A S B S

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From the President

By now, all members should have received paper copies of ASBS *Newsletter* issues 144–5 and 146 in the mail. I apologize for the long delay in getting these issues to you and also for the somewhat irregular publication schedule of the electronic version of the Newsletters over the past 12 months. The irregular schedule has been due primarily to the fact that Editor Russell Barrett has been trying to finish off his Ph.D. thesis at the same time as editing the *Newsletter* and moving into and renovating a house. Russell recently submitted his thesis (Congratulations Russell!) and Peter Jobson has now organized to have the printing and distribution of the *Newsletter* done by a company in Perth, Fineline Print & Copy Service. If our relationship with this company works as hoped, we should be able to get back to a regular publication schedule for both electronic and print versions of the *Newsletter* from this issue onward. Russell is also getting married shortly (again, congratulations Russell!) and will be heading off on an extended honeymoon to South America from October 2011 to February 2012 and so will be unable to edit the December 2011 and March 2012 issues of the *Newsletter*. Bill and Robyn Barker have kindly offered to act as guest editors of these issues of the *Newsletter*. Articles for the December issue should be submitted to Robyn (Robyn.Barker@sa.gov.au) by 30 November 2011.

Those members who were lucky enough to attend the XVIII International Botanical Congress in Melbourne will probably agree with me that overall, the conference was a great success. I found the way the program was arranged, with a couple of plenary lectures kicking off each day, followed by a series of keynote talks between morning tea and lunchtime and two blocks of symposium sessions after lunch to be an excellent format. Sometimes having absence of choice is the best choice of all and I was most grateful for being "forced" to go to some outstanding plenary and keynote talks that I might not have attended had I had the choice to go elsewhere. As with any large conference like this, most of us moaned from time to time about "programming clashes" between competing, concurrent symposia that we wanted to attend, but the compatible timing of talks did allow many of us to skip between symposia to catch many of the talks that we wanted to hear. Elsewhere in this *Newsletter* are reports of some of the symposia. The organizing committee of the Congress, including ASBS members Judy West (Congress President), Karen Wilson (Secretary General), Pauline Ladiges, David Cantrill and Tim Entwisle deserves our warm congratulations for overseeing such a stimulating and smoothly functioning conference. Karen has promised to provide us with a distillation of the committee's plan of action in a forthcoming *Newsletter*.

The Congress started with a bang, with a Botanical Nomenclature Section that probably made more profound changes to the way that we name plants than any previous Congress since the ICBN was established. I am sorry that I missed this historic event, at which electronic publication became recognized as an effective form of publication and English descriptions became an acceptable alternative to Latin, among other changes. Surprisingly to me, the anticipated fracas over the application of the generic name *Acacia* failed to eventuate. Members interested in reading a more detailed account of the nomenclature session should consult Miller *et al*. (2011) at http://www.pensoft.net/J_FILES/3/articles/1850-G-3-layout.pdf. and Knapp *et al*. (2011) (http://www.pensoft.net/journals/phytokeys/article/1960/changes-to-publication-requirements-made-at-the-xviii-international-botanical-congress-in-melbourne-what-does-e-publicat).

ASBS Council had scheduled the Society's Annual General Meeting as part of the IBC, until we realized that the statutory requirements for notification of members had not been completely met. Disappointingly, our meeting of a substantial proportion of the membership had to be re-badged as an "Informal General Meeting" (the AGM will now be held in Mueller Hall, National Herbarium of Victoria at 13.00 on Friday 25 November 2011 - see the formal notice elsewhere in this *Newsletter* and on the ASBS website). As well as hearing reports from the President, Vice President, Treasurer, Newsletter Editor and Webmaster,

we also witnessed two award presentations. The first of these was the presentation of a framed life membership certificate to John Clarkson. John had been voted a Life Member of ASBS at the Council meeting before last year's ASBS Conference in Lincoln, New Zealand and the decision had been announced at the conference dinner at Melton Estate, but John had not yet been given anything in black and white saying so. On receipt of his certificate, John gave us another thoughtful speech, saying, among other things, that he was delighted to have been able to serve ASBS in a number of capacities and in that way to stay firmly connected with one of his first loves in botany: plant systematics.

The second award presentation was of the Nancy T. Burbidge Medal to Professor Pauline Ladiges of the School of Botany at the University of Melbourne. This was the first of two Burbidge Medals presented at the IBC, the other being to Professor Michael Crisp before he delivered his Nancy Burbidge Lecture on the Friday morning. My article about these awards appears elsewhere in this *Newsletter*.

On the Friday evening, ASBS members had the opportunity to get together socially at the Society's conference dinner, organized by ASBS Councillor, Pina Milne and held at University House, University of Melbourne. The food, drink and company were all good and members were treated to two additional highlights, one planned, the other a complete surprise to most of us. Between the main course and dessert, Professor Adrienne Clark (University of Melbourne), representing The Nature Conservancy (TNC), and Mr Max Bourke, representing both TNC and the Thomas Foundation, launched an exciting new initiative, which ASBS Council and TNC had been negotiating for several months: the Australian Conservation Taxonomy Award. This postgraduate scholarship will be funded by TNC and the Thomas Foundation and administered by ASBS, and will be offered for the first time in March 2012, concurrently with the March round of Hansjörg Eichler Awards. The purpose of the award is to provide $6000 of support for a postgraduate student's research project in plant systematics for 12 months, as well as $3000 to fund the student's attendance at the two ASBS conferences immediately preceding and following the year of funded research. At this stage, funding has been committed for two awards, to be offered in 2012 and 2013. Funded projects will contribute to Australian systematic botany (including cryptogams) and have conservation relevance, with preference given to applications that include taxa that occur in TNC's priority regions: the Great Western Woodlands of Western Australia and/or Australia's northern grasslands (see http://www.nature.org/ourinitiatives/regions/australia/placesweprotect/index.htm). More details and application forms will appear soon on the ASBS web site.

The unplanned highlight of the conference dinner was the unrolling and display of a "small" (6m x 1m!) photographic collage entitled "Volcano Dreaming", designed by Kerrie Poliness and Peter Haffenden, comprising over 3000 images provided by ten different photographers, illustrating the biota of the Victorian Volcanic Plain, printed on a cloth banner (see http://www.inheritearth.com.au/downloads/EintrophotosOL.pdf). I thought it was superb, and would love to see the full sized (12m x 2m) version.

Other news of immediate relevance to Australasian plant systematists that has broken in the past six months includes the following. On 30 May, the Federal Minister for Innovation, Industry, Science and Research, Senator Kim Carr, announced that the Australian Research Council's process for ranking scholarly journals as part of the Excellence for Research in Australia initiative (ARC-ERA) would be scrapped. This prompted much rejoicing in the academic and scientific community, especially amongst systematists (see my article about this elsewhere in this Newsletter).

Recently, Australian institutions and the Royal Botanic Gardens, Kew seem to have been engaged in a slow-motion game of musical chairs. First, Dr Timothy Entwisle left his position as Executive Director of Sydney's Royal Botanic Gardens and Domain Trust on 25 March 2011 to take up the position of Director of Conservation, Living Collections and Estates at Kew. His replacement in Sydney then turned out to be Professor David Mabberley, formerly the Keeper of the Herbarium, Library, Art and Archives at Kew. David started as Executive Director at Sydney on 22 August

2011. The latest move in this trade in personnel has just been signaled by the announcement that Kew Director, Professor Stephen Hopper, will be leaving Kew in 2012 to take up a new Chair in Biodiversity at the University of Western Australia. We wish all three well in their new or forthcoming roles.

Only a few days ago I read the sad news that Gillian Perry, a botanist at PERTH, had died on 22 August 2011. She was probably best known for her work on botanical nomenclature, which was a major focus of her professional life for three decades. Only very recently, at the Nomenclature Section of the IBC in Melbourne, she was still making a significant contribution to improving the Code. An obituary has been promised for the next *Newsletter*.

The number of applications ASBS has received for Hansjoerg Eichler Awards this year has been substantially lower than in previous years. A simple (perhaps simplistic) explanation for this pattern is that the delayed publication of ASBS *Newsletters* leading up to the application deadlines in March and September resulted in research students and their supervisors being unaware of these opportunities. However, the fact that Secretary Gill Brown emailed reminders to all Australian academic plant systematists before the March deadline suggests otherwise. Another potential explanation is that the number of potential applicants has dwindled. Whatever the cause, I encourage all student members who are pursuing research projects in plant systematics to seriously consider applying for a Hansjoerg Eichler Award in the March 2012 round of applications. I urge postgraduate student members also to apply for the new Australian Conservation Taxonomy Award at the same time.

Finally, I want formally to thank our retiring Council members, Dr Tanya Scharaschkin and Secretary, Dr Gillian Brown, who will be stepping down at the AGM in November. Tanya has been available to help when we needed her and Gill has been a tower of strength on Council. I wish both them all the best on behalf of ASBS and send Gill our best wishes for the birth of her baby early in 2012. *Peter Weston*

NANCY T. BURBIDGE MEDALS

Award of Nancy T. Burbidge Medals to Professors Pauline Ladiges and Michael Crisp

The Nancy T. Burbidge Medal is awarded to a person who has made a long-standing and significant contribution to Australasian systematic botany and is the foremost award that can be conferred by our Society. ASBS Council received two nominations for the Nancy Burbidge Medal prior to its meeting at the International Botanical Congress in Melbourne. One was for Professor Michael Crisp, who had earlier been invited by the Conference Organising Committee to deliver the Nancy Burbidge Lecture as a Plenary Presentation on the morning of Friday 29 July on the topic of "Evolution of the Australian flora through the last 65 million years". The other nomination was for Professor Pauline Ladiges, who had already delivered a Nancy Burbidge Lecture back in 1996, at about the time the idea of a Nancy Burbidge Medal was first conceived. The topic of Pauline's lecture had been "Biogeography after Burbidge". Council voted to approve both of these nominations and both medals were presented during the IBC. Pauline was awarded her Medal at the Informal General Meeting of ASBS members on Wednesday 27 July 2011 and Mike was awarded his just before he delivered his Lecture. This is the first year in which two Nancy Burbidge Medals have been awarded, reflecting both the significance of 2011 as the year of Australasia's second "home" IBC and also the high calibre of both nominees.

