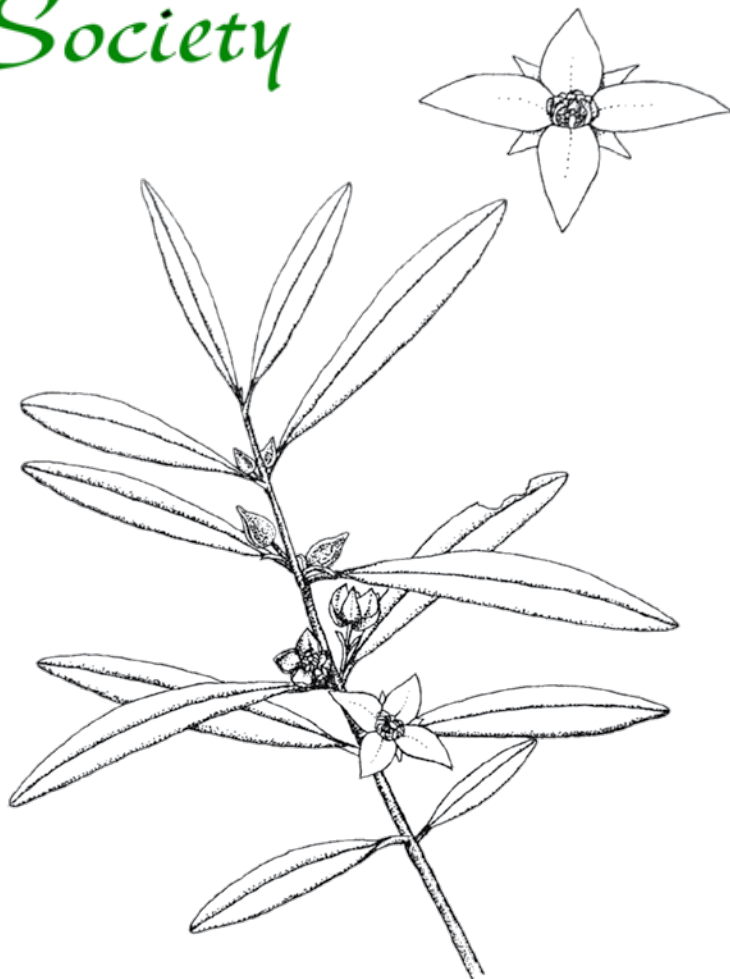


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Cover Image: *Boronia jensziae* (Rutaceae), reproduced with the permission of Peter Neish (the artist) and ABRS.

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From the President

As I write this missive we have received a warning to expect more snow in the high country: so it must be at the start of Summer and the festive season. It has been a busy year for the society and its council and 2009 looks like it will be just as busy. I hope everyone has an enjoyable summer break, if you are having one, and all the best for 2009.

You will notice a new illustration on the front cover of the Newsletter. This image of *Boronia jensziae*, drawn by Peter Neish (formerly of MEL), was commissioned by ABRS and reproduced in *Austrobaileya* (5(2): 283 [1998]). The species is endemic to Hinchinbrook Island in north Queensland and is named after Andy Jensz, my long suffering partner.

Filing

In the June *Newsletter* (No. 135; 2008) I asked members of the society to have a look for files and correspondence relating to ASBS. It is hoped as much correspondence etc can be captured and, if deemed appropriate, formally filed at The Royal Botanic Gardens Melbourne (MEL). Staff at MEL, in particular the librarian Helen Cohn, are assisting ASBS in creating an archive. A few

people responded to the last call though I feel there must be more material out there.

I will ask you to look again every so often to prompt you to do something with these documents. Over the last 35 years there have been numerous Office Bearers and Newsletter Editors, many meetings, both Council and AGM's, as well as conferences, workshops etc. (see ASBS website). All these people and all these events created documents that minute meetings and record discussions and decisions. In addition, the society creates various miscellanea such as bank books, conference brochures etc which should be captured and filed. Files are the archival record of the Society, the corporate memory, and are a valuable asset for the Society as well as for future researchers.

If you do find something, notify me and we can work out what best to do with it. At the least we can get it out from under your feet or out of that shed etc to a place where it can be stored more appropriately for future reference.

Thank you for your support.

Marco Duretto

Introducing the editors

This is where we (the new editors) find out just how much work Robyn, Bill and their helpers have done over the last eight years! They have left some very big shoes to fill... To Robyn and Bill, thank you for all your help during the hand over and ready offers of continued assistance - we hope not to have to call on you too often. A number of notices and reviews in this issue are Robyn's.

The Quiet & Noisy Ones from Perth

Peter should know by now that jobs are always delegated to those who don't turn up to the meetings, so welcome to the editorship! Peter has decided I am the quiet one from the West (somehow I don't think it took him long to reach that conclusion), and I'd complain, but don't want to make that much noise... Gael, I hope you can work with us alternating between noisy and quiet - you may be grateful we are in another city!

I was reminded the other day that my photo appears in the PERTH newsletter from 1992. I was pictured as a new volunteer while at boarding school in Perth, processing specimens from my parents' cattle station in the Kimberley, collected during my holidays. The Kimberley is where my passion for plants first developed, thanks to the encouragement of people like Kevin Kenneally (who I met on a Gould League camp when I was interested in birds, not plants), and this is where my primary interests remain. Since the publication of the *Flora of the Kimberley Region* (Wheeler 1992), I have been working on a bibliographic checklist and revised keys for the region and hope to bring it to a publishable state at some point in the future.

At this point I should perhaps point out that I have a brother Matt, who shares my passion for

the flora of the Kimberley, and is also based at Kings Park. We both had an interesting time at the ASBS conference in Cairns trying to keep up with conversations that carried on with individuals who had only met one of us previously and hadn't quite realised there were two of us (or at least didn't pick the difference). Most seemed to have figured us out by the Adelaide conference. Our apologies for being so confusingly similar in appearance and interests.

Moving to Perth to study Science at the University of Western Australia in the mid-1990's, I have slowly been coming to terms with the volume of plant species in south-western Australia, my taxonomic interests in the area starting with the beautiful Tinsel Lilies (*Calectasia*). Around the time I completed my first paper on that group, it was suggested to me that "if you are looking for something else to work on, *Lepidosperma* is a mess." Eight years later, I can confirm that it truly is a mess, though through work with colleagues at KPBG, NSW and NE, a semblance of order is slowly emerging (rather like chaos has an order).

My studies on *Lepidosperma* have turned into a PhD at UWA, currently in its third year, the first of which I spent looking at *Posidonia*, and there has been an intrusion of *Schoenus* in the past year, but writing of the actual thesis has begun and I do plan to finish it well before the revision of *Lepidosperma* is completed... The sword and rapier sedges as they are commonly known are a fascinating group, and their sheer diversity has a way of taking over your life (and my house, as Karen Wilson and Barbara Briggs discovered on recent visits to WA).

Enrolled as a student at UWA, I am based at Kings Park & Botanic Garden, while also being a Research Associate at PERTH where I spend a good deal of time trying to keep up with the incoming sword sedge collections. Through a combination of miscellaneous studies on Kimberley and south-west plants, and particularly for work on *Lepidosperma*, I have had opportunity to visit the major Australian herbaria, and recently a good number of the European herbaria with important Australian collections. It has been a great pleasure to meet so many of you during these visits and I hope that this will be furthered through correspondence with articles for the newsletter.

As usual, we welcome your articles and anecdotes, and would much prefer to be busy putting the content together rather than having to chase you for more. If we could get one article a year from each member, we would have plenty of material, and be guaranteed a diversity of topics - please mark out some writing time in your diary now!

Russell Barrett

Ah! This is what happens when you make a casual, throw away comment at the tea room of PERTH, right before the Adelaide Conference and then get convinced by your employer that a holiday in the new year might be more relaxing than attending the conference.

Of the two in Perth, I'm the noisy one. Most of you will have encountered me at some time at either MEL or NSW in the last 20 odd years, and I consider myself very fortunate to be able to claim to having a friend working at every state herbarium. If you didn't know I was visiting, the ring of my distinctive laugh soon notifies you.

Although a native to coastal NSW, I ended up doing my undergrad at LaTrobe Uni, and in the Christmas break of 1986, I did volunteer work at MEL. So many of the people there reminded me of my extended family that I knew this would be a place where I could feel comfortable. To be paid to travel throughout Australia, the minute of data gathering, the detective work of nomenclature and the historical aspects associated with the collections just sucked me in to the vortex that is Australian systematics.

During the early 1990's, I carried out a Masters at James Cook Uni in Townsville under Betsy Jackes, where I was truly out of my comfort zone with all those tropical families, and no flowers. The skill I carry with me today as a result of working with Betsy is the power of detailed and accurate observation. Much of my family identifications, especially of sterile material, are due to her tutelage. During this period, I continued to collect specimens for MEL. It was a crash course in learning the complete literature of Australian taxonomy (yes I have scanned through every Australian herbarium house journal as well as others such as *Aust J Bot*, *NSW Linnean Soc*, and *Blumea*).

The late 1990's saw me back in Sydney working on *Dillwynia* for my PhD (still incomplete and gestating); a genus I still work on sporadically. After ten years I had explored most of the possibilities at NSW and moved to the New England to make a nuisance of myself to Jeremy Bruhl and Ian Telford.

From 2000, I have been an Adjunct Lecturer at UNSW. Most of the courses I teach are ecology based, but I have introduced general plant identification to a couple of my classes (primarily those that are aimed at non Biology students). Getting people to enjoy and appreciate the diversity of our flora means we have a louder voice in conservation debates.

The majority of us love working on the Western Australian flora, but not many of us get the opportunity to be paid a decent wage to do so. In March 2008, I joined a consultancy company, based in Perth. My title is Senior Botanist, which means I am the senior plant taxonomist. The work has been a challenge; generating species lists from sterile material is not an easy task, but I have reveled in it and enjoy that aspect of the work. Other duties include tutoring the botany team in plant identifications and to encourage them in strengthening their skills, and the opportunity to describe new species that are outcomes of our survey work. PERTH has been incredibly kind in making me a Research Associate and treating me as a pseudo-staff member.

Working with Russell and Gael is going to be very enjoyable, rewarding and educational. Some of you will be stunned to discover that I am developing skills in organization: my personal life might still be messy, but I actually meet deadlines and requirements at work!!

