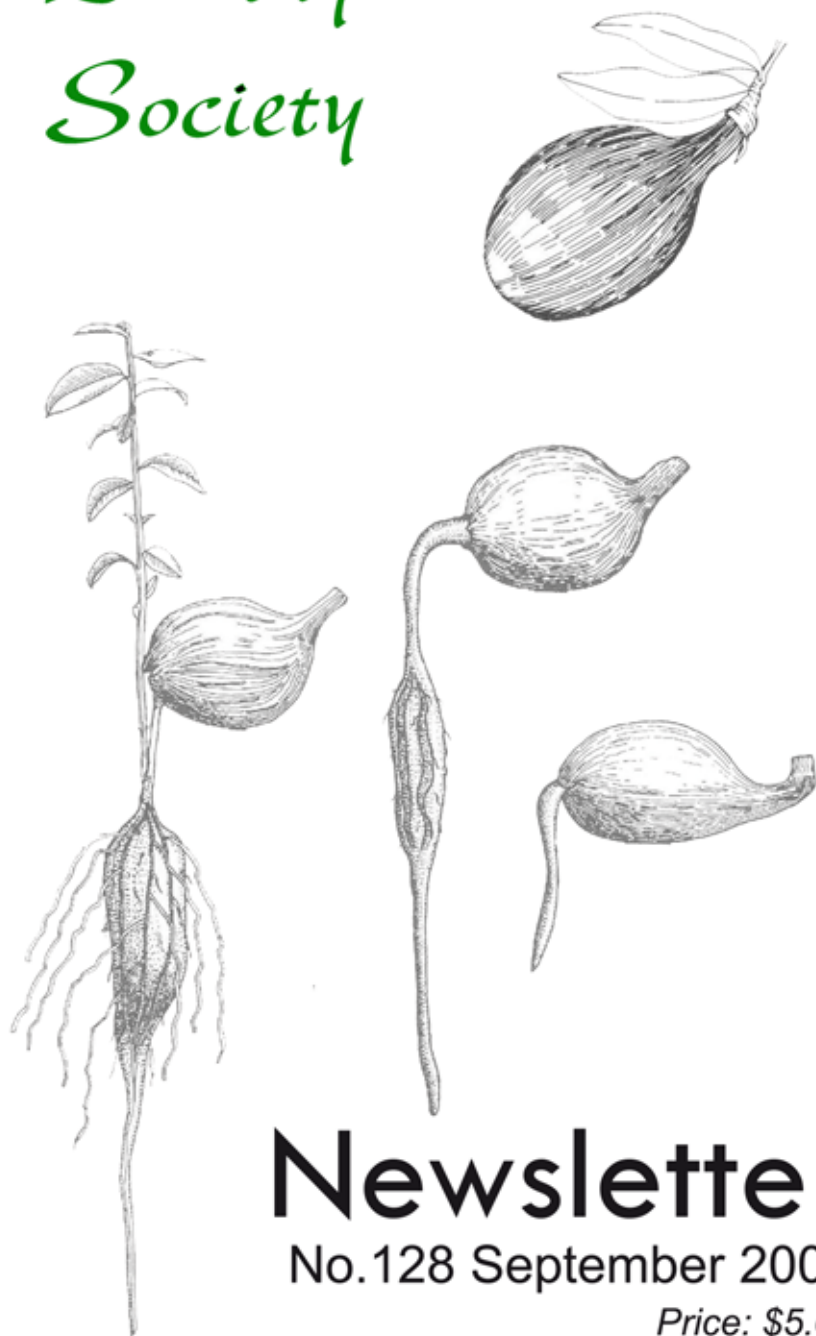


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Loose-leaf inclusions with this issue

- CSIRO Publishing brochure
- Rainforest Trees and Shrubs book flyer
 - Sturt Pea book flyer

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From the President

For the past few months I have been what could be described as the Scarlet Pimpernel of the Society. I have been engaged in so much fieldwork that I seem to come home only long enough to pick up fresh clothes and restock the tucker box. Thankfully my fellow Councillors have kept Society business running in my absence and I would like to acknowledge my appreciation of this.

In this issue of the Newsletter you will note that Alex George has finally been presented with the Burbidge Medal that was awarded in 2004. Steve Hopper, who was ASBS President at the time the award was announced, made the presentation on behalf of the Society. Steve now heads off to take up his appointment at the Royal Botanic Gardens

Kew. Thanks Steve and keep in touch. Council is currently considering nominations for the 2006 Burbidge Medal.

The Cairns conference is nearly upon us and early indications are that several overseas botanists, especially a few from across the Tasman, plan to attend. This will give Council the opportunity to further pursue the idea, floated some time ago, of trying to formalise links with botanical societies in near neighbouring countries. There has been some interest shown by some New Zealand botanists. More on this as things develop.

John Clarkson

Nancy Burbidge Medal

2004 Nancy Burbidge Medal acceptance speech¹

Alex George

'Four Gables', 18 Barclay Road, Kardinya, W.A. 6163

This is an unusual situation for me, as usually it is other people receiving an award. I think it is appropriate to say a little about the person we commemorate in this medal, and the Society that bestows it. Then I would like to review some highlights on my journey to this point, at the same time reflecting on some who have, knowingly or unknowingly, influenced me in one way or another.

I am particularly pleased that Andrew Burbidge is here today, not only because he is Nancy's nephew but also because he and I have been associated, especially in conservation matters, for more than 35 years.

Nancy Burbidge

The photograph that we have as a backdrop today shows Nancy in the Herbarium at the Royal Botanic Gardens, Kew. It was taken by one of the Kew staff, Nigel Hepper, during Nancy's term as Australian Botanical Liaison Officer in 1953–54.

I first met Nancy soon after joining the staff of the (then) State Herbarium when she attended the ANZAAS conference in Perth in 1959. Stan Blake from Brisbane and Jim Willis from Melbourne were two others whom I first met at the same time.

Nancy was, of course, considered a Western Australian (though born in Yorkshire, migrating

with her parents in 1913), graduating from UWA with a BSc Hons in 1937, an MSc in 1945 and being awarded a DSc in 1961.

She was one of many who have influenced me, in both my professional career and personally. I have often used Nancy's published work, especially after I began fieldwork in the north-west and desert regions where I made many collections of genera she worked in, particularly *Triodia*, *Nicotiana* and *Vittadinia*. She also wrote three volumes in a series *Australian Grasses*. Her major DSc paper 'The phytogeography of the Australian region' was essential reading. In 1963 her *Dictionary of Australian Plant Genera* filled a gap in our botanical literature. With Max Gray she wrote the *Flora of the ACT* (1970). Later, her book *Plant Taxonomic Literature in Australian Libraries* (published in 1978, just after her death) also became a standard reference, still useful as a quick reference to where works are held.