Pauline and Mike have both made careers as researchers on the evolutionary and biogeographic history of the Australian flora and its place in the flora of the Southern Hemisphere and the world. In their different ways, both have made internationally significant contributions to this field. They have also earned prominent international reputations in other areas of systematics, including the taxonomy of particular plant groups and the methodology of

systematics and biogeography. Both have helped to sustain the health of Australasian systematic botany as a profession, through their university teaching at undergraduate and postgraduate levels, in educating a new generation of professional systematists. Their contributions to plant systematics are outlined below.

Professor Pauline Yvonne Ladiges

Professor Pauline Ladiges was nominated for the Nancy T. Burbidge Medal by Dr Michael Bayly (School of Botany, The University of Melbourne), seconded by Dr Frank Udovicic (National Herbarium of Victoria), supported by letters from Dr Kevin Thiele (Western Australian Herbarium) and Dr Marco Duretto (National Herbarium of New South Wales). All were formerly supervised by Pauline as postgraduate students.

Pauline Ladiges was born in England but her parents migrated to Australian in 1952, and she grew up in Moe, in the La Trobe Valley east of Melbourne. She started her professional life as a school teacher at Melbourne Secondary Teachers College in 1971 but soon returned to the University of Melbourne and its School of Botany, first as a postgraduate student, then as a lecturer in 1975. Her Ph.D. research, supervised by Dr David Ashton, focussed on the autecology of *Eucalyptus viminalis*, in which she described ecotypic variation in drought tolerance and soil nutrition. This was one of the first studies to investigate geographic, genetic variation of a widespread and variable eucalypt species.

Pauline Ladiges with her Nancy T. Burbidge Medal at the IBC. (Photo: Karen Wilson)

Pauline's research concentrated on ecology until she met Dr Chris Humphries of the British Museum (Natural History) in 1979, when he spent a year's sabbatical at Melbourne studying the phylogeny of *Nothofagus* and teaching about cladistics. She quickly saw the relevance of phylogenetic analysis to understanding eucalypt evolution and embarked on a six year collaboration with Chris, during which they reconstructed the phylogeny of the eucalypts as a whole and of several subclades in detail. Pauline spent 6 months in London at the Natural History Museum with Chris in 1982, during which she devoted a good amount of her time to discussions with other prominent theorists and practitioners of cladistics such as Colin Patterson, Dick Vane-Wright and Lynne Parenti. From then on her work focused on plant systematics.

At first the eucalypts dominated Pauline's research in systematics, as well as the projects of postgraduate students who she supervised, including Frank Udovicic, Andrew Drinnan and the late Jenny Chappill. The results of this pioneering work, based on both morphological and molecular evidence, were crucial in providing a solid framework for more detailed research in eucalypt phylogeny and biogeography. Among many other things, they showed unequivocally that the bloodwoods are more closely related to *Angophora* than either group is to *Eucalyptus sensu stricto*. This discovery was taxonomically highly significant, influencing Lawrie Johnson's eventual taxonomic decision not to split the eucalypts into numerous genera but instead to recognise *Corymbia* as a separate genus sister to *Angophora*. As Kevin Thiele wrote in his letter of support, "through her own work and that of her students, Pauline then extended these methods to many other groups including *Acacia*, thus covering the two most iconic large Australian

genera." The plant families on which Pauline and her students have worked have included Proteaceae (with Kevin Thiele), Rutaceae (with Marco Duretto and Mike Bayly), Rhamnaceae (with Juergen Kellermann), Myrtaceae (with Gill Brown, Adele Gibbs, Carlos Parra-O.), Ericaceae (with Gill Brown), Fabaceae: Mimosoideae (with Dan Murphy and Gill Brown) and Orchidaceae (with Jacinta Burke).

In September 1983, the Canberra Chapter of ASBS announced that it had committed to organising a one day symposium on the rapidly progressing method of cladistic analysis, as part of the 1984 ANZAAS conference. Experts in the field, including Vicki Funk from the Smithsonian Institution, were invited to come and explain how to do cladistic analysis and ASBS members were asked to contribute talks on botanical applications. When Vicki had to withdraw from the symposium due to ill health, Gareth Nelson of the American Museum of Natural History was invited to take her place at the meeting held at CSIRO Plant Industry on 18 May1984. That day, Pauline, who contributed a talk on "Relationships within the stringybark eucalypts of Eastern Australia" met Gary, whose invited paper was on "Pacific biogeography". Thus began a personal and professional partnership that continues to this day.

Pauline's research in systematics included a biogeographic component right from the start but her interaction with Gary sparked a keen interest in the methodology of biogeographic analysis. Together, they have made important advances, especially the formulation and development of the concept of biogeographic paralogy and the idea that its elimination should be central to historical biogeographic analysis. At the same time they have stirred debates and challenged developing orthodoxies. Pauline's empirical biogeographic research has also been highly influential and has had a broader scope than the taxonomic groups on which she has worked, encompassing the relationships between whole biotas, both within Australia and between it and other land masses, most notably New Caledonia.

Altogether, Pauline has published over 125 peer-reviewed articles in international scientific journals, published eight book chapters, and edited four special volumes. However, as a university academic, she has also had a "parallel career" as a lecturer, supervisor, mentor and administrator. Pauline has spent almost all of her career working in the School of Botany at the University of Melbourne, where from 1992 to 2010 she served in the demanding role of Head of School and was awarded a personal chair. In his letter of support, Kevin Thiele wrote "perhaps most importantly, Pauline has consistently championed, both in words and actions, the importance of teaching systematic botany in Australian universities. At a time when such teaching declined in many institutions, she created and maintained a world-class systematics research groups in Melbourne, both at the University and through close linkages with the National Herbarium of Victoria. Many of the students she taught and mentored have gone on to teaching, university and herbarium positions throughout Australia, including many offices within the Australian Systematic Botany Society. Without Pauline's influence and leadership, Australian systematic botany would be considerably poorer today."

In addition to being an inspirational teacher, Pauline has co-authored two biology textbooks for secondary education, and co-edited and co-authored the first substantial Australian biology textbook used in tertiary institutions (now in its fourth edition). These three books have won prizes for Best Australian Textbook and Awards for Excellence in Australian Publishing.

As Head of School over 18 years Pauline also became engaged in the University's corporate activities and in a large number and variety of positions on boards of management, advisory committees and philanthropic organisations. Her stature and contributions have been recognized through numerous honours and awards including membership of prestigious scientific bodies such as the Australian Academy of Science and appointment in 2009 to the Order of Australia.

Professor Michael Douglas Crisp

Professor Michael Crisp was nominated for the Nancy T. Burbidge Medal by me, seconded by Dr Dale Dixon (both National Herbarium of

Michael Crisp is presented with his Nancy T. Burbidge Medal by Peter Weston at the IBC. (Photo: Anna Monro)

New South Wales), supported by letters from Dr Barbara Briggs (National Herbarium of New South Wales) and Professor Peter Linder (University of Zurich).

Mike was awarded his Bachelor of Science degree with First Class Honours in 1971 from the University of Adelaide, where he then proceeded to complete his Ph.D. in plant ecology, with the thesis "Long term change in arid zone vegetation at Koonamore, South Australia". He was appointed in 1975 as a botanist by the Australian National Botanic Gardens, Canberra, where he switched the focus of his research from ecology to systematics and in particular to the systematics of the Australian legume tribes Bossiaeeae and Mirbelieae, the "egg and bacon peas". Mike commenced a taxonomic revision of the genus *Daviesia* and gradually became the foremost authority on the taxonomy of the Mirbelieae. He has continued to work on the taxonomy of the Mirbelieae in parallel with other projects and has published 44 taxonomic papers on this group so far, in which over 200 new taxa and new combinations have been published.

Mike soon realised that Willi Hennig's analytical technique and taxonomic method, phylogenetic systematics, which had been introduced to English speaking scientists a decade earlier, but which had not been adopted enthusiastically by many plant systematists, offered a promising, explicitly scientific method for reconstructing plant phylogeny. He started applying Hennig's method (which soon came to be known as cladistic analysis) to the study of the evolutionary history of his egg and bacon peas. Mike was also impressed by the potential of cladistic biogeographic techniques for reconstructing biogeographic history that were being actively developed in the late 1970s and early 1980s. Mike presented the results of his first cladistic analysis and biogeographic study, an analysis of the small genus *Leptosema*, at the ASBS symposium "Evolution of the flora and fauna of arid Australia", held in Adelaide in 1980. This is where I first met him and we quickly became close friends and colleagues. Mike went on to become a strong, articulate and persuasive advocate for the use of overtly phylogenetic methods in systematics, biogeography and evolutionary biology and has contributed significantly to methodological innovation in this field.

In 1981–82, Mike was posted to London as Australian Botanical Liaison Officer at the Royal Botanic Gardens, Kew, where he enjoyed interacting with the legume specialists Dr Roger Polhill, Bernard Verdcourt, Gwil Lewis and Dr Charles Stirton at Kew, Dr Peter Linder, the South African Liaison Botanist then posted to Kew and the enthusiastic group of young cladists working at the British Museum (Natural History), most notably Dr Chris Humphries. His ABLO research project mostly involved the identification and photography of type specimens of Mirbelieae and Bossiaeeae held in European herbaria and over the following few years the resulting photographs aided considerable work on the alpha taxonomy of various groups in the Mirbelieae as well as the production of treatments of the Fabaceae for several regional Floras such as the "Flora of Central Australia", an ASBS publication. Mike also extended his alpha-taxonomic work to the description of new species in other taxa, particularly his first botanical love, *Eucalyptus*.

Not long after we first met in Adelaide, Mike and I commenced a research project on the systematics of the subtribe Embothriinae (Proteaceae), including a cladistic analysis of the subtribe and

a morphometric study of species boundaries in the genus *Telopea*, preliminary results of which were presented in 1984 at a symposium on the biology, cultivation and conservation of waratahs, and published in the resulting symposium volume. A year later Mike was invited to present a phylogenetic analysis of the tribes Mirbelieae, Bossiaeeae and Brongniartieae at the Second International Legume Conference in St Louis, Missouri and he asked me to collaborate with him on this project, adding a review of cladistic methodology for legume specialists to the resulting chapter published in *Advances in Legume Systematics Part 3* in 1987. Our collaborations on the systematics of the Fabaceae and Proteaceae and on historical biogeography have been ongoing and so far have resulted in 18 co-authored publications.

Another colleague with whom Mike developed a fruitful, ongoing collaboration, starting in the early 1990s, was Dr Peter Linder, then at the University of Cape Town. Peter came to Canberra for a sabbatical break in 1994 and then returned the favour in 1996–97, hosting Mike in Cape Town. They published four co-authored, highly influential biogeographic papers as a result of their sabbaticals together, which have received a total of over 300 citations.