Peter Jobson

Taxonomy Down Under

As to Russell and Peter being quiet and noisy ... when I first arrived in Adelaide in November 2007, I was amazed to see Sulphur-crested cockatoos roaming freely in the canopies of the Blue and Red (River) Gums of Adelaide, since I had only ever seen them in pet shops in my homeland (South Africa). These are surely the noisiest birds I have ever known. If their loud, brash shrieks are

anything to go by in terms of Russell's and Peter's noisy episodes, I am certainly in for a deafening time, so maybe it is good that they are in another city!

In the early 1990's, I entered the University of Johannesburg with a love for wildlife and plants, after having spent childhood holidays in remote, unspoilt wilderness areas, national parks where the Big Five were commonplace and on jagged mountains of breathtaking beauty. When I was introduced to the wonders of taxonomy, however, there was no turning back. I found it thrilling to understand the process of naming plants and to unravel taxonomic relationships among species. I was also properly introduced to the majesty of the Cape Floral Kingdom at this time and went on to revise a genus of beautiful legumes endemic to the Fynbos called *Rafnia* for my master's studies. After spending some time at the University of the Witwatersrand as a taxonomy researcher, an opportunity arose for us to move down to the magnificent Cape, where my passion for the Fynbos grew from strength to strength.

As it turned out, we lived in Paarl and I literally had the great granite dome of Paarl Mountain in my back yard (you may recall Stephen Hopper's reference to granite landscapes). I spent many happy months exploring the nature reserve on the mountain with its 800-plus species (in an area of 1910 ha, to give you an idea of the explosive diversity, with endangered and critically endangered vegetation types), collecting specimens and involving the local (human) community in conservation activities. I had two small children by this stage and spent the next few years in and around Cape Town, working on various publications and surveying valuable remnant vegetation for conservation initiatives.

Before long, the many pressures facing South Africa drove us to seek refuge elsewhere in the world. Australia is naturally the land of choice for many South Africans, with its blue skies, warm climate, not-altogether-different culture and for me, rich plant life. I was fortunate enough to find a job in Adelaide, doing what Peter is currently doing, consulting. You can imagine, however, what an adjustment it was coming from the world's richest floral kingdom (species:area) to the arid state of South Australia. Fortunately, after

scouring the River Murray floodplain for weeks, bush-walking in the Adelaide Hills, visiting Kangaroo Island and enjoying the many natural wonders of SA, I am feeling more at home here.

One of the first things I did when I arrived in Adelaide was visit the State Herbarium, determined to become acquainted with the flora of the area. I was warmly welcomed by Bill Barker and it was great to meet all the keen, dedicated herbarium staff. I had been looking forward to the ASBS Conference all year and it was very exciting to discover the “taxonomy scene” of my new country. I was very impressed by the devotion of the scientists, the distinct atmosphere of unity among the delegates and the easy-going banter among friends (I enjoyed the witty comments that flew about during the AGM).

The highlight of my first year in Australia was my recent visit to the northern mallee shrublands and heath of WA. I was enormously inspired to behold the phenomenal beauty of the species-rich heathlands with their glorious array of hakeas, grevilleas, banksias (including *Dryandra!*)—the Australian cousins of the African Proteaceae I am familiar with—eucalypts and other striking Myrtaceae, epacrids and restiads, not to mention the fantastic and exciting legumes. I felt right at home amid the rich diversity.

I am very pleased to be able to assist with the editing of the ASBS newsletter and look forward to interesting and fruitful interactions with the taxonomists out west, east, north and south in this marvellous land Down Under.

Gael Campbell-Young

Inaugural Pauline Ladiges Prize

The Pauline Ladiges Prize is awarded to the best oral presentation by a student at an ASBS conference.

The award is named in honour of Professor Pauline Yvonne Ladiges FAA in acknowledgement of her dedication to teaching, students and systematics. Since 1992 she has been the Head of the School of Botany, The University of Melbourne. Professor Ladiges was appointed to a “Personal Chair” at the University of Melbourne in recognition of her scientific discoveries and leadership within the university. She has published more than 120 scientific articles in refereed journals of international standing, published eight book chapters, edited four special volumes, coauthored two biology textbooks for secondary education, and coedited and coauthored the first substantial Australian biology textbook used in tertiary institutions. These three books have won prizes for Best Australian Textbook and Awards for Excellence in Australian Publishing. Her research is in the field of plant ecology (predominantly 1974–1982) and phylogenetic systematics and historical biogeography (1983–present). She studies the evolutionary relationships and history of the Australian flora, particularly in relation to the botanical differentiation of geographic areas during the geological history of the continent. Lately Professor Ladiges and her research

group have been elucidating the phylogeny of large Australian plant genera, including the eucalypts and acacias using molecular (DNA) and morphological techniques.

Pauline’s distinguished career has been recognised by a number of awards which include:

- Elected Fellow Australian Academy of Science (2002)
- Awarded Royal Society of Victoria 2005 Research Medal (biological sciences, non-human)
- Awarded Australian Centenary Medal (2003)



Professor Pauline Ladiges

She has taught and trained what can only be described as a very large number of students over the years. Her students can be found working professionally in all states of Australia and in many institutions overseas.

The inaugural prize was presented to **Trevor Wilson** (UNSW) at the 2008 Adelaide Conference for his paper entitled “Does traditional classification of *Prostanthera* dictate how pollination has evolved?” [abstract below]. The prize in 2008 was sponsored by CSIRO Publishing and Trevor received a \$250 book voucher and a personal online subscription to *Australian Systematic Botany*.

Trevor is a PhD student at the University of Sydney and The Royal Botanic Gardens, Sydney. Two of his major interests in biology are birds and plants and it is the integration of the two which has launched his study into the evolution of pollination. The species of the Australian mintbush (*Prostanthera*: Lamiaceae) are pollinated by either insects or birds and Trevor is trying to understand what is responsible for the selection of the bird-pollinated syndrome. The foundation of his research relies on using molecular techniques to infer the past of the Australian mintbush. This is complemented with studying the pollination biology of key species in the genus and then examining them in a phylogenetic context. Trevor is supervised by Murray Henwood (UNSW) and Barry Conn (NSW).

Marco Duretto
Tasmanian Herbarium,
Tasmanian Museum & Art Gallery



Trevor Wilson

Abstract from 2008 ASBS National Conference in Adelaide (28 Sep. – 3 Oct. 2008), *Systematics in a changing environment*

Does traditional classification of *Prostanthera* dictate how pollination has evolved?

Wilson, T.C.¹, Henwood, M.J.¹, & Conn, B.J.²

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Australia has an unusually high incidence of bird-pollination amongst its flora. Of no exception to this trend is the Australian mintbush, *Prostanthera* (Lamiaceae). Traditionally, it is divided into two monophyletic groups: section *Prostanthera*, which is inferred to be insect-pollinated, and section *Klanderia*, which is inferred to be bird-pollinated. A considerable amount of morphological variation in the flowers of either group indicates that relationships may be more complex than the original classification. Recently, other ostensibly bird-pollinated groups in the Lamiaceae (e.g. within *Salvia*) have been found to be polyphyletic. Could bird-pollination have evolved more than once in *Prostanthera*?

To test the monophyly of section *Klanderia* and, by inference, bird-pollination, a phylogenetic tree of sixty *Prostanthera* species (and outgroups) has been constructed using the nucleotide trnT-F sequence of the chloroplast genome and the nucleotide ETS sequence of the nuclear genome. Results show that section *Klanderia* is paraphyletic and section *Prostanthera* is polyphyletic, which suggests that multiple shifts have occurred between insect-pollination and bird-pollination.

The floral morphology traditionally used to infer pollinators was tested to support conclusions based on the phylogeny. Field observations were conducted on species representative of different floral morphologies and/or pollinator type in order to confirm their hypothetical pollinator(s). Of the three species for which empirical data are now available, *P. sieberi* is insect-pollinated, *P. monticola* is bird-pollinated, and *P. lasianthos* is insect and bird-pollinated. This indicates that the morphology traditionally used to make inferences about pollinators may be misleading. The role of floral morphology, including anther appendages, in facilitating pollination will be reviewed in reference with the available phylogeny and observational data.

Eichler Research Fund Report

Morphological and genetic variation in the holly grevillea, *Grevillea aquifolium* Lindl. (Grevilleoideae: Proteaceae)

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Introduction

My PhD research is investigating morphological and genetic variation in the holly grevillea, *Grevillea aquifolium* Lindl. The holly grevilleas, also known as the '*G. aquifolium* group', are those species 'with holly-like leaves and 'toothbrush' inflorescences and their close relatives (McGillivray 1993). The group includes 20 taxa, including subspecies, and is distributed through south-eastern Australia. It is an informal grouping within the *Asplenifolia*-*Hookeriana* Subgroup of the *Pteridifolia* Group in Makinson's (2000) informal classification of *Grevillea*.

Grevillea aquifolium is the second most widespread holly grevillea species and currently the most morphologically variable (Fig. 1). Olde and Marriott (1995) distinguish some 12 'horticultural forms' of *G. aquifolium* on the basis of leaf and floral morphology as well as flower colour. In South Australia, *G. aquifolium* is confined to several small disjunct populations in the lower south-east of the state, from ~25 km north-east of Robe to the coast south-west of Mt Gambier (McGillivray 1993; Olde and Marriott 1995) (Fig. 1). South Australian populations include Carpenters Rocks, Buck Lake Conservation Park and in the West Dairy Ranges. *Grevillea aquifolium* is mainly found in western Victoria, from the Stawell and Grampians area to the Little Desert (Olde and Marriott 1995; Makinson 1996). The species is also found in the Kentbruck Heath area near Portland in far south-west Victoria (McGillivray 1993; Olde and Marriott 1995; Makinson 1996).