She was one who made me aware of the value of conservation, involvement in societies, indeed in the importance of service to others through what we do and publish. During her term as Australian Botanical Liaison Officer at Kew in 1953–54 Nancy was responsible for gathering some of the resources that have been so useful, such as the microfilm of Robert Brown's manuscripts at the Natural History Museum in London, and more than 2700 photographs of type collections in the

¹The speech given by Alex George at the Western Australian Herbarium on 8th September 2006, slightly edited by him. Thanks to Steve Hopper for organising the presentation and photographs on behalf of the Society.

Herbarium at Kew. These days, high-quality scans are replacing those photographs, but they have served the Australian taxonomists well.

In 1970 I had a day excursion to Boyagin Rock with Nancy and her nephew Andrew and, to my great regret, did not take a photograph of the two together. Nancy, incidentally, was in Perth to attend the opening of the new building for the renamed Western Australian Herbarium. It is a reflection on the society and maybe politics of the day that (apart from the staff) she was the only woman present!

Nancy was, of course, one of the strongest proponents of the Flora of Australia project and was the leader of the precursor project at the time of her death. In 1973 she stepped aside from her position as Curator of the (then) Herbarium Australiense in order to work on planning the *Flora*. She oversaw the start of the compilation of the *Australian Plant Name Index*, and many of the filing cards used for that project in the early years bear her handwriting. The printed edition of APNI (published in 1991) is dedicated to Nancy. She knew that the momentum for the *Flora* gathering during the 1970s would succeed but, again, it is sad that she passed away before the formal decision to proceed was taken. In fact, of course, through the *Flora* we continue to harvest the fruits of her research and efforts. I like to think that I have contributed to something that she fervently believed in and have tried to maintain and improve the standards that she and others of her generation such as Hansjoerg Eichler established for us. It may be an ageing factor, but I feel that currently in Australia we do not have many systematic botanists with the stature of those greats of the 20th century.

Among the formal acknowledgments of Nancy and her work are an AM (Member of the Order of Australia), in the Queen's Birthday honours list, 1976; an altar piece in St Michael's Anglican Church, Mount Pleasant, dedicated in 1978; and the Nancy T. Burbidge Memorial Lecture delivered at meetings of the Australian Systematic Botany Society. The first was by Selwyn Everist in 1979. The Society instituted the Nancy T. Burbidge Medal in 1997.

At the Australian National Botanic Gardens, Canberra, the Nancy T. Burbidge Memorial Amphitheatre was officially 'opened' on 14 September 1980 by Robert Boden, then Director of the Gardens. In recognition of her conservation work, especially in the A.C.T., one of the mountains (1742 m) in Namadgi National Park, A.C.T., was named Mt Burbidge, gazetted on 14 October 1992.

She is also commemorated in the names of plants such as *Acacia*, *Sclerolaena* and, appropriately,

Triodia, a genus in which she did research. When I revised *Verticordia* I chose her collection number 8061 as the type of a new species, *V. paludosa*.

I shall mention others who have influenced me later.

Australian Systematic Botany Society

The invitation to hold a meeting to discuss the formation of a society for Australian plant taxonomists came from Melbourne in 1973. As I was already planning a visit there I scheduled it so that I could attend. It was quite a vigorous meeting but agreed to proceed and decided on the Society's name. I was nominated to the interim council set up to draft a constitution. On returning to Perth we established a Perth chapter which rapidly attracted a membership of over 40. In Perth in August that year, we held a second meeting at which the constitution was formally adopted and so ASBS came into being. After the abortive Systematic Botany Committee that ran for some years from 1947 before being disbanded there was some concern whether ASBS would succeed, but within a year there were chapters in all States and also within a year it began to issue a newsletter. The society has held regular meetings, organised (usually in co-operation with other organisations) a number of successful symposia – typically the papers from these have been published as books. ASBS was also the main proponent of the *Flora of Central Australia*, published in 1981 in conjunction with A.H. & A.W.Reed.

I served on the Society's committee for four terms, edited the newsletter for 11 issues from 1978 to 1980, and have been a regular contributor to it. The newsletter has now run to more than 125 numbers and is a rich resource, on both historical information and the progress of systematic botany in Australia during the past three decades.

Highlights

So, how to decide what have been the highlights for me? Is it people? places? events? plants? ...? I feel like a reviewer who, asked to choose the three best books or recordings for the year, says 'If I could choose six I would include A, B, C, D, E and F, but, since I can have only three, I choose the following'. There are just so many but I have had a go at it. First must be a sense of gratitude that I found a vocation, a career that has been much more than a job – indeed, there have been times when, perhaps, I became too absorbed in it, though I do not regard myself as a workaholic. How can I be when I enjoy what I'm doing? The awakening to plant taxonomy came after high school where I had no idea what I wanted to be. I joined the then-State Herbarium in 1959, when it had a staff of just four. I was on the very bottom level – a temporary laboratory assistant

– but that meant that I learnt all the basics of herbarium curation as well as being introduced to learning the flora and taxonomic research. I had a year working under Charles Gardner before he retired.

The phrase ‘in the right place at the right time’ is well-worn, but in some ways it applies to me. The first must be living in south-western Australia, such a rich botanical region. Had I been a decade or more earlier I would probably have been stifled by Charles Gardner, and had I been a decade later I would not have had all the opportunities that came my way, such as field work to so many places, and being first editor of the *Flora of Australia*. As it was, Gardner encouraged me and his enthusiasm spurred me on. We even published a paper jointly.

When Gardner retired Bob Royce took over as Curator of the Herbarium. He was a great boss for me, teaching me about herbarium practices, the importance of becoming involved at all levels, of liaising with the public (in those days it was a *Public Service*). He gave me every encouragement, gave me opportunities for field work, and supported my application for the position of ABLO. At a personal level he was also very understanding and supportive, almost a second father-figure.

I have been extraordinarily fortunate in the field work associated with my job, which has taken me to many parts of Western Australia from Cape Londonderry at the tip of the Kimberley to West Cape Howe on the south coast, and from West Point on Dirk Hartog Island to and beyond the State border. I have walked where, probably, no European has walked before. There have been so many exciting days, so many wonderful landscapes, so many discoveries that I find it hard to choose highlights. No place, and no season, can be boring when you’re interested in natural things. Favourite areas include all the deserts, the Ravensthorpe and Fitzgerald River areas, the Cape Range and Dirk Hartog Island. The big biological expeditions to the Prince Regent River Reserve in 1974 and the Drysdale River National Park in 1975 were memorable. Being able to still see places much as they were when the first collectors visited has been special,



Fig. 1. Alex George with his Nancy Burbidge Medal

though many are now irrevocably changed, some, such as Ludwig Preiss’s ‘Wuljenup’, now Mt Willyung, just east of Albany Airport, during my lifetime. Being fairly remote, the places where William Dampier landed in 1688 and 1699 are still relatively unchanged.