In the 1990s, Mike appreciated the enormous potential of the new field of molecular systematics and initiated a project to test morphology-based cladograms of genera of Mirbelieae and Bossiaeeae using phylogenetic analyses of molecular data sets. The first two papers resulting from this project were published in 1999 and a further nine papers on the molecular systematics of these tribes have subsequently appeared, which have provided a detailed picture of the phylogeny of this clade as well as a robust overview of its major subgroups. In pursuing this project, Mike formed a collaborative relationship with Dr Lyn Cook (now at the University of Queensland) that has matured into an extraordinarily productive and innovative research partnership. Their 22 co-authored papers have covered an impressively diverse range of areas within the fields of phylogenetic and biogeographic methodology, systematics, historical biogeography and evolutionary ecology, in all of which their contributions have made significant impacts, reflected, for instance, by over 450 citations that their papers have received.

In 1990, Mike took up a lecturer's position in the Division of Botany and Zoology at the Australian National University ("BoZo"), where he smoothly progressed to the position of Reader and was then awarded a personal Chair in 2004. As an academic systematic botanist, Mike has had a tremendously positive influence on the development of plant systematics in Australia through the development of young scientists that he has taught at undergraduate, postgraduate and postdoctoral levels. Mike developed and taught two of Australia's most highly regarded undergraduate courses in the principles and methods of systematics: "Comparative Biology and Systematics" (1991–2000) and "Biodiversity and Systematics" (2000–2007), which inspired 12 students to take on projects in plant systematics for their Honours years, of whom seven went on to enrol in Ph.D. programs in plant systematics. Of the 14 postgraduate students who Mike has supervised to graduation, five are now working as professional botanists and one as a professional zoologist in Australia, and a further seven are working as professional plant systematists in herbaria and universities overseas.

Scientific administration and management are often overlooked when evaluating an individual's contribution to scientific progress but without expert leadership, scientific institutions can quickly drift into mediocrity, low productivity and irrelevance. Mike's term as a Head of School of the Division of Botany and Zoology at ANU (2000–03) was a challenging period during which the institute was put under severe budgetary pressure as a result of poor financial management elsewhere in the Science Faculty. Mike steered BoZo successfully through these difficulties at the same time as maintaining his own research productivity and enhancing the position of systematic and evolutionary biology in the Division's staffing and teaching programs.

Although service to ASBS in official capacities is not included in the criteria for awarding the Nancy Burbidge Medal, it should be noted in passing that Mike has served our Society as Public Officer (1986–92), Newsletter Editor (1988–92, with Barbara Barnsley), Councillor (1986–90), Vice

President (1990–92) and President (1992–95).

In his letter of support, Peter Linder wrote: "I have known Mike Crisp for most of my professional life. We met in 1981 in Kew, when he as ABLO, and I was SABLO. That started a long friendship and collaboration, and parallel career tracks. Mike is a very remarkable scientist and person, and has been an inspiration to me over the many years. What I have appreciated most about him are the following attributes: He is a "complete" botanist. In the centre stand the plants. Not any theories, methods, or ideas, but the plants (well, usually a mirbelioid legume). He has worked on these plants taxonomically, phylogenetically, ecologically, biogeographically and macro-evolutionarily. And in each of these fields he has made substantial and impressive contributions.

The important thing is that he knows the plants he studies and analyses, and the striking thing is how important to him the long fieldtrips are, the house-visits to his plants. He is innovative and flexible, always ready to take on new ideas. This ranges from Hennigian cladistics (when we were both young systematists at Kew), to functional trait evolution, to molecular phylogenetics, and latterly to niche evolution and palaeoclimate reconstruction. When most researchers will start to rest on their laurels and repeat what they have done before, Mike is still looking for new frontiers. He is inquisitive, and always looking for new ways to think about his plants, and prepared to learn new methods and understand new theories. Mike has made (and is still making!) a major impact on botany in general and systematics in particular in Australia and also globally. His work, ideas and approaches have done much to shape the modern systematics enterprise in Australia."

Peter Weston
National Herbarium of New South Wales

Acknowledgements
This article was composed from the nominations, supporting letters and other attached documents and from personal communication with Pauline Ladiges.

Articles

The nomenclatural history of *Eucalyptus elata*, the River peppermint of New South Wales and Victoria

A.R. Bean, Queensland herbarium

Many eucalypts have had name changes over the years, but few if any could match the River peppermint. River peppermint occurs in coastal areas from around Putty in NSW to the Gippsland region of Victoria (Brooker et al. 1984). It is an ornamental medium-sized to tall tree, largely smooth-barked, with ribbons of recently shed bark frequently adhering, and with a fissured grey rough stocking on the lower trunk. The adult leaves are linear to narrow lanceolate, and the slender buds are borne in groups of 15-40 in the leaf axils.

The species is taxonomically well defined, widespread in distribution and well known in cultivation, but it has suffered an extraordinary number of name changes over the years. At various times it has been called *Eucalyptus amygdalina,* *Eucalyptus amygdalina* var. *numerosa, E. andreana, E. elata, E. lindleyana, E. lindleyana* var. *stenophylla* or *E. numerosa*.

This discussion examines each of these names, and confirms that the correct name for the River peppermint is *Eucalyptus elata*.

Sequence of names applied to the River peppermint

Mueller (1880), in Eucalyptographia, included River peppermint in his broad concept of *E. amygdalina*. Maiden (1905) agreed with this stance, but he detailed many of its 'synonyms', one of which he called the "White Gum of Bent's Basin and the Nepean River (Woolls)", now known as River peppermint. In the same publication, he suggested that either *E. numerosa* or *E. amygdalina* var. *numerosa* should be applied to it. These names recognise the high number of buds per umbel that characterise the River peppermint, but both names are illegitimate, as explained below.

Blakely (1934) was the first to apply the name *E. lindleyana* to the River peppermint, with the

statement "*The figure in the Botanical Register agrees very well with young plants of E. numerosa, Maiden, described in 1904*". He also described *E. lindleyana* var. *stenophylla* from southern New South Wales.

Cameron (1946) thought that *E. lindleyana* is a synonym of *E. radiata*, and so he proposed *E. andreana* as the correct name for the River peppermint. Johnston & Marryatt (1965) maintained *E. andreana* as the accepted name.

Pryor & Johnson (1971) resurrected *E. elata* for the River peppermint, citing Agostini (1958) as their reference. This was the first time *E. elata* had been mentioned by Australian eucalyptologists since Maiden (1905), who had included it as a synonym of *E. amygdalina*.

Discussion of each name is given below:

Eucalyptus amygdalina Labill., Nov. Holl. Pl. 2: 14, t. 154 (1806).

E. amygdalina was named by Labillardiere from specimens collected in south-eastern Tasmania. Currently the name is applied only to Tasmanian populations, but in the 19th and early 20th centuries, the name was applied widely in Tasmania, much of Victoria and in eastern New South Wales (as far north as Tenterfield). This concept included the now accepted species *E. radiata, E. elata, E. regnans, E. ambigua, E. tenuiramis* and perhaps others.

Maiden (1907) wrote "If I were to be asked my favourite Eucalyptus tree, I think I should probably name *Eucalyptus amygdalina*. When allowed fair-play it is a beautiful species, with dense masses of pendulous foliage, and shapely withal." This description is arguably referrable to the River peppermint, which grows near Sydney where Maiden was based.

Eucalyptus lindleyana DC., Prodr. 3: 219 (1828).

Lindley (1826) published the name *Eucalyptus longifolia* in the Botanical Register, but he was obviously unaware that Link had used the same epithet for a different species a few years earlier.

A.P. de Candolle published *E. lindleyana* as a replacement name for *E. longifolia* Lindl. (1826), *nom. illeg., non* Link (1822).

In Lindley's protologue, he wrote "our drawing ... was made some months since, from a plant 7 feet high ... No specimens having been preserved at the time, and the plant having subsequently perished, we are unable to offer any other description of the species than could be obtained from our figure." Hence the type of Lindley's name (now *E. lindleyana*) can only be the illustration in the Botanical Register. While the drawing presented there is reasonably detailed, showing buds, open flowers, sessile juvenile leaves and petiolate intermediate leaves, it is not sufficient to distinguish the species to which it belongs. Potentially it could equate to *E. acmenoides, E. pilularis, E. radiata, E. willisii, E. amygdalina, E. ambigua*, or perhaps another similar species. In consequence, *E. lindleyana* must be regarded as a *nomen dubium*.

Eucalyptus elata Dehnh., Cat. Horti Camald. 26 (1829).

Freidrich Dehnhardt described this species in 1829, based on a cultivated plant in the garden of the Duke of Camalduli's estate near Naples, Italy. The description appeared in an obscure publication called "Catalogus Plantarum Horti Camaldulensis".

The protologue is very detailed, and talks about bark type, branchlet orientation, operculum shape, juvenile leaves, and umbel arrangement. I have viewed high quality images of type specimens from RO and NAP. The specimens and the protologue in combination leave no doubt that River peppermint is the species represented.

The name did not escape the notice of Bentham (1867) who placed it in the synonymy of *E. viminalis* Labill., without comment. Maiden (1905) equated *E. elata* and the River peppermint, but then proposed the name *E. numerosa* for it.

Eucalyptus andreana Naudin, Revue Horticole 346 (1880).

This name was published by French botanist Charles Naudin. The protologue states "Elle existe dans plusieurs jardins de la région, notamment dans ceux de M. H. de Vilmorin et de M. Edouard André, au Golfe-Juan, qui en a été l'introducteur en France."

I have examined images of the four syntypes of *E. andreana* held at P, and have made measurements where possible. Some of the pertinent characters are: adult leaves lanceolate, 10-20 mm wide; inflorescence axillary; peduncles 6-7.5 mm long; buds numbers per umbel 5, 6, 11, 13; fruits cupular, 4.5-5 mm long, valves not exserted, fruiting pedicel 1-1.5 mm long.

The protologue is quite detailed, and adds some useful data for consideration. Naudin stated that the inflorescences can have '15 to 25 flowers, perhaps more', that the juvenile leaves are not completely sessile, and that the adult leaves are on average 10 cm long, and 1-1.5 cm wide. Naudin recorded that he knew trees 8-10 metres high, but he did not describe the bark at all.

