum* (Poaceae: Paniceae). *Sida* 19: 523-530.

It is my pleasure to announce that both resolutions were passed. Therefore, we are now known as the "The Australasian Systematic Botany Society Incorporated" and the wording to Rule 30(5)(b) has been changed to "it is approved by the vote of at least 75% of those members of the Society who, being entitled to vote, vote in person or by proxy at the meeting". The updated ASBS rules and minutes from the special general meeting are available on the ASBS website. Thank you to all members who voted. *Gillian Brown, ASBS Secretary*

# Eichler Research Fund Report

## Morphological and molecular variation within the *Lejeunea tumida* Mitt. species group (Lejeuneaceae: Jungermannopsida).

**Matt A.M. Renner**

School of Biological Sciences, University of Sydney, NSW 2006

and

National Herbarium of New South Wales  
Royal Botanic Gardens Sydney  
Mrs Macquaries Road, Sydney NSW2000.

### Background and Introduction

The Lejeuneaceae contains more than 1,000 species, which is approximately one eighth of all liverwort species, and is probably the most species-rich and morphologically diverse leafy liverwort family. Morphological diversity is coupled with varied life history strategies ranging from synoicous species through monoicous and paroicous species to dioicous and even sexually dimorphic dioicous species (Schuster 1980). Various species of Lejeuneaceae occupy virtually every conceivable microsite, from submerged rocks to living leaves, from tropical lowland rainforests to subantarctic alpine herbfields.

About 127 genera have been proposed within the Lejeuneaceae to accommodate this morphological and ecological diversity. The most recently described genus was proposed to accommodate four new epiphyllous species from Papua New Guinea, in the new genus *Papillolejeunea* (Pócs 1997). These species were distinct from *Lejeunea* in their multicellular lobule tooth, entally displaced lobule papilla, and Taxilejeuneoid subfloral innovation sequence (Pócs 1997). *Papillolejeunea* was promptly synonymized with *Lejeunea* on the grounds that yet another new species, *L. pócsii* R.M.Schust. from New Zealand, 'while clearly congeneric with *Papillolejeunea*, serves to unite the two genera' (Schuster 1998). Pócs and Eggers (1999) replied by describing another two new species of *Papillolejeunea*.

*Lejeunea tumida* was described by Mitten (1855) for plants with acute underleaf lobes, tumid lobules, and inflated perianths. Mitten cited three specimens in his protologue, but did not identify a type. The first specimen listed by Mitten, collected by Sinclair near Auckland, was designated lectotype by Grolle (1982). Stephani (1896) described *Taxilejeunea colensoana* Steph., which also possessed tumid lobules and inflated perianths. Both *Lejeunea tumida* and *T. colensoana* are small pellucid plants, and this aspect in combination with their shared possession of other characters led Schuster (1963a) to the conclusion that *T. colensoana* was 'evidently a synonym' of *L. tumida*, a view accepted by Grolle (1982). The inflated perianths of *L. tumida* are highly unusual (Reiner-Drehwald and Schäfer-Verwimp 2008), and as *Lejeunea tumida* was the only regional species with this feature it was arguably New Zealand's most distinctive *Lejeunea* species. This distinctiveness led Schuster (1963a) to propose a new monotypic subgenus for it, *Lejeunea* subg. *Sphaerocolea* R.M.Schust., characterised by its 1) multicellular lobule apical tooth, 2) heavily inflated lobules, and 3) inflated ecarinate perianths. The first of these characters was also utilised by Pócs (1997) to circumscribe *Papillolejeunea*. Schuster (1963a) noted that the lobules of *Lejeunea tumida* s.l. were "quite unique within *Lejeunea* s. lat., the 2-celled apical tooth is found again in no other *Lejeunea* known to me, and the almost ovoid-spheroid lobule form is also without any exact parallel". However, these lobule characters agree with neither Mitten's protologue, nor the lectotype designated by Grolle (1982). Furthermore, in the paper synonymising *Papillolejeunea*, Schuster (1998, p.83) remarked that for *L. pócsii* 'in MS I had this species representing a monotypic subgenus of *Lejeunea* on the basis of two features: (1) the peculiar apical tooth, and (2) the strongly inflated lobules of the leaves, with conspicuously involute free margins.' These two characters are shared with Schuster's *Lejeunea* subg. *Sphaerocolea*, based on *L. tumida*. So now we have three subgenera, one from New Guinea and two from New Zealand linked by various combinations of character states. For the

oldest of these subgenera, and presumably the one that will take priority when relationships between these species are resolved, we have contradictory published statements regarding the morphology of the subgeneric type, *L. tumida*.