Among many highlights in field work, one that stands out was the discovery of the Underground Orchid (*Rhizanthella gardneri*) in 1979, by farmer John McGuinness at Munglinup. I had searched for this for more than 20 years, and we finally learnt how to find it and were able to study living plants in the wild.

From my early fascination with the orchids (I think that the first botanical name that I learnt was *Caladenia flava*) my interests widened to, in particular, the Proteaceae and Myrtaceae. As a child I climbed Banksia trees outside our back gate in Melville, and I remember being fascinated by *Banksia coccinea* at the annual wildflower shows held in the Perth Town Hall but I had no idea of the diversity of Banksias until, in 1957, I went to Ravensthorpe and the Stirling Range for the first time and saw prostrate ones, upside-down ones and, of course, the amazing *Banksia baueri* with its huge woolly spikes. Charles Gardner’s

interest in Proteaceae also rubbed off on me, and *Dryandra* was a natural extension from *Banksia*. Even the diverse groups that I later wrote up for the *Flora of Australia* because no-one else wanted to became fascinating.

I suppose that my interest in publishing – first as a writer, then as an editor, then as an indexer – started very early. My parents were booklovers and owned the wildflower books of Emily Pelloe, and Edgar Dell's plates from the *Western Mail* (then the only popular wildflower books available here). Rica Erickson's first book, on orchids, appeared in 1951, then the first of the Blackall & Grieve books in 1954, so I was aware of botanical books. Upon joining the Herbarium I soon realised how important (and enjoyable) it is to write. Then I became interested in the actual process of publication. My early mentors in editing were Dom Serventy (editor of the *Western Australian Naturalist* in which my first two papers appeared) and Alec Trendall (under whom I served as Assistant Editor of the *Journal of the Royal Society of Western Australia* and then succeeded as Editor). In 1970, when the Herbarium decided to publish its own taxonomic journal I was very pleased to gain the job of editor.

Indexing came later. For the *Flora of Australia* we had an in-house typesetting program that included generating an index – very useful for detecting typographical errors that had slipped through the editing process. I became more sensitive to good and bad indexes and, an unforgiveable sin, no index at all. I was asked to index several of the works that I edited as a freelancer, and some years ago Roberta encouraged me to take a course in indexing which led to my becoming accredited with the Australian and New Zealand Society of Indexers. It's another challenging but rewarding exercise, though commonly unacknowledged.

Very early I became aware of the importance of conservation. Charles Gardner promoted the value of large reserves and parks. He and Bob Royce were both on the committee that reviewed conservation in Western Australia in the early 1960s. Being asked to serve on the Technical Subcommittee of the Conservation Through Reserves Committee in 1973 was an honour and opportunity. Andrew Burbidge was also a member, and I have appreciated his enthusiasm for conservation of the natural environment and his companionship in the field on both short and long trips. The CTRC built on the previous review and made recommendations for many new reserves and national parks. At the time I was one of few people who had experience in the deserts so had the job of drafting the report for System 12 as it was called. I drew the boundaries for reserves such as the Gibson Desert

and the Rudall River. We made one mistake, by including attractive photographs in the account of the Rudall River area – they showed almost the only prominent features in what was proposed as a nature reserve, representative of the vast plains of the region, but when our parent committee saw the photos they decided it looked very attractive and changed the purpose to national park which led to problems later. In writing up the Kimberley region we carefully worded our account and recommendations for the far more spectacular Prince Regent River Reserve to ensure that it would remain a nature reserve. Our parent committee was not amused when, after a good Christmas lunch, we wrote an account of the Hay Street area in Kalgoorlie, with a recommendation that the Chairman make further surveys of the fauna. It was *not* in the final report. One member on that committee who influenced me greatly over many years was Bert Main.

ABLO

Being Australian Botanical Liaison Officer at the Royal Botanic Gardens, Kew, is a privilege and wonderful opportunity. I served in the position in 1967–68, and the experience (information gathered, contacts made, working in foreign herbaria and countries) has enlightened my career ever since. Kew became a special place in my life and remains so. I had another long spell there when Roberta was ABLO in 2002–03. Then I had a (so far) unique second term as ABLO in 2004–05, perhaps another case of being in the right place at the right time. Yet, those three years have still been insufficient to uncover all the information I would like that is stored among their specimens, libraries and archives. As with field work, there is the constant anticipation of discovery as occurred last year, for example, when I came across a folding desk made from native woods by a convict in Sydney and taken back to England by Ferdinand Bauer in 1805 – one of very few pieces known of such early colonial furniture.

One of my experiences may remain unique, at least in Australian botany – that of placing the first determination on a specimen more than 300 years after it was collected. Someone may be able to beat that if Oxford finds another lost specimen that we know Dampier took back to England because an illustration was published in 1705 – *Acanthocarpus*.

Backtracking to 1980–81, I applied for and was appointed to the position of Executive Editor for the *Flora of Australia* and left the Herbarium (and Perth) with some misgivings and apprehension but at the same time with excited anticipation. I was on a very steep learning curve, very greatly supported by Alison McCusker, then in charge of the Flora Section of ABRS, and by the Flora Editorial Committee. Alison McCusker was a

great manager who did her utmost for her staff and the *Flora* project without any self-promotion. When I arrived in Canberra we had just eight months to finish writing, edit and publish volume 1 in time for a launch at the XIII International Botanical Congress in Sydney – the books were delivered with two days to spare. At the same time we were planning and preparing later volumes.

Dealing with the Flora Editorial Committee was always enjoyable and I would like to pay tribute to the co-operation and expertise of the original committee – Sir Rutherford (Bob) Robertson, a great chairman, Barbara Briggs from Sydney, Hansjoerg Eichler from Canberra, Les Pedley from Brisbane, Jim Ross from Melbourne, David Symon from Adelaide, and our own Paul Wilson. While on the staff here, in Canberra, and since returning to Perth, Paul has always ‘been there’ for advice and information. Likewise, Hansjoerg Eichler – a meticulous taxonomist, so knowledgeable in matters such as nomenclature, who would drop *whatever* he was doing to assist and offer advice.

The *Flora* was – and remains – a great project but has suffered in several ways. It has never received the resources from Government needed to reach the rate of production originally envisaged. It became bogged in the so-called reforms that beset the Public Service from the mid-1980s, virtually none of which – at least during my time – did anything to improve working conditions or productivity; indeed, most were a distraction and demoralising. On one occasion, when I tried to draw the attention of the ABRIS Advisory Committee to our problems, I was told by my superior officer that, if that was how I felt, then the sooner I left the better. I continued for another two years but eventually decided that it would be better for the project, and for me, if a new editor were appointed.