E. andreana does not represent the River peppermint as the rather broad leaves and the relatively few buds per umbel preclude it. Maiden has annotated one syntype as *E. amygdalina* var. *radiata* (= *E. radiata* DC.), and it may be that species, but there are about nine other species of peppermint that it could be. The most likely matches for *E. andreana* are *E. radiata, E. willisii* Ladiges, Humphries & Brooker and *E. ambigua* DC.

While a first-hand examination of the syntype specimens might elicit more information, it is very doubtful that a reliable species-level identification could be achieved in the absence of juvenile foliage and information about the bark.

Eucalyptus numerosa Maiden, Proc. Linn. Soc. New South Wales 29(4): 752 (1904, publ. 1905), Crit. Rev. Eucalyptus 1: 155 (1905), *nom. illeg.*

and

Eucalyptus amygdalina var. **numerosa** Maiden, Proc. Linn. Soc. New South Wales 29(4): 752 (1904, publ. 1905), Crit. Rev. Eucalyptus 1: 155 (1905), *nom. illeg.*

Maiden described *E. numerosa* Maiden and *E. amygdalina* var. *numerosa* Maiden for the River peppermint, but both names are illegitimate because in the synonymy of *E. numerosa* he placed the earlier name *E. elata;* and in the synonymy of *E. amygdalina* var. *numerosa* he placed the earlier name *E. amygdalina* var. *radiata*. Nevertheless, the name *E. numerosa* prevailed for River peppermint for many years.

Eucalyptus lindleyana var. **stenophylla** Blakely, Key Eucalypts 209 (1934); *E. andreana* var. *stenophylla* (Blakely) Cameron, Victorian Naturalist 63: 41 (1946).

Blakely believed *E. lindleyana* to be the correct name for the River peppermint, so obviously his var. *stenophylla* was intended to signify a narrow leaved variety of that species. This variety is indeed synonymous with the River peppermint.

Synonymy

Eucalyptus elata Dehnh., Cat. Horti Camald. 1: 26 (1829). Type: cult. Hort. Neapol., *F. Dehnhardt* (lecto: RO; isolecto: NAP), *fide* Bean (2010).

E. amygdalina var. *numerosa* Maiden, Proc. Linn. Soc. New South Wales 29(4): 752 (1904, publ. 1905); Crit. Revis. Eucalyptus 1: 155 (1905), *nom. illeg.*, as *E. amygdalina* var. *radiata* (DC.) Benth. (1867) was cited as a synonym.

E. numerosa Maiden, Proc. Linn. Soc. New South Wales 29: 752 (1904, publ. 1905); Crit. Revis. Eucalyptus 1: 155 (1905), *nom. illeg.*, as *E. elata* Denhn. (1829) was cited as a synonym.

E. lindleyana var. *stenophylla* Blakely, Key Eucalypts 209 (1934); *E. andreana* var. *stenophylla* (Blakely) Cameron, Victorian Naturalist 63: 41 (1946). Types: Nullica, near Eden, Oct 1932, *W. de Beuzeville* (syn: NSW323478); Glenbog (syn: ?NSW).

Dubious names

Eucalyptus lindleyana DC., Prodr. 3: 219 (1828), based on *E. longifolia* Lindl., Bot. Reg. 11, t. 947 (1826), *nom. illeg., non* Link (1822). Type: illustration (t. 947) in Botanical Register.

Eucalyptus andreana Naudin, Revue Horticole 346 (1880). Types: "Elle existe dans plusieurs jardins de la région, notamment dans ceux de M. H. de Vilmorin et de M. Edouard André, au Golfe-Juan, qui en a été l'introducteur en France." (syn: P, four sheets).

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The ARC-ERA Journal Ranking Project Has Been Aborted

Peter Weston
President

In 2008, the Australian Research Council was instructed by the Australian Government to develop a new research quality and evaluation system, called The Excellence in Research for Australia (ERA) initiative. Among other things, this initiative set out to rank over 20,000 scientific journals into four classes, A*, A, B and C, that supposedly reflected the quality of the research published in them. The aim of this exercise was to provide a proxy "measure" of the quality of research papers published in these journals, for purposes such as ranking the research outputs of scientists and their grant applications, and ranking and "benchmarking" scientific institutions and even whole disciplines. The first table of these journal rankings was published by the ARC in 2010 as an Excel spreadsheet that could be downloaded from the Council's website.

The first feature that struck many of us who looked through this list was the low rankings that had been given to journals that publish taxonomic papers, and plant taxonomic papers in particular. While a few journals that publish papers in plant systematics, including *Plant Systematics and Evolution* and *American Journal of Botany*, had been ranked as A class journals, and *Systematic Biology* and *Annual Review of Ecology, Evolution and Systematics* even made it to A*, *Taxon* was the only A-ranked journal that routinely publishes taxonomic papers. Moreover, no journal that regularly publishes the most important output of taxonomic research - taxonomic revisions or monographs – had been given A-ranking. The journals in which Australian plant taxonomists would regularly publish taxonomic revisions were ranked as either B (*Australian Systematic Botany*) or C (*Muelleria*, *Nuytsia*, *Telopea*). Some journals published by taxonomic institutions (*Austrobaileya*, *Journal of the Adelaide Botanic Garden*) were not even ranked at all. International journals of plant taxonomy seemed to fare no better: *Systematic Botany* was ranked B and *Annals of the Missouri Botanical Garden* (as "*Annual of the Missouri Botanical Garden*"), *Botanical Journal of the Linnean Society*, *Kew Bulletin*, were all ranked C, despite these journals having a history of publishing some of the most important papers in plant systematics, evolutionary biology and biogeography. Journals that mostly publish descriptions of miscellaneous new species, such as *Novon*, were all ranked C.

The ARC gave us a glimpse into their thinking through their brief explanations of the four ranks (https://roci.arc.gov.au/Static/ERA_2012_Ranked_Outlets_Consultation_Fact_Sheet.pdf). For example, "Tier B covers journals with a solid, though not outstanding, reputation. Generally in a Tier B journal, one would expect only a few papers of very high quality. They are often important outlets for the work of PhD students and early career researchers. Typical examples would be regional journals with high acceptance rates, and editorial boards that have few leading researchers from top international institutions." One had to conclude that the ARC regards plant taxonomy as a discipline suitable only for "PhD students and early career researchers".

If these rankings were not put to any practical use, none of this would have mattered, but this was definitely not the case, and the rankings, if they had been left unchanged, were likely to have been disastrous for Australian plant

taxonomy. The journal rankings were already being used in the promotion and progression of scientists working as university academics and in the comparative assessment of applications for competitive grants. The rankings had begun to function as strong incentives and disincentives for academics to pursue particular research paths. If the journal rankings of important journals in plant systematics had remained as they were, then the career prospects of all plant taxonomists working in Australian universities would have become severely limited. This would have had dire consequences for the future of our profession.

The ARC-ERA journal rankings were due to be reviewed earlier this year and I sent out a broadcast email message in March, encouraging ASBS members to make submissions to this review. Thankfully, the end result of this process was not fine-tuning but the scrapping of this scheme altogether. This was announced on 30 May 2011, by the Federal Minister for Innovation, Industry, Science and Research, Kim Carr. In his announcement, Senator Carr said that "there is clear and consistent evidence that the rankings were being deployed inappropriately within some quarters of the sector, in ways that could produce harmful outcomes, and based on a poor understanding of the actual role of the rankings. One common example was the setting of targets for publication in A and A* journals by institutional research managers. In light of these two factors - that ERA could work perfectly well without the rankings, and that their existence was focusing ill-informed, undesirable behaviour in the management of research."

However, we may not be out of the woods yet. Senator Carr said that lists of journals would still be important in assessing research excellence, and each journal would be provided with a publication profile that indicates how often it was chosen as the forum of publication by academics in a given field. He added that "these reforms will strengthen the role of the ERA Research Evaluation Committee members in using their own, discipline-specific expertise to make judgments about the journal publication patterns for each unit of evaluation." ARC chief executive Margaret Sheil said the change empowered "committee members to use their expert judgement to take account of nuances in publishing behaviour". Using the judgement of experts rather than a formulaic approach in assessing the quality of research outcomes? What a radical idea!

INTERNATIONAL BOTANICAL CONGRESS, MELBOURNE, 2011 SYMPOSIA REPORTS

Exploring the Fern Frontier: Identifying the Next Generation of Challenges in Fern Biology

Nathalie Nagalingum
Royal Botanic Garden Sydney

The symposium, "Exploring the Fern Frontier: Identifying the Next Generation of Challenges in Fern Biology", was one of two symposia focussing on ferns at the 2011 International Botanical Congress in Melbourne. I was the co-organiser of this symposium together with Jordan Metzgar from the University of Alaska, Fairbanks. It was held over two sessions and included 11 international fern researchers.

We conceived of this symposium in light of an earlier symposium, and subsequent paper presented in 1995. That year marked the beginning of a new era in fern research, and fern specialist Alan Smith posed 16 longstanding taxonomic questions that could potentially be addressed using molecular phylogenetic tools. Today, all of these 16 questions have been answered.

The fern frontier symposium presented the opportunity to ask how the advent and decreasing cost of genomic tools are offering the ability to

explore new research frontiers, and thus, address a new set of challenges. During the symposium, the speakers presented the breakthroughs that have already been achieved with these new tools. We saw how new methods and the ability to analyse vast amounts of data are impacting on our understanding of fern phylogeny, genomic evolution, fossil history, conservation biology, physiology and ecology. In particular, one of the talks demonstrated how 454 sequencing is allowing us to address the history of polyploidy in ferns, and the relationship of genome size to geography and to climate. Another speaker highlighted the unique mode of fern reproduction, as compared to seed plants, and demonstrated that this has resulted in unique dispersal patterns and patterns of fern species richness. Speakers also addressed how physiological features have driven fern diversification, and how the fossil record is providing us with insights into the extinction of ferns and the evolution of fern leaves. Australian presenters taking part in the symposium included Ashley Field who discussed how morphological and molecular phylogenies are recasting relationships among Australian species of the lycophyte *Huperzia*, and Daniel Olsen who presented phylogenies based on three chloroplast regions for all species of Australian *Asplenium*.

The fern frontier symposium was highly successful, and discussions continued well after the symposium ended and into dinner at a nearby restaurant. The diverse variety of presentations showed us how multidisciplinary approaches are helping us to gain a better understanding of ferns, and that there are diverse and exciting challenges that await us in this emerging genomics era.