Grevillea aquifolium grows in a variety of sandy soil types and in a wide range of habitats, including wet to dry sclerophyll forest, open woodland, low

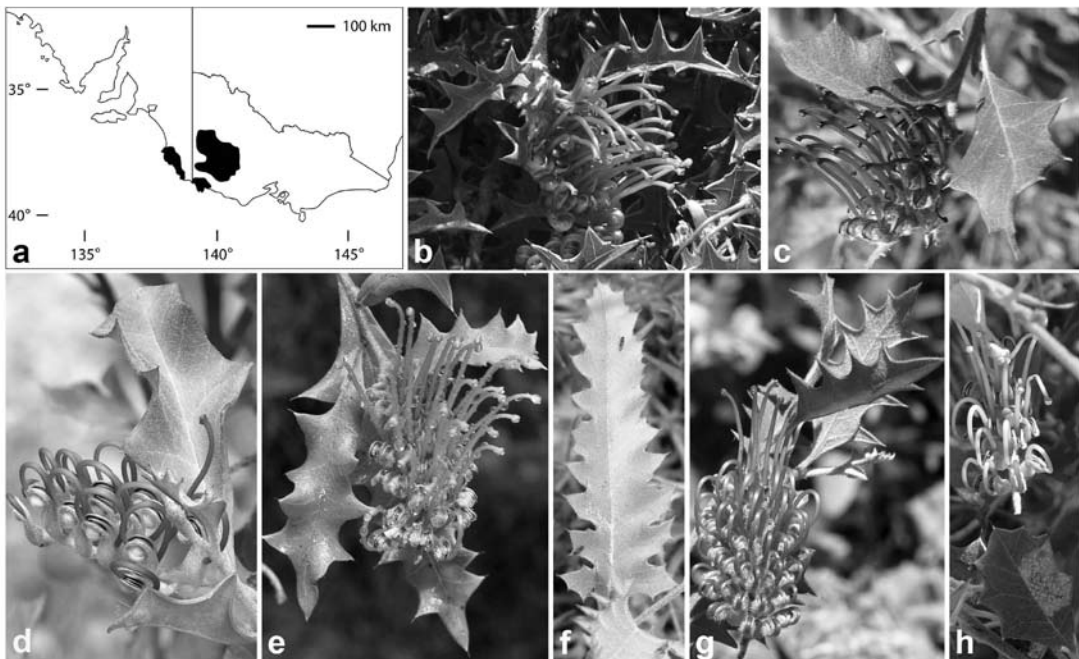


Figure 1. *Grevillea aquifolium*. (a) Distribution map of *G. aquifolium*. (b-h) Some examples of the morphological variation observed in *G. aquifolium*: (b) Mt William, Grampians National Park Vic.; (c) Pomonal, Grampians National Park Vic.; (d) Bray Junction Native Forest Reserve, SA; (e) Goat Track, Grampians National Park Vic.; (f) Fyans Creek, Grampians National Park Vic.; (g) Redman Road, Grampians National Park Vic.; and (h) Natimuk-Hamilton Rd, Vic.

to tall heathland, swampland and mallee woodland (Barker 1986; Olde and Marriott 1995; Makinson 1996, 2000). More rarely, populations are found on clay or loamy soils derived from limestone, including limestone outcrops or pavements (Olde and Marriott 1995; Makinson 1996, 2000).

Grevillea aquifolium is primarily bird pollinated; however, pollination may also be facilitated by bees and/or ants (pers obs. 2006, 2008). Regeneration is from either seed or root-suckers, with some populations exclusively clonal (Makinson 2000). Natural hybrids occur between *G. aquifolium* and *G. microstegia* in several areas on and below Mt Cassell in the Grampians, especially along Redman Road where populations of both species are in close proximity to each other (Olde and Marriott 1995a). In addition, there is a hybrid population of *G. aquifolium* and *G. montis-cole* near Mt William in the central Grampians (N. Marriott pers comm. 2007). The two forms from the Little Desert National Park ('Cooack' and 'Little Desert suckering' forms; Olde and Marriott 1995) are very similar in appearance, but differ in their mode of reproduction: the 'Little Desert (suckering)' form is apparently clonal, while the 'Cooack' form regenerates only via seed. Finally, the 'South Australian' form of *G. aquifolium* differs from the Victorian populations by growing on alkaline soils, with several populations growing in soil pockets on limestone outcrops (Olde and Marriott 1995).

Over most of its geographical range, *G. aquifolium* is widespread and common, with many populations located within State or Federally-protected parks, in particular Grampians National Park, or within State Forests or other reserves. However, several populations, especially at Cooack and Portland, have been reduced by clearing for agriculture and are close to extinction (Olde and Marriott 1995). In addition, if definable groups are found to be present within *G. aquifolium* and require formal recognition, then the conservation status and requirements of several populations may need to be reassessed.

Project Aims

The main components of my PhD project are to:

- document the morphological variation within *G. aquifolium* across its geographic range.

- investigate genetic variation, using microsatellites (SSRs), and determine whether this is correlated with morphological variation, and to what extent this is influenced by local population size or gene flow between related species.
- resolve the taxonomy of *G. aquifolium* regarding forms: i.e. are there definable groups present within this species that require recognition and if so, what is their conservation status?

The financial support provided through the Hansjörg Eichler Scientific Research Fund made the initial generation of multiplexed microsatellite profiles possible.

Field Work

In November 2006 I undertook fieldwork in the Grampians and Little Desert National Parks in western Victoria. Unfortunately, the month before I commenced my PhD (March 2006), a bushfire burnt a large area of the Grampians National Park and so the opportunity to collect was limited, with many areas, particularly the Victoria Valley, closed to all traffic. The devastation caused by the bushfire was severe (Fig. 2), with some mature trees completely burnt through.

However, I was able to collect *G. aquifolium* from 24 sites along the eastern side of the park, including from the Mt William, Mt Difficult and Serra Ranges. I also collected *G. aquifolium* from two sites in the central block of the Little Desert National Park. The leaves of the Little Desert plants, growing on straight white sand, were yellow-green in colour with the leaves curled in on themselves, minimising water loss. The sand was so white that I kept expecting to see the ocean each time we climbed a ridge or turned a corner! Despite the restrictions on collecting in the Grampians, the trip was a success; I collected 132 plants with both vouchers and leaves for DNA analysis from 26 sites.

Genetic Variation: Microsatellites

Microsatellites, also called Short Simple Repeats (SSRs), Simple Sequence Repeats (also SSRs) or Short Tandem Repeats (STRs), consist of short sequences of DNA, usually 2–6 base pairs (bp) long, that are repeated so as to give short arrays of 20–100bp at each locus (e.g., ATATATATAT...)

and are randomly distributed throughout the nuclear and plastid genomes (Armour *et al.* 1999; Wang *et al.* 1994; Goldstein and Schlötterer 1999). Microsatellites are usually highly polymorphic molecular markers, with many alleles at a particular locus. The variation detected in microsatellite analyses results from changes to the number of repeat units due to errors in DNA replication at the locus under study (Avice 2004; Lowe *et al.* 2004; Armour *et al.* 1999). Microsatellites are relatively abundant, highly reproducible co-dominant markers (i.e. heterozygotes can be distinguished in the profile) that are thought to have a uniform coverage across the genome. They are considered to have high mutation rates compared with other DNA markers, making them useful for intra-population level studies of organisms (Lowe *et al.* 2004).

Microsatellites have been used in studies of population-level genetic variation in a broad range of species including other *Grevillea* species (Goldstein and Schlötterer 1999; England *et al.* 2002; Whelan *et al.* 2006; Hoebee 2002). Fortunately, there already exist 12 nuclear microsatellite primers for use in *Grevillea*, developed from *G. macleayana* (England *et al.* 2002) and *G. iaspicula* (Hoebee 2002). Some of these primers are known to amplify microsatellites in other holly grevillea species such as *G. repens* (Holmes *et al.* 2008), *G. infecunda* and *G. renwickiana* (E. James pers comm. 2008). In the initial screen, I determined that four microsatellite loci developed from *G. macleayana* (primers Gm10, Gm13, Gm15, Gm25; England *et al.* 2002) were transferable to *G. aquifolium*. DNA was extracted from all plants collected so far and the amplifications (via PCR) of each microsatellite primer performed separately. The PCRs were performed separately to make sure that each primer had been successfully amplified. The PCR products were then multiplexed and sent for separation by capillary electrophoresis by Applied Genetic Diagnostics (Department of Pathology, University of Melbourne). An initial analysis of the data obtained from 83 plants scored for three microsatellite loci (primers Gm10, Gm13, Gm15) was performed and the preliminary results were presented at the 2008 ASBS Conference in Adelaide.

The results so far show that microsatellite primers developed from *G. macleayana* are transferable to *G. aquifolium*. For the 83 collections analysed, there were 12 shared multi-locus genotypes (more than one plant exhibiting the same genotype) and 47 unique multi-locus genotypes. Of the 12 shared multi-locus genotypes recovered in the preliminary analysis, one showed possible evidence of clonality. This genotype was found in three of five plants collected at a single locality (Crater Track, Little Desert National Park Vic.) and returned statistically significant Pgen and Pse values of <0.0001 and <0.01, respectively. The probability of genotype (Pgen) is an estimate of the probability of identical genotypes arising under sexual reproduction with random mating, while the probability of second encounter (Pse) is an estimate of the probability of a second encounter of a specific multi-locus genotype generated by sexual reproduction under random mating. Significant scores for both of these probability estimates suggest the possibility of clonality at this locality; Olde and Marriott (1995) also described an exclusive clonally-reproducing population from this area.

The microsatellite markers analysed (Gm10, Gm13, Gm15) show variation both within and between collecting sites; there is also some suggestion of genetic differentiation between Grampians and Little Desert populations, but the sample sizes are not yet sufficient.

Current and Future Directions

Recently in December 2008, I completed fieldwork in south-eastern South Australia and western Victoria, with the objective of collecting samples from disjunct populations on *G. aquifolium* in those areas. I was able to collect specimens from Carpenter Rocks (near Mount Gambier) and also from the Bray Junction and Bagdad Native Forest Reserves near Robe in South Australia. These collections represent the western extremities of the geographic distribution of this taxon. From Victoria I was able to collect specimens from the eastern parts of the Little Desert National Park (Cooack Rd area); the Black Range State Park; Deep Lead Flora Reserve and Stawell; the Lower Glenelg National Park near Portland and from the Victoria Range in the Grampians National Park. *Grevillea aquifolium* has now been collected



Figure 2. Photos of the Grampians National Park, taken in February 2006, six months after the Mount Lubra bushfire. On the pathway to The Balconies from Reids Lookout (at left), and the road to the Mount William carpark (at right), looking along the road towards Halls Gap.

from the major known areas of its distribution; DNA isolation and preparation of microsatellite profiles for these collections will commence early in 2009.

I am currently screening the remaining microsatellite loci to determine whether they are applicable to *G. aquifolium*. I have three more loci that are amplifiable and polymorphic in *G. aquifolium* and am in the process of optimising the PCR protocols for the other loci to check whether they are applicable. Approximately one third of the initial profiles need to be repeated to confirm presence of peaks for some loci. I am also testing chloroplast DNA regions for DNA sequencing; this work will build on the work already done by Gareth Holmes (University of Melbourne).