From the high years when the project was gained and began to good reviews, the support of the botanical community has also waned, partly due to the slow progress which has seen delays in contributions being published, partly due to political pressure to produce floristic works at a State or regional level, and partly to diversions to other projects such as Australia’s Virtual Herbarium. We are trying to do too much with



Fig. 2. At the presentation. Top, Alex George ASBS Burbidge Medal 2004 recipient with Dr Andrew Burbidge and Marion Blackwell. Middle, Jen McComb, Margaret Byrne and Russell Barrett. Bottom, Alex with Paul Wilson.

Photos. Steve Hopper, Russell Barrett.

the same resources. Had we concentrated on the *Flora* the volumes on the flowering plants would now be finished and all manner of spinoffs would be possible. Besides this, the editorial committee

was disbanded several years ago, an extremely retrograde step. There is now no external body to advise the Flora team and adjudicate if a problem arises between the team and a contributor. The Flora is suffering as a result. Now I wonder if it will ever be finished.

I just mentioned the *flowering plant* volumes of the *Flora*. I have always been aware of the cryptogams and fungi and have sometimes collected them, though I have never done any research on them. I was fortunate to have colleagues who specialised in them, for example Rex Filson and Jack Elix in lichens, George Scott in mosses and liverworts, and Roberta in marine algae. Although the initial plan was to write the vascular Flora before turning to the cryptogams, we began to bring them into the program in the 1980s. The first volume (on lichens) appeared in 1992, and we now have volumes on the fungi and mosses and shortly will have one on algae. But there is a long, long way to go.

I may have gone on a bit about the *Flora*, but it *IS* the most important project that I have been (and still am, as a contributor) involved with.

In 1993 we returned to Perth where I set myself up as a freelance botanist, editor and indexer. These are not lucrative occupations but I have found sufficient work, and the lack of bureaucracy makes for a much more relaxed and productive lifestyle. As an indication of what one can achieve, during the past 13 years I have edited 45 books, indexed 15 and written 4, besides finishing revisions of *Dryandra* and *Synaphea* for the *Flora of Australia*, writing many short papers and articles, and serving a term as ABLO. I have enjoyed being involved in organising two very successful conferences, Dampier 300 in 1999 and Investigator 200 in 2001. I think I would have been far less productive in a 'regular' job.

I have greatly appreciated opportunities to work in association with botanical artists. It was a privilege to be associated with Celia Rosser in the Banksias project at Monash University. The icing on the cake was seeing the three volumes of *The Banksias* presented to the Queen as official gifts from the Australian Government. In Western Australia we have a number of botanical artists of very high ability, and I have worked especially with Philippa Nikulinsky and Margaret Pieroni, and learned much from them about botanical art.

One of the pleasures of taxonomy is its international networking nature. It crosses political and language boundaries. Largely through my terms at Kew and attendance at conferences I have been fortunate to meet botanists, librarians, historians and others from many countries, who have widened my knowledge and understanding.

I want to acknowledge several other people important in my life whom I have not mentioned so far. John Tonkinson was a schoolteacher who I met in what would now be called a gap year, and who was instrumental in awakening a latent interest in wildflowers. We had many field trips locally and around the South-West seeking orchids in particular, and one to the North-West.

Rica Erickson – I have known her since I was about 6 or 7. I have used her books, been associated with her in writing *Flowers and Plants of Western Australia*, often called on her knowledge, more recently edited her book *A Naturalist's Life*. She is the quintessential quiet achiever. Denis & Maisie Carr, not always on the right side of the 'establishment', but to me they gave encouragement, personal support, and an example of inquiring minds that searched below the surface for the purpose of things. Lawrie Johnson – a brilliant mind, a stimulating conversationist, one with whom I could disagree but remain a colleague. Jim Willis, always the gentleman, vastly knowledgeable in botany and history, always made you welcome.

But these are only a few of the many, many who have influenced me in one way or another. Some have done so through 'negative' behaviour or actions, alerting me to the value of not emulating them. These lessons are sometimes as, or more, important than positive ones. My own mistakes – and there have been plenty – have taught me much. But maybe there's an analogy with aviation, another of my abiding interests. For some years I held a private pilot's licence (Steve will remember an aerial survey that we made to the Fraser Range to check out a record of *Eucalyptus caesia*). There's a saying among pilots – when you gain your licence you think you know everything about flying; when you have flown a thousand hours you *know* that you know everything about flying; when you have flown ten thousand hours you know that, really, you are just beginning. Maybe that applies to me, too.

And with all those who have been part of this journey, I hope that I have been able to reciprocate in some way. But that is for others to judge.

I appreciate having been in the right place at the right time.

So, again, thank you, Steve, and the Australian Systematic Botany Society for this Medal.

Postscript

For those who wish to read further on Nancy I refer you to the following:

Chippendale, G. (1991), Notes on Nancy Burbidge, *Australian Systematic Botany Society Newsletter* 67: 21–22.

Chippendale G.M. (1993), Nancy Tyson Burbidge (1912–1977), *Australian Dictionary of Biography* 13 1940–1980: 298–299.

Grieve, B.J. (1984), The Nancy Burbidge Memorial Lecture, *Australian Systematic Botany Society Newsletter* 39: 1–7.

Hartley, W.H. (1978), Obituary, *Brunonia* 1: 123–129.

Stewart, N. (1987), Nancy Burbidge, A.M. (1912–1977) A Botanist of Distinction, pp 201–204 (portrait p. 203) in N.Stewart, *As I Remember Them*, Artlook Books, Perth.

ASBS Inc. business

New members

Council is pleased to welcome the following new members for 2006 to the Society:

- Miss Amy Kruger, Carina Heights, Qld.
- Miss Senilolia Tuiwawa, School of Botany & Zoology, Australian National University, Canberra, A.C.T.
- Mr John Marshall, School of Biological

Science, Flinders University, S.A.

- Mr Andrew Thornhill, School of Botany & Zoology, Australian National University, Canberra, A.C.T.
- Mr Bruce Maslin, Western Australian Herbarium, Perth, W.A.