Much has been made of the inability of morphology to provide conclusive data on species membership and relationships between species in liverworts (Gradstein *et al.*, 2003; Heinrichs *et al.*, 2004; Ilkiu-Borges, 2005; Reiner-Drehwald and Goda, 2000). Morphology supposedly confuses and confounds endeavours to resolve relationships due to its 'enormous variability in gametophytic characters' (Heinrichs *et al.*, 2004), and 'the lack of stable morphological boundaries between species' (Feldberg and Heinrichs, 2006). These assertions have been presented hand in hand with moves toward broader specific (Heinrichs *et al.*, 2001; Heinrichs *et al.*, 2004; Reiner-Drehwald and Ilkiu-Borges, 2007; Reiner-Drehwald, 2005; Reiner-Drehwald and Goda, 2000), and generic concepts (Gradstein and Reiner-Drehwald, 2007; Grolle and Zhu, 2000; Ilkiu-Borges, 2005). However, the view that leafy liverwort morphology is exceptionally variable within species that are simultaneously character-poor may reflect more on the interpretation of morphological data than morphology as a data source.

Crucially, no species within the Lejeuneaceae has been critically re-evaluated using anything other than a subjective assessment of morphological data. Although a handful of species have been re-evaluated using molecular data, these studies have not revisited morphology in lieu of resolved phylogeny. For example, the molecular test of species boundaries within *Bryopteris* by Hartmann *et al.* (2006) derived all five of their morphological characters from Gradstein (1994) and Stotler & Crandall-Stotler (1974). Primary hypotheses of morphological homology are more than logical groupings of raw observations that can be simply rejected in the face of conflict with molecular data (Vogt 2008). However, because hypotheses of homology are in and of themselves testable against specific criteria (Rieppel, 2003), they can be falsified if re-evaluation finds that they fail to meet those criteria. For morphology-based analysis this means that morphological characters are based on descriptions that can themselves be

critically evaluated and potentially rejected. If knowledge of phylogeny is incorporated into this evaluation, so much the better.

The published conflict, all of it based on morphological data, suggested that there really was no better place to start a re-evaluation of the utility of morphological data in informing relationships between individuals within the Lejeuneaceae, than *Lejeunea tumida*.

### Project aims:

My PhD had three broad aims

Test the monophyly of *Papillolejeunea* + *L. pócsii* + *L. tumida* on the basis of morphological data.

Conduct independent tests of the monophyly of *Lejeunea tumida* on the basis of morphological and molecular data.

Examine patterns of morphological variation within and between *L. tumida* and *L. pócsii*.

The financial support provided through the Hansjörg Eichler Scientific Research Fund made testing the monophyly of *L. tumida* on the basis of molecular data possible.

### Summary of main findings:

#### *Papillolejeunea*.

Morphological evidence does not support the monophyly of *Papillolejeunea* + *L. pócsii* + *L. tumida*. It transpires that all three characters defining *Papillolejeunea* are homoplastic within the suite of 75 individuals belonging to 23 species of Lejeuneaceae subf. Lejeuneoideae included in my analysis. Neither on their own, nor in combination do these characters furnish us with sufficient group membership criteria because *Papillolejeunea* was resolved as polyphyletic and nested well within *Lejeunea* by cladistic analyses. The logical problem of where to place *L. pócsii*, either in *Papillolejeunea*, or in *Lejeunea*, or between the two, is a non-problem because morphological data suggest that *Papillolejeunea* is not a real historical entity. Within this context *L. pócsii* cannot be intermediate between it and *Lejeunea*. This finding, along with methods and results, was published in Renner *et al.* (2008).

#### *Lejeunea pócsii*

It transpired that two names, *Lejeunea helmsiana*

and *L. pócsii*, were applied to New Zealand *Lejeunea* that possessed the following three characters: a multicellular first lobule tooth, an inflated lobule carinal region, and pentacarinat perianth. I explored whether the recognition of two species was warranted by searching for size and shape differences in underleaves, lobules, and leaf lobes of nine individuals with these three characters. Cluster analysis identified three groups on the basis of size data, and two on the basis of shape. There was no concordance between cluster membership and individual membership for modules, which was evidence against the existence of more than one taxon, rather the clusters represented intra-individual polymorphism. Morphological data described an allometric relationship that appeared to account for shape differences between the types of *L. helmsiana* (Steph.) Steph. and *L. pócsii* R.M.Schust. The Helms specimen of *L. helmsiana* (one of two syntype specimens) consisted entirely of shoots with relatively large lobules and small underleaves, a morphology that was uncommon within our sample set. By contrast, the illustrations of *L. pócsii* in Schuster (1998) are more reflective of the average module morphology observed in our sample set. Although the types appear different, this may be in part due to the Helms specimen mis-representing patterns of variation by virtue of its exceptionally fragmentary nature. However, specimen size did not allow quantitative examination of the Helms specimen in herb. Stephani (G), and the type of *L. pócsii* was not available for study (in herb. R.M.Schuster). Nevertheless, I rejected the hypothesis that the names *L. pócsii* and *L. helmsiana* apply to distinct evolutionary entities. Schuster (1998) evidently overlooked Stephani's species when describing *L. pócsii*, and as a result proposed a heterotypic synonym of *L. helmsiana*. This finding, including methods and results, was published in Renner et al. (2009).