A perspective on species radiation – the New Zealand story

Ilse Breitwieser
Allan Herbarium, Landcare Research and Heidi Meudt, Museum of New Zealand Te Papa Tongarewa

The ASBS co-sponsored the New Zealand Plant Radiation Network (NZPRN) symposium at the International Botanic Congress (IBC) entitled, "A perspective on species radiation – the New Zealand story", which was organized by Ilse Breitwieser (Allan Herbarium, Landcare Research), Heidi Meudt (Museum of New Zealand Te Papa Tongarewa), and Peter Heenan (Allan Herbarium, Landcare Research). The aim of this symposium was to highlight the contemporary research that is contributing to the dynamic, almost tumultuous, view of New Zealand's biodiversity that much of the New Zealand flora is the result of late-Tertiary (Pliocene-Pleistocene) species radiations.

The NZPRN symposium was opened by a talk by Ilse (co-authored by Jo Ward, Canterbury University) who presented an overview of recent progress in our understanding of the phenomenon of species radiation in New Zealand. This talk was followed by presentations on recent research on New Zealand species radiations with respect to polyploidy (Brian Murray, Auckland University), species delimitation (Heidi Meudt), hybridisation (Rob Smissen, Allan Herbarium, Landcare Research), and adaptive radiations (Carlos Lehnebach, Te Papa). The final presentation on ecological drivers of radiation by Bill Lee (Landcare Research) and Daphne Lee (University of Otago), presented by Peter Heenan, brought the session to a close by highlighting how studying diversification mechanisms in New Zealand radiations can contribute to understanding the key processes determining large-scale patterns of biodiversity.

The NZPRN symposium was well-attended at the IBC, but if you missed it, several of the symposium talks—as well as other talks and posters relevant to the New Zealand flora—are available on the NZPRN wiki (http://nzprn.otago.ac.nz/wiki/bin/view/NZPRN/Eventsibcmelbourne). NZPRN is an informal network open to any researchers interested in plant species radiations relevant to New Zealand, whose object is to promote collaboration and discussion of ideas, methods and projects regarding plant evolutionary biology. Our wiki is our main web presence, and it is maintained collaboratively and collectively by NZPRN members. To find out how you can contribute, see http://nzprn.otago.ac.nz/wiki/bin/view/NZPRN/Adminguidelines.

Recent advances and new developments in biogeographical reconstruction methods

Peter Weston
National Herbarium of New South Wales

Ever since multivariate methods for exploratory data analysis ("phenetics") became widely available as part of computerized software packages back in the late 1960s, historical biogeographers have dreamt of having a computer program that would spit out a single, plausible, well supported biogeographic model from their data when they pressed the "run" button. The advent of cladistic biogeographic methods in the late 1970s and early 1980s represented a significant step towards this goal but the resulting parsimony-based computerised algorithms were still constrained by obvious limitations such as a rigidly hierarchical framework, an inability to handle long distance dispersal elegantly, and reliance on extraneous geological information to date nodes in area-cladograms.

Dispersal-vicariance analysis, which came later, simply replaced one of these limitations (no long distance dispersal) with another (no extinction). Recently, the introduction of parametric methods such as maximum likelihood estimation and Bayesian analysis into biogeography through computer programs like Lagrange, has enabled the construction of more sophisticated, event-based models that incorporate variables such as branch lengths of phylogenetic trees, rates of dispersal and extinction, and more besides, in estimating ancestral geographic distributions.

This symposium, organised by Felix Forest, was dominated by talks on applications of such methods to real phytogeographic problems. These included the African "Rand flora" pattern (Isobel Sanmartin), the distributional history of the Sapindaceae (Sven Buerki), the ancestral ranges of 30 disjunct arcto-tertiary remnant genera (A.J. Harris), the dispersal history of the grass subfamily Danthonioideae (Aelys Humphreys) and the geographic history and diversification through time of *Fosterella* (Bromeliaceae) and *Lupinus* (Fabaceae) (Daniele Silvestro). The scenarios that were presented as optimal models were all both interesting and plausible.

The parametric methods on display certainly seemed to be able to integrate a mind-boggling array of parameters. This ability, however, might actually turn out to be something of an Achilles' heel. Humphreys, for instance, presented simulations in which the most unsophisticated of all biogeographic methods, Fitch parsimony analysis, outperformed a likelihood-based Bayesian method in reconstructing ancestral distributions, given realistically small data sets. Moreover, the methods presently available for reconstructing ancestral distributions all assume that events such as extinctions and dispersals are independent of one another, which is clearly unrealistic in cases where parallel events were caused by generic physical changes such as climatic catastrophes. My overall impression was that we had entered a methodological quagmire but such has often been the prelude to dramatic improvements in science.

ABRS Report

International Botanical Congress

Several staff from ABRS attended the IBC in Melbourne, and the Nomenclature Section which preceded it. Changes to the International Code of Botanical Nomenclature, voted on at the Nomenclature Session, include a name change for the Code itself, the dropping of the requirement for a Latin diagnosis or description as part of valid publication of a new taxon (English will be an acceptable alternative), and allowing publication solely by electronic means. These changes will take effect on 1 January, 2012. The Nomenclature Session also upheld the decision of the Vienna Congress in 2006 to conserve the type of *Acacia* as *A. penninervis* Seiber ex DC.

During the main Congress sessions ABRS staff ran a booth promoting our products and services, and it was good to meet so many botanists from around Australia and overseas.

Staffing

Jo Harding has returned from maternity leave and is again leading the Bush Blitz team. Mim Jambrecina has also joined the BB team, replacing Leah Schwartz.

Erica Alacs, who has been working on the Australian Faunal Directory, has been promoted to a job elsewhere in the department, and we are recruiting her replacement. Sam Cocks has been appointed as our Grants and Business Officer.

ABRS National Taxonomy Research Grant Program

The grants round for 2012–13 is open to applications until 28 October 2011. Further information can be found at: http://www.environment.gov.au/biodiversity/abrs/funding-and-research/grants/index.html

Bush Blitz

Bush Blitz has been working most recently in Western Australia; in July at Cane River in the Pilbara, and in September at Credo Station in the Goldfields. At Credo Station the scientists were joined by employee volunteers from BHP Billiton. Volunteers will also participate in the upcoming survey at Ned's Corner in Victoria.

More information about Bush Blitz surveys can be found at: http://www.bushblitz.org.au/

Publications

Flora of Australia volume 39, Alismatales to Arales was published on 25 July 2011, on the first day of the International Botanical Congress in Melbourne. It is available from CSIRO publishing. I am now working on Volume 26, which contains about 600 species in the families Meliaceae, Rutaceae and Zygophyllaceae.

Annette Wilson
Editor, Flora of Australia
September 2011

ASBS Notices

Book Reviews

I have offered to coordinate book reviews for the ASBS Newsletter. Most members will have recently received two emails offering a number of books for review. If you haven't it probably means that the Society does not have your email address or you may have changed your address and forgotten to tell the Secretary. Check your inbox for Monday, 8 August and Friday, 19 August.

I would like to make sure all members get the opportunity to review books which might be of interest to them. As books become available I will circulate the details by email. If you see a book you are interested in get in touch with me and I will arrange for the book to be sent to you. All I ask is that you commit to completing the review of about 800-1,000 words within 6 to 8 weeks of receiving the book from the publisher. I think we owe it to publishers to turn things around promptly. In return you get to keep the book.

Several books have already attracted considerable interest however I will try hard to make sure everyone who is interested eventually gets the opportunity to receive a book. I am still contacting publishing houses. I have already positive responses from:

CSIRO Publishing

Cambridge University Press

Footprint Books

Kew Publishing

Missouri Botanical Gardens Press

Oxford University Press

Wiley-Blackwell Publishing

If you know of a publisher which publishes books in a field of interest to you and other members let me know and I will approach them. I can be contacted by telephone on 07 4048 4745 or by email at john.clarkson@derm.qld.gov.au.

John Clarkson

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Friday 29 July 2011

Australian Conservation Taxonomy Award launched by The Nature Conservancy

The Nature Conservancy Australia with The Thomas Foundation today launched a major new award designed to foster research by young scientists into important taxonomic works that has significant implications for conservation in Australia.

The Australian Conservation Taxonomy Award is a $10,000 award that includes funding for a research project and costs associated with attending the Australasian Systematic Botany Society conference.

Professor Adrienne Clarke AC, a botanist and member of The Nature Conservancy's Australian advisory board said: "Science is an essential part of the way we operate to assist in identifying creative solutions to our most pressing conservation issues."

"Taxonomy is fundamental to understanding biodiversity and so is incredibly important for conservation," she added.

"This importance is increasing – as we measure the response and adaptation of biodiversity to climate change it is essential to have a good understanding of species and subspecies and their relationships to other taxa."

Professor Clarke said that there was a shortage of trained taxonomists and curators and so support for the profession is critical.

Announcing the award, Max Bourke AM, Executive Director of The Thomas Foundation, said "For many years now The Thomas Foundation has been trying to assure the science and more importantly the future scientists underpinning the study and protection of biodiversity are available. We hope that this will be another step in that process building on the support for young ecologists of previous years."

"The Australian Conservation Taxonomy Award was not just a useful financial contribution to a high quality research project but an opportunity to build stronger links with The Nature Conservancy and its partner organisations that have a lasting impact on conservation."

The award was launched at the International Botanical Congress in Melbourne. The Australasian Systematic Botany Society will administer the award. Funding has been made available through The Thomas Foundation. Applications will open early 2012.

The Nature Conservancy (TNC) is a leading conservation organisation working around the world in more than 30 countries to protect ecologically important lands and waters for nature and people. The Conservancy has been responsible for the conservation of more than 3.6 million hectares in Australia with a priority focus on northern Australia and the South West, and has invested over $33 million to partner organisations for conservation programs addressing critical issues such as land management and fire control. The Conservancy has helped secure 29 high priority additions to the National Reserve System, including some of the largest private protected areas in Australia. Visit The Nature Conservancy at www.nature.org/australia.

The Thomas Foundation was established in 1998 by David Thomas and his wife, Barbara. The conservation of biodiversity has always been part of the Foundation's focus. The Foundation adopts a strategic planning approach to its grant-making and considers its grants to be investments in forming social capital. The Foundation's mission is: *"Arresting the decline of biodiversity in Australia and encouraging others to do likewise."*

Media inquiries: Penny Underwood on (03) 9818 8540.

Hansjörg Eichler Research Fund March 2011 Round

This round we had two applications, which both showed a considerable level of skill and enthusiasm. One successful applicant was awarded $2,000 for the following proposal:

Rose Barrett (The University of Melbourne, Victoria)

Molecular phylogeny and biogeography of *Zieria* (Rutaceae), using chloroplast and nuclear DNA markers

Annual General Meeting 2011

The Annual General Meeting of the Australian Systematic Botany Society will be held in Melbourne.