Acknowledgements

I would like to thank the Australian Systematic Botany Society for financial support provided through the Hansjörg Eichler Scientific Research Fund. I would also like to make special mention of Greg Downing, for accompanying me on the fieldtrips in 2006 and 2008, as well as Val and Andrew Downing, who participated in the December 2008 trip to South Australia and western Victoria. I would like to thank the Parks Victoria rangers, Department of Sustainability and Environment (DSE) and ForestrySA officers, for their assistance and access to national parks and forestry land and Neil Marriott, for suggesting potential collection sites. Finally I would like to thank my supervisors Dr Mike Bayly and Prof. Pauline Ladiges for their help, guidance and support.

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Articles

Miss Janet Cosh, an Amateur Botanist

Jean Clarke and Belinda Pellow
Janet Cosh Herbarium, University of Wollongong

Miss Janet Cosh, a resident of the Southern Highlands of New South Wales, was an educated woman with a variety of interests. Her passion for natural history and botany was inspired by her parents and grandparents. In particular, her maternal Grandmother Louisa Atkinson was a botanist, natural historian and writer. Miss Atkinson collected for Rev. Dr W. Woolls and F. Mueller until her untimely death in 1872. Examples of her work are held in the Mitchell Library and National Herbarium of NSW.



Miss Janet Cosh

Miss Cosh always remained a dutiful daughter and when her Father retired in 1934, she moved to 'Netherby' in Moss Vale where she cared for her parents until they died. By then in her fifties, this quiet, reserved woman was able to devote her time to her particular areas of interest: a systematic study of local history and later botany. In both areas, she left permanent and accurate records.

In the late 1960's, after spending many years documenting the history of her local area, Miss Cosh, by then nearly 70 years of age, turned her energies to the study of botany. During the next 17 years, Miss Cosh made significant contributions to plant taxonomy providing a rigorous basis for understanding the ecology and biodiversity of many native species of flora in the Southern Highlands of New South Wales. As an amateur botanist, she was highly respected and was often in consultation with professional organisations such as NSW National Parks & Wildlife Service and taxonomists at the National Herbarium of NSW, the Australian National Herbarium and the CSIRO. Many examples of letters exchanged with these authorities from prominent personnel such as L.A.S. Johnson, J. Armstrong, J.D. Briggs and D.A. Johnstone still exist as wonderful examples of the polite and lengthy communications by mail in the 1970's. A number of the letters from the National Herbarium of NSW are in acknowledgement of donations Miss Cosh made over the years to the Royal Botanic Gardens Research Fund.

Miss Cosh's botanical fieldwork was thorough and methodical and her field notes were precise. She was extremely proficient at map readings having been recruited during World War II to locate and map various routes from the coast across the Southern Highlands to the inland. Specimen locations were always recorded clearly and accurately. Range extensions of several species were documented by Miss Cosh, as well as new locations for rare species such as *Phyllota humifusa*, *Hakea constablei* and *Acacia chalkeri*. Each specimen was identified by Miss Cosh using various keys such as the *Flora of the Sydney Region* (a copy of which she split in half for ease of carrying in the field) and by consulting with the National Herbarium of NSW. She amassed a collection of botanical books and maps that are annotated prolifically and, succinctly.

Miss Cosh had a keen interest in the ecology of plants and with her friend, Rachelle Roxborough, compiled a series of vegetation and fire history maps for Morton National Park. She was an environmentalist and contributed to the establishment of Cecil Hoskins Reserve, Stingray

Nomina Subnuda and Mueller's 'Scary Myrtle'

Russell Barrett and Peter Wilson

Kings Park & Botanic Garden and National
Herbarium of New South Wales

At the last ICBN meeting in Vienna, provision was added to the Code to allow for a binding decision of the Committee for Vascular Plants on whether species published with doubtfully diagnostic descriptions ('nomina subnuda') should be considered validly published (McNeill *et al.* 2006; Art. 32.4). As Dick Brummitt commented in an email to RB, many of the names in question are in fact Australian in origin. The first of these decisions has been made by the committee, and relates to an Australian plant named by no less than Ferdinand Mueller.

The name in question is *Scaryomyrtus hexamera* F.Muell., proposed as a new genus and species of Myrtaceae, in the *Calytrix* alliance. The name was proposed by Mueller in a letter to Joseph Hooker, written from the field in the vicinity of the Grampians, while on one of his earliest field trips as Victorian Government Botanist. Mueller's letter was duly published by Hooker in 1854 (though this was undoubtedly not the intention of Mueller) and thus the name entered the literature. The 'Scary Myrtle' (actually named for the scarious perianth) has since remained largely in obscurity, making only a brief appearance in APNI (Chapman 1991) where it is listed as a validly published name under Myrtaceae with no further clues to its affinities.

PW has long wondered about the correct application of the name; being hexamerous, clearly it was misplaced in the Myrtaceae, not matching anything in the *Calytrix* alliance, the only Myrtaceous group with a scarious perianth. Hexamery clearly suggested a monocot, and *Calectasia intermedia* Sond. (Dasypogonaceae) became the prime suspect. In discussion with RB, it became clear that this was indeed the case. The superficial similarity between *Calytrix* and *Calectasia* has been noted by Barrett & Dixon (2001) and confusion is common among those not familiar with these unusual looking plants.

Once identified, it became apparent that if validly published, it would be the earliest specific name for the species currently known as *Calectasia intermedia*. This raised the question of whether the brief description, "a most handsome new genus of Myrtaceae (*Scaryomyrtus hexamera*) with a steel-blue scarious calyx, hexandrous and apetalous, otherwise allied to *Calycotrix* or rather *Lhotzkya*" should constitute valid publication. While we considered the description to be diagnostic, its brevity left us with some doubt, and so a binding decision was sought from the Committee for Vascular Plants. The Committee was unanimous in accepting the name as validly published (see Barrett & Wilson in Brummitt 2007).

Mueller himself never referred to the name again, probably realising his mistake shortly after sending the letter to Hooker, and later used the name *Calectasia cyanea* R.Br. in his own publications. While named *C. intermedia* by Sonder (1857) based on the same Mueller collection, it has variously been included in *C. cyanea*, or recognised as a distinct variety until George (1986) reinstated it at specific rank, which has since been followed.

Given the lack of usage of Mueller's name and common usage of *C. intermedia* since 1986, a proposal has been submitted to *Taxon* to conserve *Calectasia intermedia* against *Scaryomyrtus hexamera* in order to maintain the current usage of names. The 'Scary Myrtle' is thus laid to rest with the Tinsel Lily family, Dasypogonaceae, recently recognised as the Order Dasypogonales and endemic to southern Australia.

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NEWS

Items by **Robyn Barker**

Gamba grass declared a weed in the Northern Territory

The Northern Territory Government has come in line with Western Australia and Queensland governments in declaring Gamba grass a weed. New plantings and the importation of seeds is prohibited throughout the Territory. However land-holders between Darwin and Katherine will only be required to manage and control the spread of Gamba grass while those living in the rest of the Territory will need to eradicate the grass on their properties.

For further information see the NT government media release of 25th November

<http://newsroom.nt.gov.au/index.cfm?fuseaction=viewRelease&id=4801&d=5>

Weed alert for a new *Asparagus* species

A new weedy *Asparagus* species, *A. falcatus*, has been identified in the eastern States. There are images and pleas for further observations and information in the latest issue of the Bridal Creeper Newsletter (Web ref. 1). This same site (Web ref. 2) has information on distinguishing between the various *Asparagus* species in Australia including recognition of the Western Cape form of *Asparagus asparagoides* which has been found in South Australia and Victoria. The Western Cape form is not affected by the rust which has been released for the control of Bridal Creeper.

Web ref. 1: www.weeds.org.au/WoNS/bridalcreeper/docs/BridalCreeperNewsletter11Nov08.pdf

Web ref. 2: www.weeds.org.au/WoNS/bridalcreeper/resources.htm

Changes to Australia's biosecurity system proposed

Results of an enquiry into Australia's biosecurity system were released by the Minister for Agriculture, Fisheries and Forestry, Tony Burke, on 18th December 2008. The detailed report, *One Biosecurity: A Working Partnership*, made 84 recommendations, including:

- bringing together the major functions of Biosecurity Australia, the Australian Quarantine and Inspection Service and parts of the Department of Agriculture, Fisheries and Forestry into a new national authority;
- establishing a new biosecurity standards commission to assess the biosecurity risk of imports, with greater emphasis on risks to human health and the environment;
- developing new biosecurity legislation to replace the century old Quarantine Act;
- appointing an Inspector-General of Biosecurity with broad powers to audit and investigate the Authority's work;
- establishing a new council of experts to advise government;
- better coordination between states, territories, industry and the Commonwealth to monitor biosecurity after goods and people enter the country, not just at the border.

The enquiry recommended an increase in funding and substantial information technology upgrades.

The Government has accepted all 84 recommendations in-principle, but more consultation was needed on how to implement the findings and fund the reforms. Interim administrative arrangements will take effect from 1 July 2009.

The report can be downloaded at www.daff.gov.au/maff/media/media_releases/2008/december/report_proposes_major_overhaul_of_australias_biosecurity_system

Mexican Feather Grass sold in Queensland nurseries as *Stipa*

Mexican Feather Grass plants mistakenly labelled as *Stipa capillata* and *Stipa capriccio* were sold to a Queensland production nursery who has then on-sold the plants to retail outlets throughout Queensland. This follows the sale of Mexican Feather grass in Victoria some months ago.

www.news.com.au/couriermail/story/0,23739,24641315-3102,00.html

<http://nqr.farmonline.com.au/news/state/agribusiness-and-general/general/mexican-weed-on-sale-since-2007/1363558.aspx>

Live bumblebees not to be allowed entry into mainland Australia

On 27th October, Environment Minister, Peter Garrett rejected a request to allow the live importation of bumblebees (*Bombus terrestris*) into Australia (Web ref. 1).

Representatives of the hydroponics industry wanted to introduce the bees into Australia for improved crop pollination in greenhouses. However Mr Garrett said that the scientific evidence and advice he had received suggested that the environmental and economic risks of a bumblebee population spreading throughout mainland Australia were significant. Bumblebees have escaped from greenhouses in a number of countries, including Japan and Israel, despite strategies to contain them. Their illegal introduction into Tasmania in the 1990's led to their rapid dispersal within Tasmania and this could easily be repeated in southern Australia.