#### *Lejeunea tumida*.

Three morphological entities belonging to two separate clades were resolved within *L. tumida* on the basis of morphological data collected from herbarium material. Morphological data suggested the species was polyphyletic. Traditionally, perianth morphology has been interpreted to

comprise two states, either pentacarinat or inflated and ecarinat (Schuster 1963a, 1963b; Reiner-Drehwald and Schaefer-Verwimp 2008). *Lejeunea tumida* has been circumscribed by its inflated and ecarinat perianths. However, my study found that perianth morphology was best described by four homologous characters associated with perianth wall conformation and the presence or absence of dorsal, lateral, and ventral carinae, because the dorsal, lateral and ventral carinae comprise three distinct structures, no matter how carinae are homologised across the Lejeuneaceae (M.A.M. Renner unpublished data). In my interpretation of perianth morphology, tumid perianths result from seemingly independent processes of inflation of perianth walls and loss of various carinae, rather than a single correlated transformation between pentacarinat and ecarinat states. Inflated, ecarinat perianths can be 'constructed' by the gain of convex perianth walls, and various combinations of carinae loss. Not surprisingly, morphological data suggest that inflated ecarinat perianths have at least two independent origins. These results are in preparation for resubmission to *The Bryologist* (Renner et al. in prep).

During fieldwork for DNA material in New Zealand, a fourth entity was apparently collected for the first time. This entity was subtly different from its coastal-lowland inhabiting near relative, and apart from growing in scrub on frost flat margins in the central North Island, lacked the unique insertion of CATT in *trnL-F* possessed by the former. The phylogeny based on nrITS1 and *trnL-F* resolved 21 individuals of *Lejeunea tumida* in two clades either side of the basal-most node within *Lejeunea*. It is impossible for *L. tumida* to be more polyphyletic and still be attributed to a single genus under the existing generic classification. The combination of morphological and molecular data supported the division of *Lejeunea tumida* into four species, including two new species and one synonym reinstated as a new combination. The taxonomic component of this study has been published in Renner et al. (2010), and the molecular results are currently in press (Renner et al. 2011).

#### **Main conclusions drawn.**

*Lejeunea tumida* comprises four, not one, species.

Morphology is capable of unambiguously informing relationships between individuals on the basis of unique combinations of homologous characters, and should continue to have high utility in alpha-taxonomic investigations within the Lejeuneaceae, so long as interpretation of morphology is appropriate. Extensive phenetic overlap has the potential to obscure subtle yet significant qualitative character differences between species, be they closely or distantly related.

Morphology is not capable of unambiguously informing relationships between species, due to convergence and homoplasy in homologous characters. This may in part explain the shambolic state of the generic and infra-generic classification within the *Lejeunea*-generic complex.

The challenges associated with resolving the true identity of *Lejeunea tumida*, the type species of *Lejeunea* subg. *Sphaerocolea*, suggest that full and robust resolution of generic and infra-generic boundaries within the *Lejeunea* generic complex that is meaningfully tied to species taxonomy is yet some way off. However, that end is at least one step closer to fruition.

### Acknowledgments

I would like to thank the Australian Systematic Botany Society for financial support provided through the Hansjörg Eichler Scientific Research Fund; everyone who put up with me and my thesis (more apology than thanks); Assoc. Prof. Glenda Wardle and Dr Elizabeth Brown, my supervisors; and I would like to make special mention of David J. Clarke, Sam Clayman, Carolyn Connelly, Endymion Cooper, Yvonne Davila, Graeme Finlayson, Lindsey Gray, Margaret Heslewood, Tim Parrat, Lou Pastro, Georgia Ward-Fear, Moira Williams, and Trevor Wilson for making completing this project far more entertaining.