Venue: Mueller Hall, National Herbarium of Victoria, Royal Botanic Gardens Melbourne, Australia

Time: Friday 25th November 2011, 1 pm*

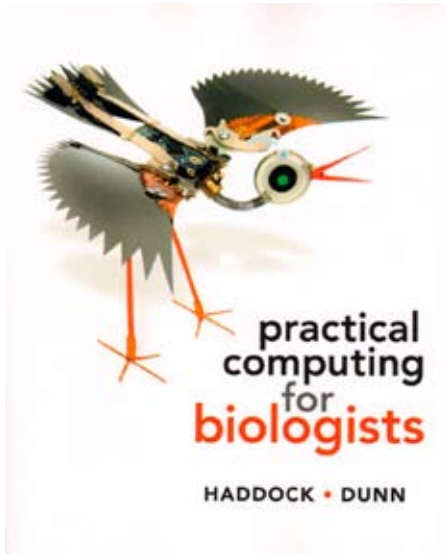
*You may have heard the AGM was to be held on the 27th July 2011 but as not all members were given 4 months notice of the meeting we had to change the date to meet our constitutional obligations. We apologise for any inconvenience this may have caused.

Book Reviews

Practical Computing for Biologists. By Steven H.D. Haddock and Casey W. Dunn. Sinauer Associates, Sunderland (MA). 2011. xix + 538 pp. ISBN 978-0-87893-391-4. US$59.95, AU$90 (paperback)

During the latter part of his career my father was a computer programmer (he was a Methodist minister before that). This actually didn't help me learn anything about computers, at first, because in those days neither he nor I had a computer at home. After all, Apple did not build their first fully-assembled computer until 1977 (the year after I started university), and IBM did not release their first PC microcomputer until 1981. Hanging around the computer room at the Australian Broadcasting Commission was not really an option, even if my father's colleagues did make me feel welcome.

So, I actually received my first piece of computer tuition from a fellow postgraduate student (David Killingly), who had seen the bioinformatics revolution coming in the early 1980s and had therefore completed a computing certificate whilst also doing his PhD. Part of this tuition involved getting the Wagner78 program to run on the University's mainframe computer. Steve Farris had given a copy of this program to one of the other PhD students, reportedly with the comment that she probably wouldn't be able to get it to run. So, it seems to me that David's success was likely a first for Australia, and quite possibly for the world.



This taught me something about Fortran programming, which allowed me to successfully get other desirable programs (e.g. Decorana, Twinspan) to run on microcomputers some years later (most of the problems were confined to the input/output code, which was easy to fix). From there, I branched out into doing the same thing for Basic programs, learning by trying to decipher pre-existing programs. My first university lecturing job (in 1986) required me to teach (among other things, such as taxonomy and ecology) Pascal programming, for which I decided to consult some books rather than using guesswork, as I had before. More recently, I successfully learnt some

Perl programming using a combination of these two methods.

Note that I am not discussing any ability to create "proper" computer programs, but merely what I call "disposable programming". By this I mean the modification of existing programs if they don't do exactly what I want, or the writing of simple little programs to do one-off tasks that are either too complex or repetitive to do manually. I have rarely written a program that anyone else could use! Conversely, no-one is ever going to release a program to do the sorts of short-term tasks that I require. That is why I learned to write my own, so that I could throw them away without regret after they have finished being useful.

However, computer programming is just one part of using a computer in biology. The other important part is dealing with different operating systems, and especially learning to type commands whenever the WIMP interface (windows, icons, mouses [sic], pull-down menus) is too cumbersome. The first microcomputer I ever used was a Cromemco C-10, which most of you will never have heard of. It ran its own CDOS operating system, and was one of the most unstable things you have ever seen — to this day, I still press the Save button every few seconds, which is a habit I developed from using that [expletive deleted] machine. We only used it for word processing (a program called WriteMaster), which is all it was good for. There was almost no other software for it; indeed, one of the postdocs (John Smith) had to write a printer driver in order to connect it to the Diablo printer that the Department had bought. (I still remember having to answer "No" to the question: "Is your name David Morrison?", because otherwise the program would quit. This went on for years.)

I also learnt to use Unix while working as a research assistant for the late Mary Tindale. The Royal Botanic Gardens in Sydney was in the process of buying their first minicomputer, and I got involved in this process in spite of the fact that I was supposed to be studying acacias for the *Flora of Australia*. This helps explain why I was one of the few of Mary's assistants who never published any new species — I was given species that required little taxonomic work, so that I could spend my time computerizing (mainly with Peter Weston and the late Ken Hill). This probably wasn't what ABRS thought they were spending their money on, but Mary seemed happy to turn a blind eye.

I thus learned a lot about computers, but my knowledge of acacias remains somewhat sketchy, even to this day. I once tried to rectify this anomaly by using the Delta Intkey computer program to help me prepare the *Acacia* treatment for the *Flora of New South Wales* (with considerable help from Stuart Davies, and also David Mackay), thus combining computing with acacias, with some success.

The final part of my computer education came with the so-called office that I was given for my first lecturing job, which was actually part of a small disused lab (instead of four walls and a door, I had three walls and a shower curtain). Down the other end of the lab was a brand-new Macintosh Plus computer, which my Department had been loaned as a "seed" computer (this was 1986, remember). Actually, the salesman subsequently left the company he worked for, so that we never returned the computer (which presumably makes it stolen by now), and I got my sweaty hands on it. I knew about these computers because Roger Carolin (ever the innovator) had recently bought one. This computer allowed me to run MacClade (the first program I ever bought), which, in the days when we all used solely phenotypic data, sure beat the hell out plotting the characters onto the trees by hand. I didn't actually buy my own home computer until the mid 1990s, but it was a Macintosh, and I have owned them both at work and at home ever since.

So, why have I just given you my life story? Apart from its intrinsic interest to myself, it is actually relevant to the book that I am supposed to be reviewing. You see, the book is intended to prevent other biologists from having to go through the same long-winded process that I went through. The book fast-tracks you through the whole process of learning to seriously use a computer in biology (rather than merely pottering with packaged programs), and is therefore precisely the book that I needed 30 years ago. (The authors note: "Much of what we ourselves use in practice was garnered through self-directed experience, and we have tried to collect this knowledge in one place to make it easier for other scientists" p. 4.)

Where were the authors when I needed them?

The idea is that if you know a bit more than how to double-click on icons then this allows you to treat a computer as a serious research tool in modern biology. I take no great credit for realizing this 30 years ago, and basing my career on the idea, but it is even more true today than it was back then, since the bioinformatics revolution was then merely a gleam in the eye of people like Mike Dallwitz (the author of Delta) and Richard Pankhurst. So, I find it somewhat surprising that there are still so few books on this subject.

The point here is that if you often won't be able to find someone else to do the computing for you — if you can't do it yourself then it won't get done at all. For example, I have recently found the need to extract small amounts of information from text files that are tens or hundreds of megabytes in size, which is trivial if you can write a few lines of computer code but pretty much impossible otherwise — this is why I decided to learn some Perl programming. The only alternative was to hire someone else to do it, and the task was a bit too trivial to interest a professional (who would be far too expensive, anyway). Besides, that is a bit like getting someone else to eat your lunch for you every time you feel hungry!

Another way of looking at this issue is simply productivity. If you spend several weeks learning to use a computer productively, this can save you months if not years of time later on, or even open up possibilities that were previously excluded from you. This is not true for any other electronic tool used by biologists, which typically need to be learned properly to be of any use at all. There is also a computer on almost every scientist's desk, while most of the other tools are housed in laboratories — scientists usually spend more time at their computer than in their lab or in the field. Given this, why do so many people waste their time copying files around, reformatting data files for different programs, repeating tasks manually, and reinventing various wheels (see http://software-carpentry.org/blog)? Computers are no longer glorified word-processors, and biologists are no longer confined to using a few simple "canned" computer programs with their "one size fits all" functions.

The book by Haddock & Dunn does not try to teach you much computing, but instead it provides a "problem-centric" self-study guide to give you a taste of what computing is and what it can do for you. You're not going to become a computer scientist, but if you follow the book and try the practical exercises then you will become a seriously competent user of scientific computing. In that sense it is precisely the right sort of book for a biologist, not surprisingly since the authors consider themselves to be "biologists who also happen to have backgrounds in computing" (p. 2). The book eminently succeeds at the authors' stated goals: "We expect that many biologists will use this book to improve the efficiency of their research, help scale up existing projects, or develop the skills needed for new types of studies" (p. 4).

The authors have chosen the Apple Macintosh as the computer of choice for their book, at least partly because you can run both Unix and Macintosh programs on the same machine, and this is a seriously helpful situation when you don't know what type of program you will need for your next piece of research. Indeed, it is very likely to be a program that will run under Unix rather than under Windows, for example. This does not mean that Windows machines are excluded from the book, but much of the necessary information is relegated to an Appendix.

The programming language of choice for the book is Python, a language that I have had nothing to do with so far, but which as a result of the book I am now well qualified to deal with, should I ever require it for my disposable programming. Python's recognized advantages for biological computing include: it is easy to learn and easy to read; it is interpreted and thus multiplatform (Python programs run on most operating systems); it offers free access to source code; and there are internal and external libraries of pre-existing code already available (notably the biology-centric Biopython).

The book also provides examples for use in other situations, notably when using mathematical toolkits such as Matlab or R. I have some familiarity with the latter but not the former. Indeed, R is fast becoming the tool (and language) of choice for biological mathematics, which is going to be a

bit of a cultural shock for most biologists, unless they are used to working out their own computer commands in an apparently cryptic language.

Languages like Python and R take longer to learn than do most canned packages, but their modular nature allows the user to mix-and-match a wide range of methods that have been developed for data analysis (or to develop their own methods). The main question is whether the advantages of doing, say statistics or phylogenetics, in an environment like R or Python outweigh the extra learning cost. An increasing number of people seem to think that they do (or, at least, that their research assistant should learn).

In addition to getting the reader to understand operating systems and computer programming, the authors have tackled the topics of: searching and modifying text files using regular expressions; writing shell scripts; combining tools using pipes; relational databases; working with graphics programs; and interfacing with electronic equipment. You will even learn how best to organize data in spreadsheets to simplify subsequent processing and analysis, as well as learning more than you expected about preparing figures on computers. In all cases the focus is on flexible tools that can be adapted for many purposes, rather than on pre-packaged programs (no matter how popular they may be).