Anna Monro
Treasurer

Articles

Interpreting biogeographic patterns

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There has been a recent resurgence in interest in historical biogeography linked to the publication of numerous molecular phylogenies. Molecular trees are being used to date nodes, discover the timeframe of lineage divergences and explain biogeographic patterns. In a review of recent molecular studies, de Queiroz (2005) presents a figure (his Figure 1, p. 72) of “striking examples” of oceanic dispersals, with *Lepidium* mustards dispersing from North America to Africa and Australia, *Myosotis* forget-me-nots from Eurasia to New Zealand and then from New Zealand to South America, and *Acridocarpus* (Malphigiaceae) from Madagascar to New Caledonia, the latter dispersal shown by an arrow that skirts across the Indian Ocean, across the water-way north of Australia into the Pacific to reach New Caledonia. He concludes that:

Resurrection of oceanic dispersal is the most striking aspect of a major shift in historical biogeography toward a more even balance between vicariance and dispersal explanations. (p. 68).

The new emphasis on dispersal is rekindling interest in non-random aspects of the phenomenon...such as prevailing winds and ocean currents. (p. 72).

The up-coming Southern Connections Conference in January 2007 in Adelaide is advertising a symposium “Goodbye Gondwana”, presumably with a similar frame of thinking.

Putting aside the problems of molecular dating of nodes on phylogenies (see Heads 2005 for a comprehensive critique), there are lessons from the past that seem to have been forgotten with regard to analysing and interpreting biogeographic patterns (Nelson and Ladiges 2001).

Area cladograms

The historical relationships of areas can be determined from a cladogram of the relationships of taxa (species) within a monophyletic group. The taxon names are replaced by the area(s) in which they occur. Widespread taxa are uninformative, but area relationships can be discovered based on the endemic taxa, which have restricted distributions. Most often areas will be represented more than once on the cladogram, and a summary **area cladogram** is derived. Two or more area cladograms, based on different monophyletic groups, can be combined as a **general area cladogram**, reflecting the common history of a biota. The same pattern found in different groups of organisms is usually interpreted as evidence supporting a vicariance hypothesis, which can include dispersal of the biota, for example, on exotic terranes.

So what are some of the problems?

1. Biogeographic analyses may be misleading if not all terminal taxa (or a comprehensive sample covering all areas) are included in the phylogeny. Biogeography usually requires species as terminal taxa. In some cases the definition of areas is simplistic, since some regions are geologically composite (e.g. New Zealand) and can have multiple relationships.)
2. Various methods have been proposed for deriving a summary area cladogram for a monophyletic group (see Crisci et al. 2003). Methods that attempt to optimise areas as ancestral on all nodes of a fully resolved cladogram (such as the program DIVA by Ronquist 1996, 1997) can yield improbable

results.

3. **Geographic paralogy** is not always recognised and dealt with. Paralogy is well understood in the context of molecular biology: a gene is duplicated and each copy then tracks the history of the organisms. Only orthologous copies are compared among taxa. The same idea relates to biogeography (Nelson and Ladiges 1996). Consider one branch of a taxon cladogram (Fig. 1) in which an endemic in area B is related to an endemic in area C with both more distantly related to a taxon in area A; then the area relationship is A(B,C). The sister branch of the cladogram has taxa in these same areas. This duplication of areas is an example of geographic paralogy. In this simple example, the two paralogous lineages show the same relationship A(B,C). Each lineage is a paralogy-free subtree. Together the two subtrees are evidence (congruence) of one area relationship.

If one were to take an approach of optimising the areas on the nodes of the original tree, nodes 4 and 5 would both have the same ancestral area (combined area "A+B+C" in a vicariance model or just "A" for a dispersal model, but see 4 below). However, one would stop there – optimising lower nodes 1-3 (and beyond for related taxa in similar or different areas) would be meaningless. A recent paper in *Journal of Biogeography* that finds Australia to be the centre of origin of passerine birds suffers from this problem of optimising paralogous basal nodes (Jønsson and Fjeldså 2006).

4. **The progression rule.** Hennig's (1966, p. 136) cladogram (Fig. 2) shows a phyletic sequence of taxa occurring in areas 1-5, from west to east (1 being the sister area of 2-5, 2 the sister area of 3-5 and so on). The example that Hennig offers related insect taxa in the Malay

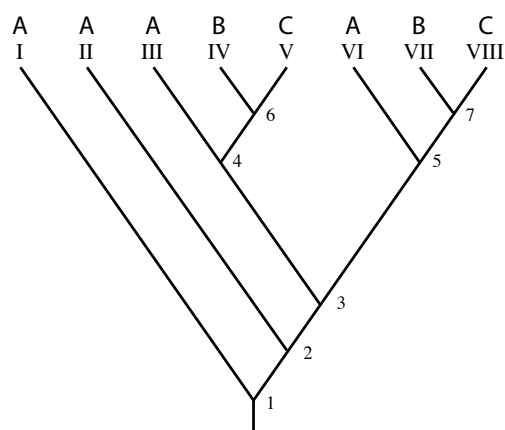


Fig. 1. A simple example of an area cladogram where taxa I-VIII occur in geographic areas A, B and C. Nodes 4 and 5 are informative and result in two paralogy-free subtrees, each giving the area relationship A(B,C). Lower nodes 1-3 are geographically uninformative.

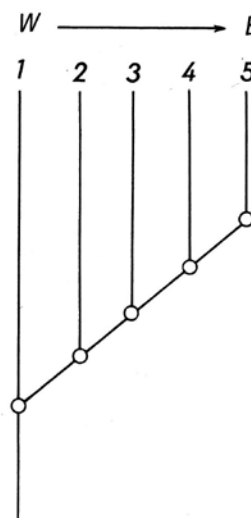


Fig. 2. The progression rule illustrated by an hypothetical example from Hennig (1966). The biogeographic pattern is interpreted as dispersal of ancestral taxa progressively from west to east.

Archipelago, and he interpreted the geographic "progression" as dispersal from west to east. In 1981, Norman Platnick provided a critique: "The progression rule – or progress beyond rules in biogeography", a read relevant to today's debates.

An example of applying Hennig's progression rule is to optimise area A (and not A+B+C) as ancestral on the tree in Figure 1. Despite the addition of a number of lineages towards the base of the tree that are in area A, the summary area cladogram is still simply that areas B and C are more closely related to one another than they are to area A. There is no more evidence from nodes 1-3 than from 4 and 5 for A being an ancestral area. There are various possible interpretations. The whole clade could have been widespread ancestrally; some speciation events occurred first in part of the distribution (area A) and subsequent events isolated area B+C, then B from C. Alternatively, perhaps there was a centre of origin (area A) with dispersal into area B+C, followed by vicariance of B from C; or dispersal from A to B to C. My point of emphasis is one of caution – to leave various options open. If you start by using the progression rule you pre-determine a conclusion of dispersal from a centre of origin that may well be wrong.