### References

- Feldberg K, Heinrichs J (2006) A taxonomic revision of *Herbertus* (Jungermanniidae: Herbertaceae) in the Neotropics based on nuclear and chloroplast DNA and morphology. *Botanical Journal of the Linnean Society* **151**, 309–332.
- Gradstein SR (1994) Lejeuneaceae: Ptychantheae, Brachirolejeuneae. *Fl. Neotrop. Monogr.* **62**, 1–216.
- Gradstein SR, Reiner-Drehwald ME (2007) The status of *Neopotamolejeunea* (Lejeuneaceae) and description of a new species from Ecuador and Southern Brazil. *Systematic Botany* **32**, 487–492.
- Gradstein SR, Reiner-Drehwald ME, Schneider H (2003) A phylogenetic analysis of the genera of Lejeuneaceae (Hepaticae). *Botanical Journal of the Linnean Society* **143**, 391–410.
- Grolle R (1982) Übersicht der Lejeuneaceae in Tasmanien. *Wissenschaftliche Zeitschrift der Friedrich-Schiller-Universität Jena Naturwissenschaftliche Reihe* **31**, 207–227.
- Grolle R, Zhu R-L (2000) A study of *Drepanolejeunea* subg. *Rhaphidolejeunea* (Herzog) Grolle and R.L. Zhu, stat. nov. (Hepaticae, Lejeuneaceae) in China with notes on its species elsewhere. *Nova Hedwigia* **70**, 373–396.
- Hartmann FA, Wilson R, Gradstein SR, Schneider H, Heinrichs J (2006) Testing hypotheses on species delimitations and disjunctions in the liverwort *Bryopteris* (Jungermanniopsida: Lejeuneaceae). *International Journal of Plant Sciences* **167**, 1205–1214.
- Heinrichs J, Groth H, Gradstein SR, Rycroft DS, Cole WJ, Anton H (2001) *Plagiochila rutilans* (Hepaticae): A poorly known species from tropical America. *The Bryologist* **104**, 350–361.
- Heinrichs J, Groth H, Lindner M, Feldberg K, Rycroft DS (2004) Molecular, morphological, and phytochemical evidence for a broad species concept of *Plagiochila bifaria* (Hepaticae). *The Bryologist* **107**, 28–40.
- Ilkiu-Borges AL (2005) A taxonomic revision of *Echinocolea* (Lejeuneaceae, hepaticae). *Nova Hedwigia* **80**, 45–71.
- Mitten W (1855) Hepaticae. pp 125–172. In 'Botany of the Antarctic Voyage of H.M. discovery ships *Erebus* and *Terror* in the Years 1839–1843: under the command of Captain Sir James Clark Ross. Volume II. Flora Nova Zelandiae 2. (Ed. JD Hooker) (Lovell Reeve: London).
- Pócs T. 1997. New or little known epiphyllous liverworts, VI. *Papillrolejeunea* gen. nov. from Papua New Guinea. *Tropical Bryology* **13**, 1–18.
- Pocs T, Eggers J (1999) New or little known epiphyllous liverworts, VIII. Two new *Papillrolejeunea* species from Papua New Guinea. *Bryobrothera* **5**, 159–164.
- Reiner-Drehwald ME (2005) On *Amphilejeunea* and *Cryptogynolejeunea*, two small genera of Lejeuneaceae (Jungermanniopsida), and two common neotropical *Lejeunea* species. *Nova Hedwigia* **81**, 395–411.
- Reiner-Drehwald ME, Goda A (2000) Revision of the genus *Crossotolejeunea* (Lejeuneaceae, Hepaticae). *Journal of the Hattori Botanical Laboratory* **89**, 1–54.
- Reiner-Drehwald ME, Ilkiu-Borges AL (2007) *Lejeunea huctumalcensis*, a widely distributed Lejeuneaceae from the Neotropics, and its relation to *Ceratolejeunea*. *The Bryologist* **110**, 465–474.
- Reiner-Drehwald ME, Schafer-Verwimp A (2008) On *Inflatolejeunea*, *Lejeunea* species with eplicate perianths and *Lejeunea talamancensis* sp. nov. from Costa Rica (Lejeuneaceae). *Nova Hedwigia* **87**, 387–420.
- Renner MAM, Brown EA & Wardle GM (2008) Conflict and continuity and the logic of grouping in and out of context, with *Papillrolejeunea* (Lejeuneaceae: Jungermanniopsida) as an example. In: Mohamed H, Baki BB, Nasrulhaq-Boyce A, Lee PKY, (eds). *Bryology in the New Millennium*. Kuala Lumpur: University of Malaya, pp. 487–503.
- Renner MAM, Brown EA & Wardle GM (2009) *Lejeunea pócsii* R.M.Schust. is a heterotypic synonym of *Lejeunea helmiana* (Steph.) Steph. (Lejeuneaceae: Marchantiophyta).

*Nova Hedwigia* **89**, 335–348

Renner MAM, Brown EA, Wardle GM (2010) The *Lejeunea tumida* species group (Lejeuneaceae: Jungermanniopsida) in New Zealand. *Australian Systematic Botany* **23**, 443–462.

Renner MAM, Brown EA, Wardle GM (2011) The *Lejeunea tumida* species group is positively polyphyletic (Lejeuneaceae: Jungermanniopsida). *Australian Systematic Botany* **24**, in press.