The book is full of practical advice, as well as sound teaching. The sections vary in their usefulness, depending on what you might be trying to use a computer for; and there are missing sections that could have been added, such as web page development, and techniques for using the web to find out why your computer program has recently stopped working. Oddly, the sections on "Working on Remote Computers" and "Installing Software" are placed near the end of the book, rather than near the beginning, which is where I would have placed them based on my own learning experience. Much as I like the book, I would also have preferred some more emphasis on the evils of "black-box bioinformatics", in which data analyses are performed on large amounts of data without any regard for the quality (or even logic) of the underlying biology. There are many people who genuinely believe that sheer quantity of data will swamp any possible inadequacies in quality, but processing data in bulk is a classic way of making uncheckable mistakes.

There are examples throughout the book, illustrating in a practical way the points being made. However, the suggestion (p. 25) that one might take the zoological name "*Physalia physalis* (Linnaeus)" and want to delete the brackets might seem inappropriate to a taxonomist! I would have been more impressed, also, if the word "Göteberg" (p. 193) had been spelled with an "o" rather than the second "e" (although a web search has just revealed to me that there are a number of U.S. websites that use this erroneous spelling of the city you know as Gothenburg).

Importantly, not all of the examples used in the book are about molecular biology, which is a major plus. There is a depressing tendency in the modern world to see all of biology as molecular biology, and therefore to assume that everyone is a molecular biologist who wants only to process DNA or amino acid sequences. This assumption is far from the truth, and it is commendable of the authors to recognize this fact explicitly. It will be interesting to see whether the Biopython project, which gathers together Python-written programs specifically for "biology", ever breaks itself out of its biology = molecular viewpoint. I have seen it suggested that R is actually more useful than Python for ecologists, which is likely to be true for most statistical analyses. However, it might be more efficient to access the R statistical features from within a Python program (e.g. using the package PypeR), because R is not really a good language for novices (i.e. it is idiosyncratic and less consistent than other languages, so that there is a steep learning curve).

There is an associated web page for the book (http://practicalcomputing.org/), which has updated instructions (e.g. for recent versions of software), download files (including the authors' own data, as well as programs to be installed, and the computer code for all of the practical exercises), and errata for the book's text.

All in all, this is an extremely useful book, which covers a lot of material not covered elsewhere. It is not a book for casual readers, nor is it a reference manual, but instead it is intended for those who really want to make some progress with their

mastery of computers as tools for scientific use. The price seems to be pretty outrageous, but you will get your money back pretty quickly with your increased productivity. (This may seem a bit like spending your own money to provide your employer with some benefit!)

Biologists become biologists in order to do biology, this much is abundantly clear. If they wanted to be computer scientists then they would have studied computing instead. Nevertheless, modern biologists spend much of their time sitting in front of a computer screen, so it is perhaps best if they learn to sit there as productively as possible. This book will help them (although it won't help deal with the endless stream of bureaucratic emails).

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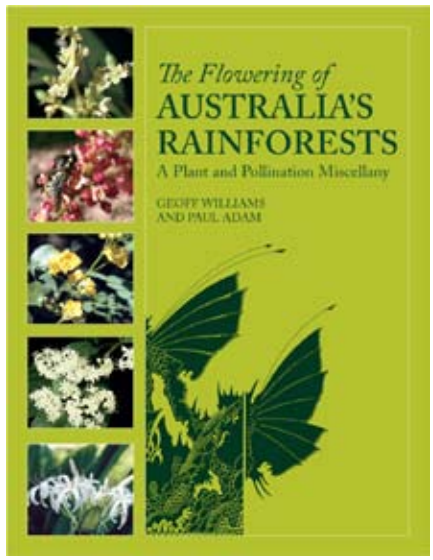
The Flowering of Australia's Rainforests: A Plant and Pollination Miscellany. By Geoff Williams and Paul Adam. CSIRO Publishing, Melbourne. 2010. xiii + 200 pp. ISBN 9780643097612. AU$99.95 (hardback)

"The essential purpose" of this book, the authors state in their preface, is "to project some of the specialist knowledge that is available on the pollination ecology of Australian rainforest ecosystems into a more popular and accessible arena." (p. xi). However, on reading this book it soon became apparent that the "popular arena" the authors had in mind was not the airport bookshop or your local Dymocks store. Take, for example, the introduction to plant breeding systems:



"Essentially there are three main categories of breeding systems in plants (though overall angiosperm pollination strategies comprise a continuum). These are represented by obligate out-crossing species (dioecious and self-incompatible hermaphrodite species), facultative out-crossers (monoecious, gynomonoecious, protandrous and protogynous species) including some self-compatible hermaphrodites, and facultative inbreeders (self compatible and apomictic plants). In the third group are some apomicts (discussed below), in which inbreeding is obligatory." (p. 61)

Given the lack of a glossary, this book will be very heavy going for any but the most determined natural history enthusiast lacking a specialised education in biology and probably also for biologists who have not learnt much about the biology of whole organisms. So this book is definitely targeted at fellow scientists, and especially evolutionary ecologists, rather than "ordinary people". This is a worthy aim, as few reviews of the pollination biology of Australian plants have been published and none of these is monographic in scale, comprehensive in scope or focused on the rainforest biome. That it is well written, as far as scientific publications go, is a bonus.

So does this book tell you everything you wanted to know about the pollination of Australian rainforest plants but were too afraid to ask? The short answer to that question is "no", primarily because, as the authors state in their preface and repeat several times later in the book, "there are relatively few studies and data on the pollination of the Australian rainforest flora" (p. xi). With what information, you might then ask, have the authors filled its 200 pages of text? This book is really a general primer on plant reproductive biology and pollination ecology, illustrated by examples with an Australian rainforest bias. In this the authors have done a generally good job. Chapters on "Being a flower", plant breeding systems, and pollination syndromes discuss the basic patterns, processes and concepts that dominate the floral biological literature, in a more lucid way than in the primary

publications in which these ideas originated, mentioning in passing that some of these concepts have been criticised as potentially misleading by some scientists. Chapters on the spatial and temporal structure of rainforest and the influence of Australian vegetation history integrate the chapters on reproductive biology with the broader ecological context. These chapters are augmented by interesting and informative appendices on the relevance of pollination ecology for conservation, case studies of pollination in Australian rainforests and the role of large insects in pollination biology as well as several appendices of useful data.

The authors have also attempted to explain the evolutionary history of pollination with reference to land plant phylogeny in a couple of chapters called "Categorizing rainforest plants" and "Rise of the angiosperms, and archaic vascular plants in Australia's rainforests". It is here that plant systematists are likely to find themselves getting somewhat exasperated by a muddled and outdated approach that would lead some readers to think that phylogeny reconstruction is more of a dark art than an exercise in scientific inference. According to the authors, the simplistic division of angiosperms into monocots and dicots is problematic, not because the dicots are a paraphyletic nonentity but because "there are a number of angiosperms with the 'wrong' or an enigmatic number of cotyledons" (p. 33). "The ranking of monocots and eudicots remains unclear and their recognition within a consensus system of formalized classification is elusive" (p. 34), which would come as a surprise to the Angiosperm Phylogeny Group (whose first two classifications are included in the bibliography), for whom neither monocots nor eudicots have been elusive enough to evade placement in their classifications.

Further on we are told that "primitive and possibly ancestral angiosperms do survive within Australian rainforests" (p. 36), and that "many such taxa are characteristic of Australian rainforests, which are putative centres of ancestral diversity and evolution" (p. 36). It should go without saying in 2010 that character states, not taxa, can be primitive, that higher taxa possess mosaics of primitive and derived character states and that it is highly unlikely that any extant species is ancestral to the rest of the angiosperms. Similarly, "the Elaeocarpaceae (e.g. *Elaeocarpus, Peripentadenia* and *Sloanea*) appear to have arisen in the Cretaceous and are considered ancestral to the order Malvales". This is a remarkable assertion, not only for suggesting that one higher taxon can be ancestral to another but also because the Elaeocarpaceae have been firmly placed in the order Oxalidales in angiosperm classifications going back at least as far as APG I (Angiosperm Phylogeny Group 1998). "Our understanding of plant phylogenetic lineages is subject to the tyranny of the fossil record" (p. 39), despite the fact that plenty of highly resolved, well supported plant phylogenies have been constructed without reference to any fossils at all. To me, the most surprising claim in these chapters is that "based on phylogenetic studies, angiosperms are now seen as arising from multiple ancestral groups, perhaps as many as six, not from a single gymnosperm-derived stock" (p. 35) and "the current understanding [is] that flowering plants are derived from multiple ancestral non-angiosperm pathways" (p. 39). I have no idea where they found this notion, but to my knowledge, the last serious suggestion that the angiosperms are polyphyletic was made by Ronald Melville (1983), although other authors, such as A.D.J. Meeuse and Leon Croizat had earlier made analogous arguments on the basis of contentious interpretations of seed plant morphology. Every phylogenetic analysis of the angiosperms that I have seen since 1993 has strongly confirmed angiosperm monophyly, so the view presented here is seriously outdated.

My inability to work out where the authors were coming from here underlines this book's greatest weakness: it has no in-text citations to the references in the copious bibliography. Citations were either never inserted in the first place, or (more likely?) were deliberately removed, perhaps in a misguided attempt to make the book appear less intimidating to a general audience. In a few cases, we are given the names of the scientists who did original research on which the text relies and then the reader can usually find the sources listed in the bibliography. However, in most cases there is no way to find the original sources efficiently. Unfortunately, this omission largely destroys the utility of this book as a reference work.

Despite my critical remarks, I do rate this as a useful book and value its presence on my bookshelf. As the "only game in town" it will be an essential reference for anyone working on the pollination biology of Australian species and ecosystems until a better replacement comes along. However, it is a great pity that it could have easily been made much more useful than it is. Hopefully, a second edition will be published that will have been critically read by someone with expertise in plant phylogeny and include in-text citations.