Australian continental biogeographic patterns

Many Australian plant taxa have a geographic distribution that is broken up into regions, separated by climatic, edaphic or sea barriers (past and present). Areas of endemism include: the South-West Province of Western Australia, the Kimberley, Arnhem Plateau, Cape York, the Wet

Tropics of Queensland, South-Eastern Australia and Tasmania (Burbidge 1960; Crisp et al. 1995). For example, within *Banksia*, *Eucalyptus*, genera within Rhamnaceae, and freshwater fishes, sister groups occur in the South-West and eastern Australia, regions separated today by the Nullabor Plain as a result of successive marine inundations, increased aridity and edaphic factors (Hill et al. 1999, Crisp et al. 1999). Was a widespread ancestral taxon split or was there dispersal from a centre of origin, either from west to east or east to west? (Hard to imagine dispersal for the freshwater fishes.)

Preliminary molecular data (McPherson 2006) on *Tetratheca* (41–46 species) reported recently in this Newsletter (No. 126) provide an interesting example of a group that occurs widely in the south-western and south-eastern parts of the continent but with no species shared between the two regions and none on the Nullabor. McPherson concludes that a “western Australian origin” for the group is supported by the molecular results. This appears to be based on the progression rule because related genera (*Platytheca* and *Tremandra*) occur only in the west, and the eastern species of *Tetratheca* form a clade nested within western species-groups. Given the general pattern among various taxonomic groups, it seems likely that vicariance is relevant in the divergence of western and eastern plant groups in Australia and dispersal in *Tetratheca* need not be assumed.

In summary, historical biogeography based on phylogenies seeks congruence of patterns to help sort out the likelihood of a common history. I would emphasise the search for general patterns and the keeping of an open mind as to the possibilities of interpretation when dealing with a single taxonomic group.

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CALM's Pilbara biological survey – a “Visiting Botanist” viewpoint

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Over the past three years, the Western Australian Department of Conservation and Land Management (CALM; now Department of Environment and Conservation, DEC) has been undertaking a major biological survey of the mineral-rich Pilbara region in the north-west of the state. A significant component of this work is a detailed vegetation survey of the region, led by Stephen van Leeuwen (CALM Karratha) and colleagues Greg Keighery and Neil Gibson (CALM Woodvale). This survey involves repeated sampling of permanent plots distributed across the region, with four trips per year in 2004,

2005 and 2006, covering sites in the east and west Pilbara. A significant feature of these survey trips has been the opportunity for interstate botanists to accompany the survey team, in return for assistance with identifications in their particular groups. Many botanists from nearly all major Australian herbaria have been able to participate, and during April-May 2006, Lyn Craven (CANB), Tony Bean (BRI), Karen Wilson (NSW) and myself were invited to participate in the autumn survey trip for the east Pilbara. Our survey team included Stephen, Greg and Neil, along with Bob Bromilow (CALM Karratha), Margaret Langley



Fig.1. The 2006 survey of east Pilbara. Clockwise from top. a. CALM survey team at work, Warrawagine Station, left to right: Neil Gibson, Greg Keighery, Margaret Langley, Stephen van Leeuwen, Bob Bromilow, Doug Cook. b. *Eucalyptus victrix* on streamline, south-west of Port Hedland. c. Dolerite dyke near Black Range, Marble Bar area. d. Stripping presses at Newman. Lyn Craven in foreground, Steve van Leeuwen behind preparing to stop the teetering pile of CANB presses from falling over;

Photos. Brendan Lepschi



(CALM Woodvale), trainee ranger Doug Cook from CALM Karratha, and ourselves as the “VBs”, or Visiting Botanists.

We were particularly fortunate in that the Pilbara had received an unprecedented amount of rainfall during the wet, resulting in one of the best seasons in the region for a decade. Our route took us from Port Hedland eastwards to the margin of the Great Sandy Desert and the Oakover River, south to Jigalong and Newman, and then north to Port Hedland roughly following the Port Hedland – Newman railway line. In all, we spent just under three weeks in the field, in absolutely perfect

weather conditions. The survey team (including VBs) moved through the region in convoy, but we were able to range more widely during the day while the CALM team was recording data and surveying their permanent plots. We would also meet up for lunch and for setting up camp at days end. I personally was struck with the incredible efficiency and thoroughness of the whole exercise – nearly everything was provided by Steve and the team, leaving us with little more responsibility than eating, sleeping and collecting plants! Food was plentiful, varied and appetising, skillfully prepared by master chef Bob Bromilow, with occasional input from other team members.

This trip was the first one where I didn't lose any weight, a significant achievement for someone with my shrew-like metabolism, and testament to Bob's culinary skills.

Along with our respective 'pet groups' (Lythraceae, Solanaceae, Stylidiaceae (Bean), *Hibiscus*, *Heliotropium*, *Melaleuca* (Craven), Cyperaceae, Zygophyllaceae (Wilson) and *Boerhavia*, Goodeniaceae and Solanaceae (myself)), we were also able to make excellent collections of numerous other groups, both specific research interests for colleagues as well as general collections. The nature of the survey also meant that we were able to traverse and collect in areas that would have eluded us without the extensive local knowledge of Steve and the CALM team.

Vegetation along the first part of the route, along the coastal plain between Karratha and Port Hedland was fairly undifferentiated, with vast swathes of *Triodia* spp., commonly interspersed with *Acacia* (especially *A. inaequilatera*, *A. stellaticeps*, and *A. xiphophylla*) and the occasional *Eucalyptus hamersleyana*. Traveling south-east towards Warrawagine Station and the Oakover River saw some topographical relief and different vegetation, with massive granite outcropping providing some interesting sites for collecting, as did the Telfer pipeline access track, cutting a swathe south-eastwards into the desert country at the eastern edge of the survey area. Sites that had been recently burnt were a common feature throughout the duration of the trip, and as would be expected these areas supported a much more diverse flora than adjacent unburnt sites, which were frequently little more than scattered *Acacia* over the ever-present *Triodia*. After a few days on Warrawagine Station (where the owners had just spent a staggering \$300,000 building new cattle yards), we headed for the Marble Bar area. A brief stop in the famed town allowed for a few tourist moments, such as seeing the jaspilite bar on the Coongan River after which the town is named, and discussion of the weather with the locals. A mild summer for 2005-2006, apparently – only a few 48 degree days, mostly a trifling 40-42 degrees! From here we headed south-west towards Hillside Station, including a few sites around the geologically diverse Ripon Hills, and the famed North Pole stromatolite / microfossil site (c. 3490 – 3460 myo). Vegetation throughout remained essentially scattered *Acacia* or *Eucalyptus* over *Triodia*, with varying amounts of other taxa depending on local geology or topography. One of the most striking features we observed were the dolerite dykes of the Black Range and adjacent ranges near Marble Bar – low ranges with massive dolerite boulders running along their crests and down the sides, largely devoid of soil and vegetation, but acting

as fire-refugia, supporting some tropical fire-sensitive taxa such as *Brachychiton acuminatus* and *Clerodendrum*. These formations occur elsewhere in the Pilbara, but the Black Range in particular is a spectacular example.