A similar proposal to import live *Bombus terrestris* was put up for public comment in 2006 and was rejected by all states and territories. The bumblebee is listed as a potentially threatening process in Victoria, as a key threatening process in New South Wales and an invasive alien species in Japan. Further information on bumblebees and the possible harm they might cause in the environment can be found at web ref. 2.

Web ref. 1: www.environment.gov.au/minister/garrett/2008/mr20081026.html

Web ref. 2: www.aussiebee.com.au/bumblebeeharm.html

UK House of Lords Report on systematics and taxonomy

The text below forms the greater part of the abstract of the 2008 House of Lords inquiry into systematics and taxonomy in the United Kingdom.

This is our third inquiry into systematics and taxonomy. We reported in 1992, under the chairmanship of Lord Dainton, with a follow-up inquiry in 2001–02 under the chairmanship of Baroness Walmsley. We chose to embark on this inquiry now because of the environmental imperatives increasingly manifest in our daily

lives. We have asked two questions in particular: whether systematic biology in the UK is in a fit state to generate the essential taxonomic information required to understand ecosystem services and whether the UK has the skills available to understand and predict the impact of climate change on biodiversity.

We have concluded that the state of systematics and taxonomy in the UK, both in terms of the professional taxonomic community and volunteers, is unsatisfactory—in some areas, such as mycology, to the point of crisis—and that more needs to be done to ensure the future health of the discipline. We propose, for example, that there should be more effective and regular dialogue between the users and producers of taxonomy on the priorities for developing UK systematic biology, and we emphasise the importance of stimulating recruitment and also of taking steps to fire the imagination of school children by creative incorporation of environmental and biodiversity issues into school curricula.

The study of systematic biology, in common with other areas of science, has been transformed by technological innovation. Of particular importance are the development of molecular taxonomy and the potential of web-based taxonomy. We have no doubt that the benefits to be reaped from technological innovation are enormous. We are aware however that they need to be harnessed with discrimination and we call on the Research Councils and the taxonomic institutions to respond to this challenge.

Although we received clear evidence from the taxonomic community of a widespread concern about the state of the discipline, that concern appears to be largely unheard by the Government and by the Research Councils. We find this worrying. We believe that part of the problem is the fragmentation within Government of responsibility for systematic biology. We therefore recommend that the Department for Innovation, Universities and Skills be designated as the lead department and that that department should exercise the leadership without which we fear that the downward slide of UK taxonomy is set to continue. The full report can be downloaded at www.publications.parliament.uk/pa/ld200708/ldselect/ldsctech/162/16202.htm

2009 ASBS Conference Update

ASBS 2009 Conference, University of New England, Armidale NSW

- When: Dates to be confirmed but will be within the period 29 Nov – 6 Dec 2009.
- Venue: Biological Sciences Lecture Theatre (S003) adjacent to Botany and the N.C.W. Beadle Herbarium, UNE.
- We are considering a range of symposium themes and discussion topics including scientific issues of species limits and biogeography, and, following on from some of the discussion points at Adelaide, the issue of accreditation for practitioners in biodiversity inventory/assessment.
- We welcome, as soon as possible, your suggestions for other symposia, discussion points and workshops.
- There will be a field trip on the last day of the conference, which will be worth joining, even if you know the area well!
- If you wish to make extensive or intensive use of the Herbarium and related facilities before, during or after the conference, please contact us as soon as possible.
- We will provide more information in the next ASBS Newsletter and soon on the ASBS Conferences website.
- Please consider car-pooling, train, plane and bus for transport to Armidale.

Jeremy Bruhl (jbruhl@une.edu.au) and
Ian Telford, for the organising group



Ebor Falls, Guy Fawkes River National Park. Photo J. Bruhl



Above: Weeping Rock track, New England National Park. Photo J. Bruhl

Left: Ian Telford, Brigitte Stievermann, Lachlan Copeland botanising in New England National Park. Photo J. Bruhl

ABLO report

It is difficult to realise that 4 months of my appointment are already behind me. The UK is now well into winter (recent headlines – Coldest Start to Winter in 30 Years! – nice timing on our part). Much of the last month or so has been spent at the Natural History Museum herbarium, gathering material for our Cunningham project. We have now sorted through about 120 families, including all of the larger ones, and have located and recorded about 3000 Allan Cunningham collections. We have also been given access to the BM holdings of letters, specimen and seed lists and surviving journals, and we hope over the next few years to put all this together, along with similar material at Kew and elsewhere, in a coordinated manner. My apologies to those who may have had some difficulties in reaching me at Kew, but from now on (see below) I will be there most days.

Closure of BM herbarium & part closure of K

As mentioned in my last report, BM herbarium is closed from 1 January for up to 12 months, while the collections are moved into the new wing, and rearranged in APG order. Visitors will not be able to access the collections for at least the first part of this period (hence our frantic efforts in the last month or two), and I will not be able to service enquiries there. I will keep in touch with the staff and may be granted limited access towards the end of my tour of duty, but this will depend entirely on how events unfold.

The Kew herbarium will also be reorganised into APG order during the coming year. The library, Asteraceae and legumes will be moving into the new wing starting in about March, and the balance of the collections will then be reshuffled into the vacant space in their new arrangement. As the new wing is intended to be insect-free, all material moving into that space will be sequentially frozen, so parts of the Kew collection will be unavailable on a rolling basis throughout the year. However, the disruption in Kew will be less than at BM.

If you have enquiries regarding K or BM specimens please send them as usual and I will do my best to service them. However, there may be delays.

250th Anniversary of Kew Gardens

Kew Gardens were founded by Princess Augusta, the mother of George III, in 1759. This year (2009) thus marks their 250th anniversary. To celebrate this, Kew has thrown the garden gates open for free access on New Year's Day, and as I sit here writing this, there are unprecedented crowds of people braving the near-freezing weather to take advantage of the opportunity. Traffic is grid-locked around Kew Green, and tens of thousands have come through the gates. There are special attractions in the grounds – merry-go-rounds, horse and carriage rides, food stalls, and the notorious skating rink where a previous ABLO suffered grievous bodily harm (this ABLO will not be risking it).

To mark the occasion the Royal Mint has produced a special 50p coin, featuring Kew's famous Folly, the Chinese Pagoda, and the dates 1759 and 2009. A limited edition presentation pack (50,000 only), containing an uncirculated coin and a history of the gardens, is available from Kew's Victoria Gate shop or on-line from the Royal Mint for £6.95. It will also be available in circulated condition for 50p in loose change later in the year!

Farewell for Belinda Trudgen

On 24th October there was a farewell for Belinda Trudgen, who was returning to Perth after 4+ years working at Kew in the Palm section. She had obviously made a very favourable impression on the locals, although one was heard to remark that with her departure there was one less Australian complaining about the weather! Can't think who they meant.

Visitors

Very few visitors from the Antipodes in the last few months. Annette Wilson (ABRS) and her sister visited for a week in November, and renewed acquaintances with Kew staff. Others included Paul Ormerod (Qld) working on orchids, and Elizabeth Cooper on *Stenocarpus*. I assisted Mrs Erika Pignatti and her husband from Rome, who wished to check the identity of desert plants collected by them in Western Australia over a number of years.

Requests

A steady stream of requests have been received, currently running at about 10 per month. Most have been straight forward and dealt with quickly. A few require travel. My plans for visiting other herbaria are still fluid, so anyone who anticipates needing information from a European herbarium should let me know as soon as possible and I will try to schedule a visit during the next 8 months. No promises!

Assistant ABLO

Tessa has been very busy also, assisting with the Cunningham project at BM almost full-time over the last month. She has databased about 500 Amaranthaceae historical specimens for Kew's HerbCat, and we are negotiating with Kew to get scans for these specimens done as well. She has also listed 126 specimens of Araliaceae from MEL, which have been on loan to Kew for many years. The AQIS requirement for detailed lists of specimens on incoming loans and exchanges is a major impost on Kew staff, and this task is currently passed to the ABLO (or in this case the Assistant ABLO) to avoid extensive delays.

Types and historic material at BM

As mentioned earlier, we have been spending a lot of time at BM, and have now searched through probably 90% of their Australian collections. This

has been a major revelation to me. Like most Australian botanists I was aware that BM is the home of the Banksian herbarium, and therefore the place to go to see Banks & Solander and Robert Brown material. What I hadn't appreciated was the wealth of other material held there. In particular, we noted substantial numbers of French collections (especially Labillardiere and Baudin), and two of these turned out to be isotypes of interest to one of my enquirers, who had assumed that Labillardiere material was only at FI. Also in BM are very large numbers of Sieber specimens, and others by Thomas Mitchell, many of them isotypes, and often not identified as such (again, I found a Sieber isotype of a *Grevillea* in BM, not listed in recent monographs). There are also thousands of Caley and Fraser specimens, and substantial numbers of collections by Burton, White, Paterson, Drummond, Preiss, Pritzel, Cunningham, Baxter, Milligan, Gunn, Bynoe, Menzies, Nelson, Mangles, Armstrong, and many others. I suspect (judging by the paucity of *determinavit* slips) that many Australian botanists are neglecting to their cost these very rich collections. The herbarium has plans in coming years to database and scan some of this material, but in the meantime (once the move is completed), it would be wise to check there for historical Australian specimens.

Tony Orchard
ABLO 2008-09



The new wing at the Natural History Museum which will house, inter alia, the BM herbarium. Photo: Theresa Orchard

Book reviews

Interactive guide to Australian Environmental Weeds

Robyn Barker

State Herbarium of South Australia

Environmental Weeds of Australia
An interactive identification and information resource for over 1000 invasive plants. By Sheldon Navie & Steve Adkins. DVD. Published by The University of Queensland. AU \$59.00
www.cbit.uq.edu.au/software/

envioweeds/

Note that for those of you who live in south-east Queensland, this DVD can be purchased as a package with an updated version (Lucid 3) of the *Suburban and Environmental Weeds of South-east Queensland* for \$AUD99 (Web Ref. 1)

This is another information package and *Lucid* key to follow Navie's earlier *Suburban and Environmental Weeds of South-east Queensland* (2002) and *Declared Plants of Australia* (2004), the latter reviewed in this newsletter (Barker 2005). If you have already used either of these products then you will know how useful the information contained within them can be. My copy of the second CD received extensive use when compiling some of the weed profiles for the Commonwealth's Weeds in Australia website (Web ref. 2).