Renner MAM, Brown EA, Wardle GM (in prep.) A comparison of three approaches to species circumscription in *Lejeunea* (Lejeuneaceae) using morphological data. *The Bryologist*.

Rieppel OC (2003) Popper and systematics. *Systematic Biology* **52**, 259–271.

Schuster RM (1980) The Hepaticae and Anthocerotae of North America. Volume IV. (Columbia University Press: New York)

Schuster RM (1963a) Studies on Antipodal Hepaticae I. Annotated keys to the genera of Antipodal Hepaticae with special reference to New Zealand and Tasmania. *Journal of the Hattori Botanical Laboratory* **26**, 185–309.

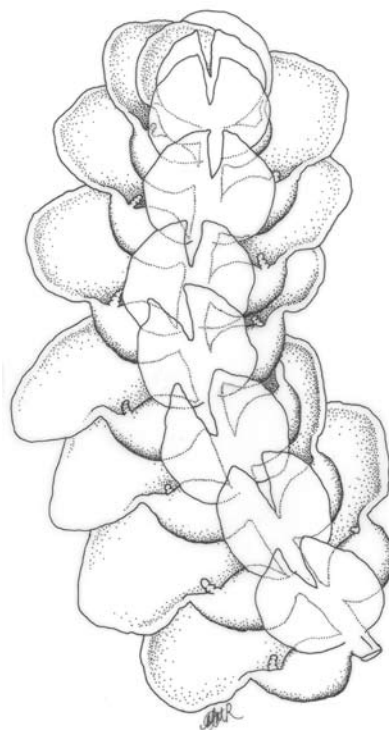
Schuster RM (1963b) An annotated synopsis of the genera and subgenera of Lejeuneaceae. *Nova Hedwigia Beihefte* **9**, 1–203.

Schuster RM (1998) On *Lejeunea* (*Papillolejeunea*) *pocsii* Schust., sp. n. of New Zealand. *Journal of the Hattori Botanical Laboratory* **85**, 83–87.

Stephani F (1896) Hepaticarum species novae. IX. *Hedwigia* **35**, 73–140.

Stotler RE, Crandall-Stotler B (1974) A monograph of the genus *Bryopteris*. *Bryophytorum Bibliotheca* **3**, 1–159.

Vogt L (2008) The unfalsifiability of cladograms and its consequences. *Cladistics* **24**, 62–73.



*Lejeunea rhigophila* M.A.M.Renner, from the holotype (AK300147).

## ABRS Report

### Staffing

We welcome John Hook as our new database manager, filling in for Robin Lawrence, whose secondment to the Atlas of Living Australia project has been extended to the end of June 2012.

Anne Ferguson is our Bush Blitz manager until mid-May, when Jo Harding returns from maternity leave. Also with the Bush Blitz team until mid-May is Berlina Bowler, as part the department's Graduate Program.

Leah Schwartz, another member of the Bush Blitz team, has been promoted to a job elsewhere in the department, and we are recruiting her replacement, as well as a new Grants and Business Officer. Sam Cocks is currently acting as the latter role.

### ABRS Advisory Committee

The ABRS Advisory Committee met in Canberra on the 6th and 7th of April, to consider applications

for the National Taxonomy Research Grants round for 2011–2012.

### Bush Blitz

The latest Bush Blitz (21 March to 1 April) was held in Victoria at Lake Condah, in the Budj Bim National Heritage Landscape, which covers several Aboriginal-managed properties. Scientists from Parks Australia, Museum Victoria, the National Herbarium of Victoria, the University of New South Wales, and the South Australian Museum took part in this Bush Blitz, the first to be conducted in Victoria as well as the first on Aboriginal-managed lands.

### Publications

*Flora of Australia* volume 39, Alismatales to Arales has been sent to press, and publication is expected in time for the International Botanical Congress in July. It will be available from CSIRO publishing.



This volume describes 17 families of monocots in 76 genera and 256 species. Most of the families are aquatic, and include the sea-grasses, pond weeds, and some major agricultural weed species. Four families are entirely or mostly terrestrial.

These latter are probably the most recognisable and include the Palms, Pandans and Aroids.

*Annette Wilson  
Editor, Flora of Australia  
April 2011*

## Obituary

### MARY TINDALE

1920 – 2011

**A Eulogy delivered by Dr Penny Farrant (of the Royal Botanic Gardens and Domain Trust, Sydney) at Mary Tindale's funeral, held at St Peter's Presbyterian Church, 234 Blues Point Road, North Sydney, at 10 a.m., 7 April 2011.**

Mary Douglas Tindale was born in Randwick, Sydney, in September 1920, the only child of George Harold and Grace Matilda Tindale. The cat was only let out of the bag last year when her cousin Elizabeth held a 90<sup>th</sup> birthday afternoon tea for her. For most of her life Mary lived by the old adage that 'a lady should not divulge her age'.