After a few days in this area, we turned south for the long drive to Newman, to pick up Karen Wilson who was flying in to join the team for the last week of the trip, and to start work on sites in the southern part of the survey area. The most significant change in this area was the dominance of mulga (*A. aneura* and *A. paraneura* in particular), and deeper, generally less rocky, loamy soils. We spent a day unloading, stripping presses and boxing dried specimens, reloading the vehicles and restocking with supplies before heading off eastwards to Balfour Downs Station and Jigalong. The southern arid zone element was more evident in the flora in these areas, with groups such as Chenopodiaceae, Brassicaceae and Asteraceae frequent components of the vegetation, whereas they were almost absent further north. A somewhat unwelcome addition to the flora in this area was *Bidens bipinnata* – one would wander off into the mulga, only to return covered head to toe in *Bidens* achenes. Overall, weeds were fairly uncommon, apart from buffel grass (*Cenchrus* spp.) which is a very serious invasive plant across the Pilbara. *Aerva javanica*, *Malvastrum* spp., *Stylosanthes* spp. and various cucurbits were among some of the other more common weeds encountered. We also had the dubious pleasure of encountering *Triodia longiceps*, one of the most savage *Triodia* species in the region, which forms immense bluish-green hummocks – lovely to look at, especially when contrasted against the bluish-black gravels in some parts of the area, just don't accidentally fall into it! Thankfully we were spared from any desire to collect *Triodia*, given that most plants had flowered and dropped their seed as a result of earlier good rains. Our CALM colleagues, however, were not so fortunate, and they had to do their best to find fertile material for identification (in every single plot, needless to say!) and many an evening was spent around the campfire removing *Triodia* 'spines' from fingers. From Balfour Downs we headed north-west to Roy Hill Station, the Chichester Ranges and Fortescue Marsh, one of the major wetlands in the Pilbara. Further good collecting ensued, before the long drive back to Karratha to unpack, clean up (our second shower in three weeks!) and tie up loose ends.

In all, the trip proved to be (for me at least), one of the most productive and enjoyable fieldtrips I have ever had the pleasure of being involved in, a feeling I am sure was shared by my fellow VBs. There is no substitute for fieldwork when it comes to solving taxonomic problems, and I know all of us benefited immensely from being

able to see and collect our respective research groups in the field. That we were able to do so under such pleasant and enjoyable conditions was an added bonus. Special thanks to Steve, Greg, Neil, Bob, Margaret, Doug and my fellow VBs for their hard work and good company on a great three weeks in the bush!

A further note on the CALM Pilbara survey

As a VB on another trip (I thought “feral” preferable to any association with my State’s arch enemy) in the latter half of the June 2006 survey of the western Pilbara, which complemented

Brendan’s sortie into the east, I’d like to concur in appreciation of the welcome opportunity provided by Steve van Leeuwen and his cohort of CALM survey botanists. It was a highly efficient, hard-working, and friendly expedition which gave unique opportunities of access in a remarkable season following a record wet. While missing my peplidiums – we decided they must need winter rains, which were conspicuously non-existent this year – the high points for me and my colleagues in Adelaide were apparent new species of *Lawrenzia*, *Nicotiana* and *Eremophila*.

Bill Barker



Fig. Pilbara Survey Trip 2, 2006. Clockwise from below. a, Steve van Leeuwen, Jo Palmer, Neil Gibson, Kate Brown, Bill Muir, Wayne Harris, Peter Wilson, Greg Keighery, Bob Bromilow; b, Wayne, Peter and Jo striking it rich - a lump of pure iron; c, d, Wayne and Neil coping with the toasted marshmallows; e, the regiment in action: Bill, Steve, Kate and Greg re-establishing monitoring site, east of Paraburdoo.

Ph. Bill Barker:



Table. Pilbara Biological Survey. Botanical team, collaborators and Visiting Botanists. (Provided by Steve van Leeuwen)

Personnel	Agency - Affiliation	Trip 1 2004	Trip 2 2004	Trip 1 2005	Trip 1 2006	Trip 2 2006	Trip 2A 2006	Trip 3 2006	Trip 4 2006
<i>Pilbara Survey Team</i>									
Stephen van Leeuwen (leader)	DEC	+	+	+	+	+	+	+	+
Neil Gibson	DEC	+	+	-	+	+	-	+	+
Greg Keighery	DEC	+	+	+	+	+	-	-	-
Sue Patrick	DEC	+	+	+	-	-	-	-	-
Bob Bromilow	DEC	+	-	-	+	+	-	+	+
Margaret Langley	DEC	-	-	+	+	+	-	+	+
Bill Muir	DEC	+	+	-	-	+	-	-	+
<i>Collaborators</i>									
Kate Brown	Volunteer	-	-	-	-	+	-	-	-
Margaret Byrne	DEC	-	-	-	-	-	-	-	+
David Coates	DEC	-	-	-	-	+	-	-	-
Daphne Edinger	Volunteer	-	-	-	-	-	-	+	-
Jodie Fraser	Pilbara Iron	-	-	-	-	-	-	-	+
Regina Flugge	Volunteer	-	-	-	-	-	+	-	-
Gilbert Marsh	Volunteer	-	-	-	-	-	-	+	-
Yvonne Muller	DEC	-	+	-	-	-	-	-	-
Emil Thoma	Pilbara Iron	-	-	-	-	+	-	-	-
<i>Visiting Botanists (VBs)</i>									
David Albrecht	NT	-	+	-	-	-	-	-	-
Bill Barker	AD	-	-	-	-	+	-	-	-
Tony Bean	BRI	-	-	-	+	-	-	-	-
Bob Chinnock	AD	-	+	-	-	+	-	-	-
Lyn Craven	CANB	-	-	-	+	-	-	-	-
Rob Davis	PERTH	-	+	-	-	+	-	-	-
Richard Fairman	PERTH	-	-	-	-	-	-	+	-
David Halford	BRI	-	-	-	-	-	-	-	+
Wayne Harris	BRI	-	+	-	-	+	-	-	-
Brendan Lepschi	CANB	-	-	-	+	-	-	-	-
David Mallinson (Dingo)	CANB	-	-	-	-	-	-	-	+
Bruce Maslin	PERTH	-	-	-	-	-	-	+	-
Frank Obbens	PERTH	-	-	-	-	+	-	-	-
Jo Palmer	CANB	-	-	-	-	-	-	-	-
Leigh Sage	PERTH	-	+	-	-	+	-	-	-
Neville Walsh	MEL	-	-	-	-	-	-	-	+
Carol Wilkins	UWA	-	-	-	-	-	-	-	+
Karen Wilson	NSW	-	-	-	+	-	-	-	-
Peter Wilson	NSW	-	-	-	-	+	-	-	-

The true story of *Sirodotia goebelii*

Tim Entwisle

Botanic Gardens Trust Sydney

Preamble

One of the defining characteristics of science is that scientists are often wrong. As scientists, we are happy to be wrong (at least for the advancement of science). But of course we'd prefer to not make mistakes like publishing the wrong table, incorrectly Latinising our new epithet, or misidentifying a specimen. I've done all these things and suspect my error rate is slightly higher than some of my colleagues.