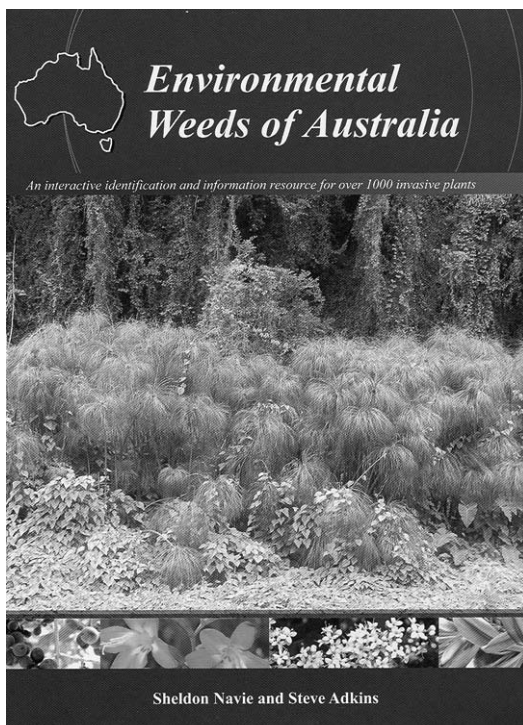
This time it is environmental weeds which receive the treatment - 1018 of them to be precise. In the key component of the package, which uses *Lucid 3*, there are just 56 characters used to separate the species. Six of the characters used are not identification characters at all but

score the species for whether they are included in the Noxious Weeds list, in the Weeds of National Significance, Quarantine Pest Plant (not allowed entry into Australia), Alert List of Environmental Weeds, NAQS list or whether the plant concerned has seeds which are prohibited entry into Australia. The abbreviation NAQS probably deserves some explanation since not all users will appreciate what it stands for (Northern Australia Quarantine Strategy - covering the coast line from c. Broome to Cairns). And while these lists might be useful for those who have to check such things quickly, perhaps they might just as easily have been supplied as separate lists accessible through the front page, particularly as they behave as characters within

the key. Some other characters of the 56 are of doubtful use as well. Distribution is another of those 'fraught with danger' characters - powerful if it is correct, but too easily discarding a species when it should not be. The plant family can be a useful characteristic if you already know what family your plant belongs to, but again the concept of the plant family used needs some further explanation since many families and genera have been re-circumscribed in the last few years.

The definition of environmental weeds

is given as "weed species that invade natural habitats in Australia (i.e. environmental weeds)". I would have thought that this might have precluded weeds which were found in crops and



cultivation, pastures, parks, gardens and footpaths and possibly also those found in roadsides and disturbed sites. However these 4 categories are listed as choices under *Habitat* in the key and 955 of the 1018 species dealt with in the key are found in one of these four habitats suggesting that the definition of an environmental weed is probably much broader than suggested. One has to wonder whether there is in any case, any real use in recognising this class of weed from weeds in general even though, historically, there has certainly been an agricultural bias to weed recognition and the resources they attract.

When picking up a plant one has no way of knowing whether it is a weed or a native – they just don't come already packaged as such, although clearly life would be much simpler if they did. And so, as with the earlier products, this key also suffers from the user not knowing whether they actually have a weed in their hand. To use a key which may or may not contain your plant is not safe and the possibilities of attaining an incorrect determination need to be clearly expressed. That this has not been done in a product listing 1018 species when one of the sponsors of this project, the Weeds CRC, lists some 28,000 exotic species for Australia (Web ref. 3) seems somewhat a dereliction in duty. The lack of suggestions for alternative sources of identification or confirmation of any identification achieved using the key, such as a local herbarium or weeds officer, is a further oversight which needs addressing.

I'm not totally convinced of the need to store the information presented here in the form of a key, although remaining prepared to admit that others may find it useful. For my purposes the value lies in the other aspect of the *Lucid* package which is probably made less of than it should be. The ability to accumulate large amounts of data together with lots of plant photos and links to further information on the web makes this a powerful, and cheap, information storage tool or database and so, to my mind at least, the strength of the product lies not so much in the keys but in the fact sheets produced for each of the species. When information is combined with what are mostly Sheldon Navie's excellent and comprehensive photographs of different aspects of the plant's life history (often including seedlings) this is an extremely useful tool.

With the value of the key in question it would therefore be of service to users if the fact sheets could be made available outside the *Lucid* player environment i.e. there is not a necessity to install and open the key to gain access to the fact sheets. And in this *Lucid 3* product this is now possible. Furthermore, no longer does one have to go through the tedious installation process of earlier *Lucid* products. So, no more waiting around to have the package installed on your network machine by your IT people! As long as you have a web browser (*Internet Explorer*, *Firefox*, *Netscape* or *Safari*) and the *Java Runtime* environment already installed on your machine then this DVD should run automatically when placed in the computer. If you don't have one or other of these products then they can be installed from the files present on the DVD.

This is a vast step forward when compared with the loading of the earlier *Lucid 1 & 2* products.

Note however that the fact sheets are sometimes considered to be pop-ups by the *Internet Explorer* browser at least, and so you may be prompted to allow pop-ups the first time you want to access them. *Internet Explorer* also blocks "active content" on web pages or interactive keys and so you are likely to get a box popping up and asking whether you want to allow this content; you should answer yes to this if you want to be taken straight to hyper-linked web sites.

Within the key there are differences from the earlier *Lucid* products. The key still opens with the familiar 4 boxes, the left hand side boxes dealing with the characteristics or features used to separate the weeds and the right hand side boxes dealing with the taxa or weeds remaining and the taxa or weeds discarded. But there have been a number of changes to the look and feel of the key and to me it is no longer quite as intuitive or quite as easy to navigate as it was in the earlier versions. And the boxes feel much more cluttered. For this reason it is probably a good idea to run through the Tutorial available on the opening index page.

You can choose to have thumbnails displaying or not for taxa and character states. If they are displaying then it is often difficult to get a feel for what else is in the box since they take up so much room that there is usually only a single

character or two entities visible in the boxes concerned. For this reason I prefer to have them turned off and only opened if clarification is needed. Un-choosing states is still possible but unlike the earlier version where one dragged and dropped the unchosen state, now it is just a matter of un-ticking the appropriate box in either of the *Features/Characters Available* or the *Features/Characters Chosen* boxes; doing this will not make the character state disappear from the *Features/Characters Chosen* as previously which is why I much prefer the old drag and drop method of earlier versions. What used to be the *Bingo* feature has now become the *Shortcut* feature. But these are now all characteristics of any *Lucid 3* key and it is not really that which is being reviewed here.

Now, in no particular order, for some comments about this particular key. Given that there are a number of species included which reproduce by “bulbs” (e.g. *Ixia*, *Gladiolus*, *Iris*) this might have been a useful character to add to the set.

There are some strange scorings in the key and some which appear to be incorrect. In searching for bipinnate-leaved *Acacia* species I was bemused to find that *Acanthus* was in the species selected together with the simple-leaved *Acacia* species *A. cyclops*, *A. iteaphylla*, *A. longifolia* and *A. paradoxa*.

The seven species of *Cotoneaster* included in the key cannot be separated using the 56 characters available and there seems little point in trying to distinguish between species when there are a large number belonging to the same genus e.g. *Acacia*, *Pinus* etc., unless they have obvious differences such as flower colour in the case of the *Ipomoea* species covered. The fact sheets do have information on the differences between species but this may also be of limited value. Where there are other fact sheets available outside the tool for distinguishing between species then it would have been good to have hyperlinked directly to them e.g. *Nasella* species. Sometimes there are linkages to fact sheets produced by other bodies, but these are usually just to the home page of the bodies concerned and one has to spend extra time searching further for the information.

Coverage in the fact sheets is not even. Many of the species covered in the tool have up to 12

images which unfortunately makes it all the more glaring when there are no images at all. For example the fact sheet for *Orbea variegata* has so little information and no images so that it is almost not worth including it. Yet it could have been made so much more valuable just by including the link to the South African National Biodiversity Institute web page on the species of *Orbea* (Web ref. 4). Likewise the apparently emerging weed, *Dyschoriste depressa*, for which the fact sheet has very little information, but this time there is a large collection of photographs. Compare the paucity of information for these two species with the surfeit of information on *Agapanthus praecox* or *Asparagus asparagoides*.

Once in the key I could not find a way to exit it and get back to the front page – trying to go to the home page always took me right out of the tool completely. However if you have gone into the tool through the various headings on the front page there is a *Back Home* button which will take you back to the front page. So eventually I was able to work out that I could exit from the key to the front page by this means, but this then closed the key down and if needed again it had to be reloaded. If you have chosen to look more closely at an image then to return to the fact sheet you need to hit the “close or Esc Key” on the top right corner of the image. Hitting the back button (if enabled) will take you out to the Fact sheet listing. All of this is just to illustrate that there is a little bit of work needed on the navigation within the tool. If you are using it all the time then you will eventually find your way around more efficiently but some forethought could make the whole process more user friendly.

While common names are listed for all of the species after their scientific name in the key, before it in the fact sheets, there is no way of accessing the fact sheets through their common names. Though the use of common names needs warning of their localised nature and the possibility of a number of species encompassed by one name (e.g. Blackberry, Golden rain tree), compiling such a list to allow access to fact sheets through both scientific and common names would seem to be a must in the next edition of this key.

And there will surely be new editions as more and more species profiles are prepared and added

to the database. Such new editions would be of even greater service to the community if the compilation of the fact sheets was to involve consultation with botanists. Then there could be a new heading within the fact sheets entitled "Taxonomic problems" since many weeds are just this and this information is presently completely lacking. There might too be a link built to Australia's Virtual Herbarium in order to show that distribution statements within the fact sheets are often wider than those depicted by herbarium specimens. This too would hopefully encourage the Australian weeds community to collect samples of what are very often species which are totally under-represented in herbarium collections.

For anyone working with weeds or identifications this tool will be invaluable, whether on its

own or as a companion to *Declared Plants of Australia*. Indeed the fact sheets from both products assembled in a single DVD would make an attractive product for the weeds fraternity. Well done to the authors for bringing so much information and so many excellent photographs together. Unfortunately there remain a whole lot more subjects out there.