At around ten years of age Mary's family moved to New York. Her father, a Commonwealth Public Servant in the Diplomatic Corps, had been newly posted to New York for the purpose of working with the British Ambassador to the USA. It is here that Mary completed her Primary School education. On her return to Sydney she attended high school at Abbotsleigh in Wahroonga. After leaving school, she attended most, if not all, the yearly class reunions

After finishing school, Mary went to Sydney University, where she completed a Bachelor of Science with Honours in Botany. She then did research work on fungi on parachutes for her Masters degree. This was a practical project that would assist with the war effort. At this time she also taught botany at the Roseville Girls School. She commenced work at the Royal Botanic Gardens Sydney in April 1944 as Assistant Botanist, mainly to do research work for a new Flora of New South Wales.

From 1949 to 1951 Mary was the first Gardens' staff member to be appointed to the important position of Australian Botanical Liaison Officer,

at the Royal Botanic Gardens Kew in England. In this role she enabled 'various important research problems' to be resolved by reference to essential literature and type specimens.

Mary travelled to England, with her mother as chaperone, aboard the P&O liner Stratheden which sailed through the Suez Canal – a voyage of just over 5 weeks. In those days flying was only for the very rich. In England they stayed in an apartment that was part of a house on the flat area of Richmond close to Kew.



Mary Tindale, 1920–2011.

Mary did a great deal of fern research at Kew and also visited herbaria all over the UK and Europe. It was while at Kew that she met three botanists that were to have an important influence on her botanical career – namely Professor Holttum from Singapore, Professor Pichi-Sermolli from Florence, and Madame Tardieu-Blot from Paris – who named a fern after her.

In 1964 Mary was awarded a Doctor of Science degree by the University of Sydney by an International Committee, one of the most seldom awarded and highest tiers of doctorates available today. She was then, in 1969, reclassified by the Public Service Board as Senior Research Scientist. Later, she became the first officer in the NSW Public Service to be appointed at the level of Principal Research Scientist.

Mary was an authority of ferns, wattles and the native soya bean *Glycine*. She was one of the authors of the *Flora of the Sydney Region*. During her long career as a renowned botanist, Mary served on many international committees pertaining to ferns. She was a member of the Special Committee for Pteridophytes in the International Bureau of Plant Taxonomy and Nomenclature from 1965 to 2005. She was Secretary of the Systematic Botany committee of ANZAAS. She assisted in the CSIRO program on *Glycine* by differentiating a number of native species, on which she published four papers. She prepared a large section of the text for the volumes on *Acacia* in the *Flora of Australia* series. At different times, Mary was editor of three botanical journals, namely *Telopea*, *Contributions from the New South Wales National Herbarium* and the latter's *Flora Series*.

Mary attended as many International Botanical Congresses as possible. She always blushed when she told me stories about dancing the night away with foreign botanists. She lived in that wonderful era of elegant gowns and romantic dances and confessed she loved dancing the tango. I always felt she was proud of never having married – because of course in those days 'one had to give up work as soon one married'. She was extremely proud to be a woman with an important, academic career. But she did have a boyfriend, Bill, who was killed in the war. We only found out recently whose photo that was on the wall in her room at Lansdowne Gardens – above the photo of herself

that she'd had taken for him.

Mary's assistants during her time at the Botanic Gardens were mostly men. They included David Keith, Don Fortescue, David Morrison, Clare Herscovitch, Stuart Davies, Phillip Kodela, Chris Puttock and Peter Wilson. From what I've heard, Mary was a very exacting boss, keeping them on their toes and toughening them up for their respective botanical careers. She also had an important collaboration with Dr Roy from Varanasi, India, who came to Sydney to work with her studying fern chromosomes.

Mary retired on 29 July 1983 after a notable career of 39 years at the Gardens. She continued her investigations and writing as an Honorary Research Associate until quite recently.

Mary was a personal friend of mine as well as a work colleague and in 2006 she allowed me to interview her for the Gardens' Oral History Project. From this interview I learnt that she had developed her love of botany, at age three, from her father who was keenly interested in natural history. At school she played tennis, and as a young woman she enjoyed horse riding and played golf. She had hoped to become a commercial artist but her parents thought botany would be a far more suitable career.

Mary was passionate about opera and ballet, which she attended regularly. She often took me, and other friends, as her guest to operas and ballets. In fact she went to the opera only a couple of weeks ago. She told me lots of stories, both on our outings and during the interview. The first opera she attended was in Paris, when she was in her 20s, the next one was in London. She saw Joan Sutherland sing in Lucia di Lammermoor, and later she saw a young Placido Domingo singing Cavernossi in Tosca, in Vienna. She went to the Royal Command Ballet Performance for the French president in Paris where she saw Helpmann and Fontaine perform together. Mary was a Life Member of the Opera Auditions Committee and took many of us to their functions and performances over the years.