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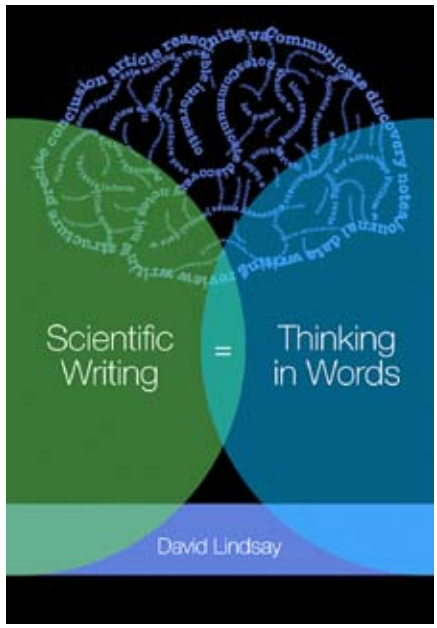
Scientific Writing = Thinking in Words. By David Lindsay. CSIRO Publishing, Melbourne. 2011. 128 pp. ISBN: 9780643100466. RRP AU$29.95 (paperback)

The opening sentence to this book is 'If you haven't written it, you haven't done it'. Such can be the dilemma of many a scientist who has done the hard yards in carrying out the experimental side of their research but come unstuck at the writing stage.

If this resonates, then this book could be for you.



Lindsay's aim is to demystify the art of good scientific writing and he has achieved it brilliantly in this little book. At only 128 pages long, the book is divided into two main sections. The first section, which is approximately two-thirds of the book, is devoted to the scientific article itself. The second section, the last third of the book, is about other forms of scientific writing, i.e. oral presentations, posters, the review, writing for non-scientists and the thesis.

He introduces the first section of the book by emphasising the importance of the written word in science. He gives us the fundamentals for building the scientific article and exposes the seven myths of scientific writing. After this introduction, Lindsay then dissects the scientific article into its constituent parts (Title, Introduction, Materials and Methods, Results, Discussion, Summary and Abstract) explaining the function of each part and how to get the best from each. He has also included a short section at the end on 'the other bits' including authorship, acknowledgements and bibliography.

The layout of the book is almost magazine-like, with quotes taken from the main text and placed in the margin in a larger font as a teaser for those who may have a tendency to skim a book when reading. Some readers of this book may find this very distracting but on the other hand they may find it enticing them to read in more detail.

Lindsay's style of writing is almost conversational and is therefore very readable. I did not find myself having to read and re-read his sentences to extract what it was the author was trying to get at (and which is something he warns the scientific writer to avoid too when constructing their own papers). His observations or statements are frequently quite candid and down to earth. For example, on making your writing understandable, "Readers of scientific literature expect to understand and, you hope, be influenced at their first pass – not to indulge in an exercise in deciphering. When they want to do that, they take up solving cryptic crosswords or

Sudoku puzzles." Lindsay is not a dry writer!

I found this book extremely well written (what else would you expect?) with many practical tips and examples to follow throughout the book. For example he lists seven verbal stumbling blocks which often characterise scientific articles and how to overcome them. Lindsay also uses analogies to great affect when explaining the impact of your writing on the reader. The best was drawing the analogy of a subeditor choosing which stories to run on the front page of a newspaper with the structure and content of your Discussion section in a scientific paper. In other words, what are the most important arguments in your discussion and how to prioritise them?

This is not a huge book and could easily be read in a day or two, but the content is such that you would refer back to it time and time again.

The last third of the book which devoted itself to other forms of scientific communication I also found very useful. Tips on oral presentations made sense as did those on posters. A visual example of a bad poster transformed into an eye-catching, readable, interesting poster brought home Lindsay's over-riding take home message: scientific writing should be precise, clear and brief. And he emphasises this throughout the book as the over-riding aim for any scientific paper or article.

And it has not just been written with the native-English speaker in mind, he has also written it for those whom English is their second language. The book is not only for non-native speakers to improve their written English, but for native speakers to think of their non-native English audience in their own writings.

I enjoyed reading this book very much and found that it was just what I was looking for to improve my own science writing skills and I can recommend it highly.

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Elachistine Moths of Australia (Lepidoptera: Gelechioidea: Elachistidae). Monographs on Australian Lepidoptera Series, Volume 11. By Lauri Kaila (with contributions by Kazuhiro Sugisima). 456 pages, 250 x 175 mm. CSIRO Publishing Melbourne. June 2011. ISBN: 9780643103054 - RRP AU$150.00 (hardback). E-book also available.

I have been eagerly awaiting the publication of this volume since seeing it listed on the CSIRO Publishing list of books in press. So why was a botanist eager to get their hands on a book on miniature moths?

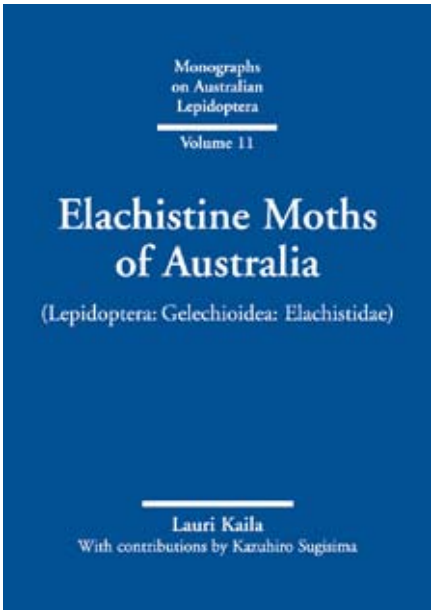
My attention was first drawn to Elachistine moths through a paper by Kaila and Ståhls (2006) where they discuss the potential for species-specific relationships between the lavae of a group of poorly known miniature moths (genus *Elachista*, meaning 'the smallest') and Australian sedges, particularly *Lepidosperma* species. *Lepidosperma* species are also poorly known, and it appears that both genera have until recently been in a similar state of taxonomic chaos.

While it is well-known that many thousands of insects await discovery and description in Australia, moths are often considered to be one of the better-known insect groups. It was of considerable interest that this volume increases the number of Australian Elachistine species recognised from eleven to 148, 137 of these being new species, nine of which are still not formally named due to a lack of material. Many of the species have only been discovered by Prof. Kaila during dedicated visits to Australia during the preparation of this volume.

My Ph.D. studies on the genus *Lepidosperma* have shown the taxonomy of this genus to be similarly confused. It is currently estimated that at least 200 *Lepidosperma* species remain unnamed (Barrett 2011). This situation was a matter of considerable frustration to Prof. Kaila who was attempting to determine the level of species-specificity between the moths and the sedges. "Unfortunately, the taxonomy of *Lepidosperma* is controversial and, especially in Western Australia, appears to be in turmoil.' '... these plants have an important impact on the indigenous Australian *Elachista* species. They could provide a useful tool for the

field identification of *Elachista* larvae...' It is unfortunate that vouchers of the plant hosts were not kept to allow for later identification given the current uncertainties.

With these taxonomic challenges in mind, I will turn my attention to the book itself. This volume continues in the tradition of the *Monographs on Australian Lepidoptera Series* by including introductory section on the phylogeny and classification of the group, morphology, biology, distribution and conservation biology. The introductions to morphology and the methods used in producing this monograph will no doubt prove to be invaluable to future workers on the group as the author makes it clear that there is still much work to be done. The illustrations are superb and comprehensive, providing a (relatively) easy introduction to a group which was largely a mystery before this study.



Three genera and 147 species are treated in the taxonomic section, the majority of these being in the genus *Elachista* which is specific to monocotyledon hosts. About 20% of the world's *Elachista* species are found in Australia representing one of the most diverse geographical radiations in the genus. Most of the world's species feed on Poaceae hosts, so it is unusual that a large proportion of the Australian species are found on Cyperaceae hosts and often have a species-specific relationship with these hosts.

With a high level or species specificity come a high level of extinction risk. 'The author would be surprised if a substantial proportion of the indigenous Elachistinae were not on the verge of local extinction, or had become extinct before they were discovered.' There is also a fair degree of rarity in *Lepidosperma* species and further studies are required to determine whether such rare sedge species may be host to even rarer *Elachista* species that remain undiscoverd.

Many of the species described in this book are very closely related and both the host plant and the pattern of the larval mine in the host plant can be very important in achieving an identification of the moth. Having said this, the host biology of many species remains completely unknown and improved field studies will undoubtedly reveal additional species that have not been discriminated based on the few available specimens. Kaila writes "It is obvious that only a fraction of the species diversity of Australian Elachistinae has been sampled for this volume."

Host species specificity can also extend to the part of the leaf the larvae are found in, with some *Lepidosperma* species playing host to two *Elachista* species in different parts of the same leaf.

I share Prof. Kaila's hope that an improved understanding of the taxonomy of *Lepidosperma* will enable a better understanding of the taxonomy of *Elachista*, and also wonder if the specialisation of *Elachista* species might also inform the taxonomy of some of the more difficult species complexes in *Lepidosperma*.

I have been through all the records of *Elachista* species that are associated with *Lepidosperma* and see a great deal of potential for one to inform the other. Given that there appears to have been a parallel speciation of both genera in Australia, it is also likely that there will be examples of co-speciation between the plant hosts and moths. This remains an exciting avenue for future research that I would like to pursue in collaboration with others who are keen to seek out tiny moths on sedges.

I enjoyed reading this book for the sense of how much we still have to learn about the nature of Australia, and particulalry the ecological interactions that are so critical to the survival of many species.

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Botanical Curiosity

This botanical curiosity was found on the Dampier Peninsula, north of Broome, Western Australia. (Photo: Russell Barrett)

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CNS Tel: (07) 4042 1837 Fax: (07) 4042 1842 www.ath.org.au/		NT tel: (08) 8951 8791 fax: (08) 8951 8790	*Australian University Herbaria* Contact CHAH representative: Murray Henwood, University of Sydney
Council of Heads of Australasian Herbaria (CHAH) Chair: Dr 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/	*Australian Botanical Liaison Officer* (ABLO) 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.Newslett. 53, edited by Helen Hewson. 1987. $5 + $1.75 postage.

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

Australian Systematic Botany Society Newsletter

Back issues of the *Newsletter* are available from Number 27 (May 1981) onwards, excluding Numbers 29, 31, 60–62, 66, 84, 89, 90, 99, 100 and 103. Here is the chance to complete your set.

Evolution of the Flora and Fauna of Arid Australia

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

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

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

Ecology of the Southern Conifers (Now out of print)

Edited by Neal Enright and Robert Hill. ASBS members: $60 plus $12 p. & p. non-members $79.95.

Proceedings of a symposium at the ASBS conference in Hobart in 1993. Twenty-eight scholars from across the hemisphere examine the history and ecology of the southern conifers, and emphasise their importance in understanding the evolution and ecological dynamics of southern vegetation.

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

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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 for December 2011 and March 2012 issues to Robyn Barker at the address given on page 27 under Chapter Convenors/ Adelaide. 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.

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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

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