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Web ref. 1: <http://shop.cbit.uq.edu.au/>
Website 2: www.weeds.gov.au/
Web ref. 3: www.weedsrc.org.au/projects/project_1_2_1.html
Web ref.: www.plantzafrika.com/plantnop/orbea.htm

Robyn Barker

Introduced Australian Flora, a book and online database

Russell Barrett

Kings Park & Botanic Garden

***The introduced flora of Australia and its weed status.* By Rod P. Randall, CRC for Australian Weed Management/Dept of Agriculture and Food Western Australia, 2007 [launched 29 August 2008]**

[Previously mentioned in Newsletter 133]

How often does a member of the public bring in a garden plant and ask if it is a weed, or simply what it is? While sometimes covered in the myriad of popular gardening books, more often than not, the species in question is not covered by any of our standard floras, and unless you are an avid gardener of 'foreign' flora, it can be hard to know where to start.

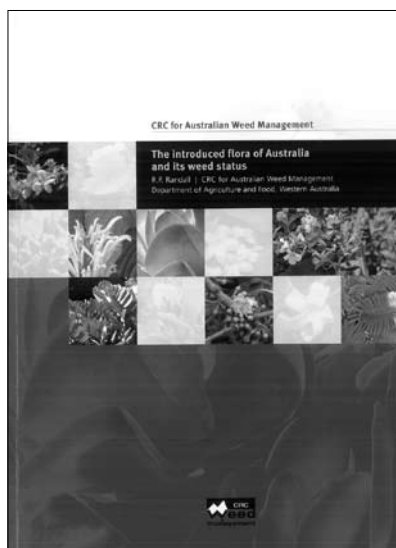
Here, at last, is a starting point, listing a massive 28,824 species that have been knowingly introduced into Australia. Fortunately, only 2,739 of these are actually listed as known weeds in Australia (more than enough!), however there remains a significant warning in that a

further 5,907 species have been introduced which are known to be weedy elsewhere in the world, and are likely biding their time, waiting to be released into a suitable niche in Australia.

When examining specific cases, this list may closely mirror that of the latest *Flora of Australia* data, listing eight *Fumaria* species versus seven in Walsh & Norton (2007) who suggest that the eighth name is misapplied in Australia, however

the numerous infraspecific taxa are not listed as Randall deals only with species and hybrid species. *Fumaria* is a recognised weedy genus and this correlation is to be expected, however when turning to horticultural plants, the differences are immediately apparent.

To consider two 'lilies,' Randall lists 10 species plus four hybrids in *Freesia* with Cooke (1986) recognising a single hybrid complex and occasional records of two parental species. Only two of



the hybrids are recorded to have naturalised in Australia, but clearly more have the potential to escape (seven being recorded as weedy outside Australia) and the lack of identification tools may mean outbreaks of other species are overlooked. Even common garden plants not normally considered as potential weeds can become so under the right circumstances. Forty two species of *Fritillaria* have been recorded for Australia, three of these having known weedy tendencies, though none are recorded as such in Australia yet, and so the genus is not mentioned in the *Flora of Australia*.

The book provides a listing (by scientific name with authority and family) of all known plant species introduced to Australia, as well as Australian native species known to be weedy outside of their natural range. Common synonyms and misapplied names are cross-referenced, and the weed status of the plant is listed under several categories indicating the propensity of each species to become a weed in various settings.

I see one of the greatest benefits of this database to botanists as being a source to check for additional taxa that may be present in Australia, but not regularly treated because they are not (yet) recorded as weeds. With the knowledge that additional species are out there, accurate identification of weedy species becomes more likely and future guides to weeds species are encouraged to include notes on the recognition of species that have been introduced and are known to be weeds elsewhere so that any occurrence can

be quickly recognised and controlled before our list of known weeds grows any further.

The additional benefit is of course to horticulturists, landscape planners and gardeners alike who want to know whether the plants they have growing are potential weeds, and which species they should choose to make sure they do not plant potential weeds in the future. This resource lists “just over 20,000 taxa” already introduced to Australia that do not have known weed status and Randall suggests that in combination with 11,000 plus native taxa in cultivation, that there should not be any need for additional imports to satisfy the demand for garden plants in Australia.

The introduced flora of Australia and its weed status has been published as a book, with a limited number of hard copies made available, as a PDF file of the book online (Web ref. 1), and probably most usefully, as a searchable website through the University of Queensland which has the advantage of being readily updated as new information becomes available (Web ref. 2). Additional reviews can be found at Web ref. 3.

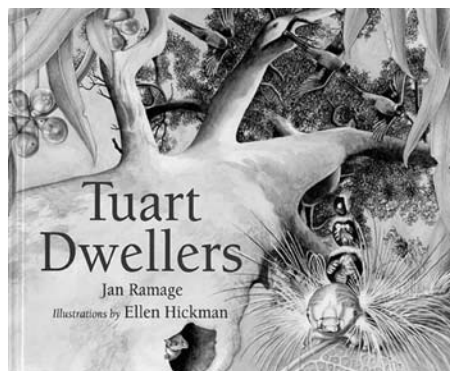
References

- Cooke, D.A. (1986) Iridaceae. In *Flora of Australia*. Vol 46. pp. 1–66. (AGPS, Canberra).
Walsh, N.G. & Norton, G.M. (2007) *Fumaria*. In *Flora of Australia* Vol 2. pp. 405–412. (ABRS, Canberra).
Web ref 1: http://www.weedsrc.org.au/documents/intro_flora_australia.pdf
Web ref 2: <http://weeds.cbit.uq.edu.au/>
Web ref 3: <http://www.sciencealert.com.au/news/20082908-17876.html>

Starting Young – Life in a Tuart Tree

***Tuart Dwellers*. By Jan Ramage, illustrations by Ellen Hickman. Published by Department of Environment & Conservation, WA, 2008. c. \$26. HB. ISBN: 9781876615307.**

While not usually the place for reviewing children’s books, I can’t resist drawing attention to the exquisite artwork and scientific detail achieved by botanical artist Ellen Hickman and the author Jan Ramage. This book is selling fast and deservedly so. An excellent primer in ecology for young readers!



A new Flora for Hong Kong – Halfway there

Russell Barrett

Kings Park & Botanic Garden

***Flora of Hong Kong*. Edited by Hong Kong Herbarium, Agriculture, Fisheries and Conservation Department, and South China Botanical Garden, Chinese Academy of Sciences. Published by Agriculture, Fisheries and Conservation Department, Government of the Hong Kong Special Administrative Region, Hong Kong. Volumes 1 (329 pp., 2007) and 2 (331 pp., 2008).**

V1: Hardcover | 2007 | £16.99 | approx. \$26/€21

V2: Hardcover | 2008 | £23.99 | approx. \$37/€29

from: <http://www.nhbs.com/>

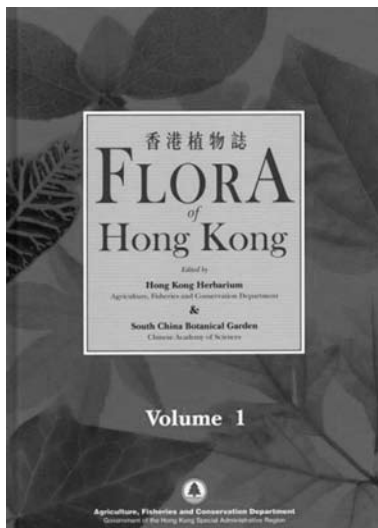
I was recently given the first two volumes of the new *Flora of Hong Kong*. A project that began in 2001, these two volumes represent the halfway point to the third *Flora* for Hong Kong, though the first for almost a century. The first was Bentham's *Flora Hongkongensis* (1861), which served as the standard flora until the publication of the first locally produced flora by Dunn & Tutcher, *Flora of Kwantang and Hongkong* (1912). The new flora treats all plants known to occur in Hong Kong, an area of about 1,000 km², including those in cultivation. Families are arranged according to the Kubitzki (1990) sequence for Gymnosperms, and Cronquist (1988) for Angiosperms. The two published volumes cover the Gymnosperms (10 families), and 101 families of Dicotyledons. Volume 3 will complete the Dicotyledons with Volume 4 comprising the Monocotyledons.

While admittedly of limited relevance to the temperate Australian flora, I found plenty of species in common with tropical Australia, and in this regard it offers a handy modern reference for some of the more poorly studied tropical genera. Many tropical species were first named by Bentham from Hong Kong, so this area is important for the application of numerous names for taxa

occurring in northern Australia. I found both the content and layout of the book to be of interest, and it clearly demonstrates the benefits available in an area with a relatively small flora (compared to Australia) and high population level to support the study of this flora.

Succinct descriptions are provided from the level of family to infraspecific taxa with keys, local Chinese names, references to treatments in other floras, representative specimens examined, distribution, ecology and usage. Almost all genera and sometimes several species are illustrated with very detailed line drawings, set with the text, with a valuable set of colour photographs of many of the species included at the back of the volumes. There are separate indices in Chinese and English. In addition to the standard glossary, a simple pictorial glossary covering the main leaf, floral and fruit characters is provided on a folded card insert to allow those not familiar with the terminology to constantly refer to the glossary without having to flick to the back of the book, a very handy feature for the beginner botanist or interested naturalist.

These are two very nicely presented volumes, and at the modest purchase price, are presumably subsidised by the Government of Hong Kong. The authors and editors are to be congratulated on bringing together such a fine body of work in a relatively short period of time.



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- Cronquist, A. (1988). *The evolution and classification of flowering plants* (2nd edn). (New York Botanical Garden, Bronx).
- Dunn, S.T. & Tutcher, W.J. (1912). *Flora of Kwantang and Hongkong*. Kew Bulletin of Miscellaneous Information, Additional Series 10. 1–370. (HMSO, London).
- Kubitzki, K. (1990). *The families & genera of flowering plants*. Vol. 1. (Springer, New York).

Book notices

***The African Baobab.* By Rupert Watson. Random House Struik, South Africa, Sep 2007. Hard cover, 200 pp. ISBN: 9781770074309. 210 Rand on publishers website, \$A30-60 on other sites. http://www.struik.co.za/struik/about_us.jsp or <http://www.coastweek.com/authors/book-01.htm>**

Selected pages of this book are visible on the web through Google Books, including some great photographs from the book.

***The Baobabs. The Pachycauls of Africa, Madagascar and Australia.* By Gerald E Wickens and Pat Lowe. Springer Netherlands, 2008. Hardcover, 498 pages, b&w illus. £146.00. ISBN: 978-1-4020-6430-2 (Print) 978-1-4020-6431-9 (Online) www.springerlink.com/content/n217m4/?p=a6d8b35de08041e08cc75719baa28c0c&pi=0**

Not to be confused with the earlier published book above, this is a comprehensive account of all eight species in the genus *Adansonia*. It covers the taxonomy, cultivation, conservation, distribution and ecology, and phytogeography as well as the economic uses of baobabs, famous trees, folk traditions and mythology and its depiction in art. Each of the 15 chapters and their titles is visible on the website where they are downloadable to those with an appropriate subscription. Front and back material is free for downloading but be warned that these are extremely large files.