We'll probably all remember Mary for her hats, her lipstick – always plenty of it, but not always in exactly the right place, and for her handbags. She was always prepared for every eventuality! Phillip recalls accompanying her to a classy

function where there wasn't enough light to read the menu. She reached into her bag and got out a magnifying glass and a large dolphin torch - because. She was well known at work for hiding things - and consequently losing things. We never know what's going to turn up in boxes of plant specimens - perhaps a hat, some stockings, or even galouses! Mary grew up in the war era, so had a habit of saving - everything.

I'll always remember Mary for her stories of that elegant age - travelling with huge chests full of ballgowns on beautiful old ships, attending dinner parties and balls, and owning elegant clothes and hats. Mary only ever bought clothes at David Jones 7<sup>th</sup> floor or, in later years, from Jenny's at Neutral Bay. David Jones was her favourite place to shop and I suspect she bought almost everything there. She told me once that her cat Bam Bam would never eat anything if he had to stay overnight at

the vets - and she suspected it was because she only fed him fillet steak from David Jones.

Mary's neighbours - Cherelle, John and Haydon Kemp, and Sally and John Vigours, her cousins Elizabeth and Douglas, Margaret and Carrick Chambers, and the staff at Lansdowne Gardens, cared for Mary in recent years.

Mary Tindale lived a long and full life. She was thoughtful and kind, always with a gift for new babies and birthday and Christmas presents for friends, family and neighbours. She was full of surprises and had a social conscience - and, as we all know, she was not the retiring type but was one who spoke her mind. Mary enjoyed good health until very recently. She followed her interests of opera and ballet to the full, led an active social life, enjoyed life-long friendships, and pursued a long, successful and distinguished career in botany. We will miss her greatly.

## Regional News

### Plant diversification in space and time - two workshops held at the Australian Tropical Herbarium/James Cook University in Cairns

How to best reconstruct plant diversification in space and time is currently a highly dynamic field in plant evolutionary research. New approaches to infer historical biogeography or diversification rates are constantly emerging. These are often based on a challenging theoretical framework involving highly advanced algorithms and are implemented in new software tools that may not be quite straightforward to use (to say the least). For us, the end user, it therefore may be difficult to keep up with the new developments and to choose the appropriate tools fitting best to the research question and the data available or to simply run the analyses using the variety of computer programs.

The Cairns chapter of ASBS in conjunction with the Australian Tropical Herbarium held two one day workshops (25<sup>th</sup> and 27<sup>th</sup> of January 2011) for molecular systematists covering current methods in biogeographical analyses and

diversification rate analyses across phylogenies. The two workshops were presented by Daniele Silvestro of the Research Institute Senckenberg & the Biodiversity and Climate Research Centre, Frankfurt, Germany.

The first workshop covered the topic "Diversification in space: parametric approaches for historical biogeography". In this workshop the most recent and commonly used methods for biogeographic inference were reviewed with a special focus on ancestral area reconstruction along phylogenies. New analytical tools were discussed that incorporate statistical models to investigate the evolution of geographic ranges of species and lineages in a phylogenetic context. These aim at reconstructing the often complex history of migration, dispersal, extinction, and vicariance involving continental drift, geomorphological events, and climate change that caused the observed distribution of present taxa. Daniele explained how these new analytical tools infer where the ancestors were distributed, measure rates and direction of dispersals, estimate range expansions and contractions during lineage diversification. The principal analytical approaches were presented (e.g. S-Diva, Lagrange,

MrBayes4) discussing the pros and cons of parsimony, likelihood, and Bayesian algorithms. The practical part of the workshop focused on the use of the computer program Lagrange.

The second workshop dealt with the topic “Diversification through time: inferring speciation and extinction rates from phylogenies”. In this workshop the concepts of speciation and extinction rates and lineage-through-time plots were presented and the stochastic processes that can be used to infer the rates from phylogenies using maximum likelihood and Bayesian approaches. Investigating the tempo of diversification using molecular phylogenetic data has become a task of great interest with the increasing availability of molecular data and improving molecular clock methods.

The patterns of species richness reflect a process of evolution and extinction which is a key subject in evolutionary biology. Recently developed

methods were presented that provide a statistical framework to estimate rates of speciation and extinction from dated phylogenies. Daniele outlined how the rates and their variation through time can be used to address a number of questions on evolutionary processes such as the impact of climatic changes or the effect of key innovations on species diversification. The practical part of this workshop demonstrated the use of a new computer program (BayesRates) developed by Daniele and his colleague Jan Schnitzler from the Biodiversity and Climate Institute Frankfurt, implementing these methods. The workshops were attended by researchers and PhD students from multiple disciplines and included Australian Tropical Herbarium staff and students, JCU Marine and Tropical Biology students, and overseas visiting PhD students from the U.S. Many thanks to Daniele for presenting these fantastic workshops.