Interesting to note too from further web browsing that scientists have now found the fruit to have an exceptionally high Vitamin C content (three times that of oranges) as well as being high in anti-oxidants and will probably become the next health food fad.

<http://www.entrepreneur.com/tradejournals/article/186433223.html>

***Seeds of adventure: in search of plants.* By Peter Cox & Peter Hutchison. Garden Art Press, UK: 2008. Hardback, quarto, dustwrapper, 415 pp., colour illustrations. AU\$105.00. ISBN-13: 9781870673587 ISBN: 1870673581**

Modern day travels by the authors in search of plants in Turkey, India, Nepal, Bhutan, China and Tibet, exploring where western plant hunters have not been since Frank Kingdon Ward, or areas remote enough never to have been botanised.

***The Atlas of the Real World. Mapping the Way we Live.* By Daniel Dorling, Mark Newman & Anna Barford. Published by Thames and Hudson, UK; 2008. PLC with Jacket, 23.2 x 26.8 cm; 400pp with 366 colour maps. RRP: £29.95. ISBN 0500514259; ISBN-13 978-0500514252**

This is a different and thought-provoking way to view the world. Country size is depicted on a proportional basis for many different items. For example internet usage shows a very large Japan, science research has a large USA, Europe and Japan and almost nonexistent Africa and Asia, species gone extinct has a large USA, Tanzania, Uganda and Mauritius (and a relatively large Australia), malaria cases has an enormous Africa and the rest of the world almost lacking, while meat consumption has a very high Chinese component. Australia and South America dominate the world representing mineral depletion – defined as “loss of potential future income, at current prices, due to the quantities of minerals currently being extracted.”

There are a number of websites giving access to some of the included maps and the ones mentioned above were all available on the New Scientist site. Others are available on the publishers website.

References

www.newscientist.com/gallery/dn15041-the-atlas-of-the-real-world?DCMP=NLC-nletter&nsref=dn15041
www.thamesandhudson.com/en/1/9780500514252.mxs?7e59891f0434c068f47c7ac4accf4c7e&0&0&0

***Managing wild radish and other brassicaceous weeds in Australian cropping systems.* By A.H.Cheam, A.M.Storrie, E.A.Koetz, D.J.Holding, A.J.Bowcher & J.A.Barker. CRC For Australian Weed Management, July 2008. ISBN: 9781920932626**

While most of this book will not be of particular interest to systematists, the list of Brassicaceous weeds will be. The citing of herbaria as a source

of identification may well mean that it will be useful to have a copy on hand in herbarium libraries or reference herbaria so that identifiers and users of the book are all talking about the same brassicaceous weed.

Further information on getting a free hard copy or downloadable at http://www.weedsrc.org.au/projects/project_2_2_3_3.html

A New Ellis Rowan biography

The flower hunter: the remarkable life of Ellis Rowan. By Morton-Evans, Christine and Michael Morton-Evans. Pymble: Simon and Schuster, 2008. Octavo, paperback, 328 pp., colour illustrations, photographs. RRP: AU\$35.00

ISBN: 9780731812851

“The flower hunter” always evokes images of shotguns and topees, but since Rowan’s first use of it as a title for her own book (Rowan 1898) it has been used subsequently for exhibitions of her work at the Queensland Museum in 1990 and by the National Library of Australia in 2002 (web ref. 1). The accompanying catalogue/biography to both of these exhibitions by Judith McKay and Patricia Fullerton respectively, also used the same soubriquet.

References

- Fullerton, P. (2002). *The flower hunter: Ellis Rowan.* (National Library of Australia: Canberra).
- McKay, J. (1990). *Ellis Rowan, a flower-hunter in Queensland.* (Queensland Museum: South Brisbane).
- Rowan, Ellis (1898). *A flower hunter in Queensland and New Zealand.* (Angus & Robertson: Sydney).
- Web ref. 1: www.nla.gov.au/exhibitions/ellisrowan/home.html

Brush with Gondwana: Botanical Artists Group of Western Australia. By Janda Gooding with illustrations by Margaret Pieroni, Katrina Syme, Philippa Nikulinsky, Pat Dundas, Rica Erickson, Ellen Hickman & Penny Leech. Fremantle Press: 2008. HB, 142 pp, 300 X 245 mm. ISBN13: 9781921361265. RRP: \$60

A history of the Botanical Artists Group (BAGs) of Western Australia with a selection of work from each artist. An exquisite book and a must-have for anyone interested in botanical art. Further information from the web site at www.fremantlepress.com.au/books/seasonal/1057

Available for Review

We have received a copy of the following books for review:

Dictionary of the Fungi (10th Edn) edited by P.M.Kirk, P.F.Cannon, D.W.Minter & J.A.Stalpers. (see <http://www.publish.csiro.au/pid/5998.htm>). 640 pages, CSIRO PUBLISHING / CABI, November 2008. HB - ISBN: 9780643095731.

Botanical Riches: Stories of Botanical Exploration by Richard Aitken. Melbourne University Publishing Ltd, 2008. Paperback, 243 pp. ISBN: 978 0522 855050.

If you would like to provide a review of one of these titles, please contact Gael Campbell-Young (details inside back cover).

Hansjörg Eichler Research Fund

Six applications were received in the September 2008 round.

Two proposals were funded:

- Iain Moore (University of New England), Species limits and phylogenetic relationships within Australian Bulbine Wolf. (Asphodelaceae) - \$2000.
- Laura Shirley (University of Melbourne), Genetic variation and systematic relationships of closely related stringybark eucalypts endemic to the Grampians National Park, VIC - \$2000.

As always, the expertise and enthusiasm of the Eichler committee (Barbara Briggs, Rod Henderson, Betsy Jackes, Kristina Lemson and Chris Quinn) in reviewing grant proposals is greatly appreciated.

The ASBS Council has decided, due to the very poor performance of the investments of the Eichler Fund (see Treasurer’s Report 2007/08, ASBS Newsletter 136, 4-11 [2008]), to conserve the Fund capital and **not offer a March round of grants in 2009**. The decision whether or not to fund a September round in 2009 will be made later this year and the society notified.

Kirsten Cowley & Peter Weston

Miscellanea

Retirements

Bob Chinnock and **Hellmut Toelken** have both recently retired from AD. We hope to have articles from each of them in the next issue of the Newsletter and we wish them well in their retirement.

2009–10 Conferences

VII International Congress of Systematic and Evolutionary Biology (ICSEB7) in Veracruz, Mexico, 5-10 July 2009

<http://www.botanik.univie.ac.at/ICSEB7/index.htm>

Kew Botanical Gardens 250th Anniversary Scientific Congress, London, 12-16 October 2009

<http://www.kew.org/scihort/anniversary.html>

VI Southern Connection Congress, Bariloche, Argentina on February 15-19, 2010.

Southern Connection aim is to provide a venue for communication among scientists, principally biologists, working on southern temperate ecosystems and biota. Previous Southern Connection congresses have been held in Australia (1993 and 2007), Chile (1997) New Zealand (2000) and South Africa (2004).

VI Southern Connection Congress will consider the past history, current characteristics, and future perspectives of southern temperate ecosystems and biota in a global context.

Original studies that describe results in themes such as composition, ecosystems structure and dynamics, ecophysiology, biological interactions and invasions, population genetics, reproductive biology, taxonomy, phylogeny, evolution, paleobiology, biogeography, macroecology, conservation, restoration and sustainable management are welcome.

For more information: southernconnection2010@gmail.com

Coming soon: <http://southernconnection2010.crub.uncoma.edu.ar>

DEWHA – Call for Data

Numbers of Living Species in Australia and the World 2nd edition

ABRS is requesting input for the 2nd edition of the *Numbers of Living Species in Australia and the World*.

In 2006 ABRS published a report titled *Numbers of Living Species in Australia and the World*. The report was compiled by Arthur Chapman, and was made available in hardcopy and online. It provided a summary and further discussion on numbers of species by group (examples from the report can be found at the following web link: <http://www.environment.gov.au/biodiversity/abrs/publications/other/species-numbers/pubs/nlsaw-2nd-edn-info-request.pdf>)

The online version of the publication (html & pdf) is available at: <http://www.environment.gov.au/biodiversity/abrs/publications/other/species-numbers/index.html>

This document was largely a synthesis of published information, and information supplied to Arthur by researchers around Australia and the world, and Arthur would like to thank all those who supplied him with information at the time.

ABRS is now preparing to update the document and if anyone has any comments on the document, references to relevant papers, or any other information, we would be most grateful if you could send this to Arthur for use in the 2nd edn.

Following feedback from the 1st edn Arthur would like to split up some groups a bit more if possible—for example the insects to order level if information on the numbers in each order is available (please see the document to see the current groupings).

All comments and references will be fully acknowledged as in the 1st edition.

Please send any further information to Arthur Chapman at the address below.

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Contacting Major Australian Herbaria and Systematics Institutions

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

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ASBS Publications

History of Systematic Botany in Australia

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

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

Systematic Status of Large Flowering Plant Genera

Austral.Syst.Bot.Soc.Nsltr 53, edited by Helen Hewson. 1987. \$5 + \$1.10 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, Eparidaceae, *Cassia*, *Acacia*, and *Eucalyptus*.

Australian Systematic Botany Society Newsletter

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

Evolution of the Flora and Fauna of Arid Australia

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

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

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

Ecology of the Southern Conifers (Now out of print)

Edited by Neal Enright and Robert Hill.

ASBS members: \$60 plus \$12 p&p non-members \$79.95.

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

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AUSTRALIAN SYSTEMATIC BOTANY SOCIETY INCORPORATED

The Society

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

Membership

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

The ASBS *annual membership subscription* is \$45(Aust.); 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 Web site. It keeps members informed of Society events and news, and provides a vehicle for debate and discussion. In addition, original articles, notes and letters (not exceeding ten published pages in length) will be considered. *Citation:* abbreviate as *Austral. Syst. Bot. Soc. Nsltr*

Contributions

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

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

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

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

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

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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 Web site.

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 flier. Contact the Newsletter Editors for further information.

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Please send correspondence to all editors

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