*Katharina Schulte and Mark Harrington*



Figure 1. Daniele Silvestro (in front) discussing the results of a Lagrange analysis with PhD student Yumiko Baba (JCU/ATH) at the plant diversification workshop.

# Chapter Conveners

## Adelaide

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

## Armidale

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

## Brisbane

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

## Canberra

Vacant

## Cairns

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

## Darwin

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

## Hobart

Vacant

## Melbourne

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

## Perth

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

## Sydney

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

# Contacting Major Australian Herbaria and Systematics Institutions

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

AD tel: (08) 8222 9307 fax: (08) 8222 9353 www.flora.sa.gov.au	HO tel: (03) 6226 2635 fax: (03) 6226 7865 www.tmag.tas.gov.au/ Herbarium/Herbarium2.htm	MEL tel: (03) 9252 2300 fax: (03) 9252 2350 www.rbg.vic.gov.au/	NSW tel: (02) 9231 8111 fax: (02) 9251 7231 www.rbgsyd.gov.au/conservation _research/herbarium_&_services
CANB tel: (02) 6246 5108 fax: (02) 6246 5249 www.anbg.gov.au/	BRI tel: (07) 3896 9321 fax: (07) 3896 9624 http://www.derm.qld.gov.au/ herbarium	DNA tel: (08) 8999 4516 fax: (08) 8999 4527 www.nt.gov.au/pwcnt	PERTH tel: (08) 9334 0500 fax: (08) 9334 0515 http://science.dec.wa.gov.au/ herbarium/
CNS Tel: (07) 4042 1837 Fax: (07) 4042 1842 www.ath.org.au/		NT tel: (08) 8951 8791 fax: (08) 8951 8790	<i>Australian University Herbaria</i> Contact CHAH representative: Murray Henwood, University of Sydney
<i>Council of Heads of Australasian Herbaria (CHAH)</i> Chair: Dr Brett Summerell (NSW) brett.summerell@rbgsyd.nsw.gov.au or www.chah.gov.au/	ABRS tel: (02) 6250 9417 fax: (02) 6250 9555 email: abrs@environment.gov.au www.environment.gov.au/ biodiversity/abrs/	<i>Australian Botanical Liaison Officer (ABLO)</i> Position Vacant Herbarium, Royal Botanic Gardens, Kew Richmond, Surrey TW9 3AB England tel: 44-20-8332 5270; fax: 44-20-8332 5278 email: ablo@kew.org	

# ASBS Publications

## History of Systematic Botany in Australia

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

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

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

## Systematic Status of Large Flowering Plant Genera

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

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

## Australian Systematic Botany Society Newsletter

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

## Evolution of the Flora and Fauna of Arid Australia

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

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

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

## Ecology of the Southern Conifers (Now out of print)

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

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

Helen Thompson  
ASBS Sales  
ABRS

GPO Box 787  
Canberra, ACT 2601, Australia

Or fax credit card details to:

Helen Thompson Fax: (02) 6250 9448

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

## AUSTRALASIAN SYSTEMATIC BOTANY SOCIETY INCORPORATED

### *The Society*

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

### *Membership*

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

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

### *The Newsletter*

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

### *Contributions*

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

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

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

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

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

### *Advertising*

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

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

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

### *Editors*

Russell Barrett Kings Park & Botanic Garden Fraser Ave West Perth, WA 6005 Tel: (08) 9480 3640 Fax: (08) 9480 3641 Email: russell.barrett@bgpa.wa.gov.au	Peter Jobson (ENV Australia) 29 Montreal Road Woodbridge WA 6056 Email: peter.jobson@env.net.au	<b>Book Reviews:</b> John Clarkson Department of Environment and Resource Management, PO Box 156 Mareeba, Qld 4880 Tel: (07) 4048 4745 Email: John.Clarkson@derm.qld.gov.au
--	--	---

# Contents

*Australasian Systematic Botany Society Newsletter 146 (March 2011)*

<b>From the President</b> .....	1
<b>Articles</b>	
<i>Acacia</i> and the IBC .....	2
AusGrass2 .....	7
<b>ASBS Inc. Business</b>	
Special resolutions outcome .....	9
<b>Eichler Research Fund Report</b>	
Morphological and molecular variation within the <i>Lejeunea tumida</i> Mitt. species group (Lejeuneaceae: Jungermannopsida) .....	10
<b>ABRS Report</b> .....	14
<b>Obituary</b>	
Mary Tindale .....	15
<b>Regional News</b>	
Plant diversification in space and time – two workshops held at the Australian Tropical Herbarium/James Cook University in Cairns .....	17