But we don't mind, do we, when a better hypothesis is put forward, when our foundation is built on with a structure totally unlike what we envisaged when we first published our grand work. As long as the new science is thorough and well founded, we don't even mind if it provides an alternative to our own thesis which we fully intend to vigorously defend...

This paper is correcting a trivial mistake that resulted from an incorrect herbarium label, not being aware of all the available literature, and probably not being parsimonious in analysing the data I had to hand. That puts it in the first category – a 'silly mistake' – rather than a re-evaluation of a conclusion due to new theory, or 'new' information or analyses. Still, it actually changes things a lot by moving a putatively rare taxon from Western Australia to Victoria (where it is far more likely to occur), and correcting the known distribution of a second species to make it much more reasonable. And that's good thing.

Background

A little over a decade ago, I was working in the Royal Botanic Gardens Melbourne with Helen Foad on an ABRs-funded project on the freshwater red algal order Batrachospermales (as

most of you will be aware, I'm still rather fond of this little clade).

One of the five genera represented in Australia is *Sirodotia*. There are half a dozen or so species in this genus, with one (*S. suecica*) found the world over, and in streams along the length of the eastern Australia, stretching as far west as Adelaide. Helen discovered in the mass of herbarium material we had accumulated – in this case a loan from Uppsala – a novel form from Australia that warranted recognition as a species. We named it *S. goebelii* Entwisle & Foard (1997).

The label for this specimen, in UPS, is in the hand of Heinrich Skuja – see Entwisle (1993, 1996) for further information on the role of Skuja in twentieth century Australian phycology. It states simply 'West Australien, Hermitage, 1898, leg. Prof. Goebel', with the label header 'Herb. Reginae Monacense'.

At the time of publishing a revision of this group (Entwisle & Foard 1999), after exhausting the usual gazetteers and directories, we were unable to locate a locality 'Hermitage' in Western Australia. With some kind assistance from Prof. Dr Hannes Hertel, from the Botanische Staatssammlung in München, we narrowed it down to the South-west.

According to Prof. Hertel's research, Professor Karl Immanuel Eberhard von Goebel (1855-1932) arrived in Western Australia on 3 October 1898. He travelled to Perth, Pinjarra, Mandurah, Busselton, Margaret River, Karridale and then back to Perth and Fremantle on 28 October. From there he sailed on to Adelaide, Melbourne and Hobart before crossing to New Zealand. Early in the next year he apparently returned to Sydney, Melbourne and Adelaide before heading on to Sri Lanka around March 1899.

So it seemed reasonable to assume that the collection labelled 'Western Australia' and '1898' was from somewhere in the south-west of Western Australia.

There was a second collection of Batrachospermales, *B. kraftii* Entwisle & Foard, apparently from the same collection event. This species occurs in streams in central Victoria, southern Tasmania and the south of the South Island of New Zealand². Armed with the same information we allocated a (surprising) record of this species to Western Australia as well (Entwisle & Foard 1997).

The new reality

Since publishing the paper in 1997, I have continued to try and locate this intriguing collection site.

²A collection of *B. kraftii* from southern New South Wales reported in Entwisle *et. al* (2004) has now been reidentified as an aberrant form of *B. pseudogelatinosum* (happily making this latter taxon monophyletic again).

Earlier this year (11 April 2006), my friend and colleague Dr Roberta Cowan emailed me with the following exciting news: "There is a small settlement on the Moore River, near to New Norcia, called Hermitage. The Moore River at this site was a favourite stopping place for people like James Drummond - one of his collection sites is 50 m upstream of Hermitage."

This was the most promising lead I'd had and surely the place where Goebel collected. Roberta said she would sample from this site next time she was in the region. I duly passed this information onto MEL, where the type specimen was held, so this useful annotation could be made to the database.

I noted to Alison Vaughan (Royal Botanic Gardens Melbourne) who took on the task of incorporating this information that "this is likely to be the collection locality given its historical prominence and the fact that there was likely to be permanent flowing water (typical of a *Sirodotia* habitat) at this site."

All good and well until Alison emailed me with another twist to the story. Firstly she pointed out that the Moore River locality wasn't part of the Hertel itinerary, but being only 100 km or so north of Perth she agreed this was still feasible. But the bombshell was her discovery that Goebel stayed at, and collected near, 'The Hermitage' in Victoria. Carr & Carr (1981, pp. 170, 174) clearly document this part of his trip, something I had completely overlooked when I tried to track down Goebel's movements in Australia.

Central Victoria is a far more likely locality for *Sirodotia* – there are no records of the genus west of Adelaide other than the putative *S. goebelii* collection. There is further support from the known distribution of *B. kraftii* (see above), which includes streams near to Narbethong, but nowhere near Western Australia!

It would now seem perverse to persist with the Western Australian locality for the Goebel collections of *S. goebelii* and *B. kraftii*, so they will be changed to 'apparently Victoria' from here on. That said, I wouldn't mind if someone took a careful look at Moore River... just in case.

Next?

Obviously I need to do some more collecting around Narbethong to try and find *B. kraftii*. I have collected in that part of Victoria before, but have found only the other species of *Sirodotia*, *S. suecica*. Perhaps *S. goebelii* isn't so distinctive after all, and further collecting will find intermediates between the two species or material that deemphasises some of the diagnostic characters (we only had dried material to work on

when we described it). In any case, a visit to The Heritage is in order.

For now, *Sirodotia goebelii* can remain in the growing pantheon of endemic freshwater red algal species from Australia, but tentatively assigned to the Victorian, rather than the Western Australian, division.

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Floral floats and flower battles – Australian acacia under another name

Robyn Barker

State Herbarium of South Australia

Did you know that the traditional Battle of the Flowers (Bataille de Fleurs) and Mimosa Festivals of the south of France - and other areas of the Mediterranean – are a celebration of an Australian *Acacia* species?

I can remember reading as a child a story set in the south of France containing reference to Mimosa Festivals and the Battle of the Flowers. The image conjured up by this narrative of people pelting yellow flowers at each other has stayed with me, even though I now have no idea what book it was. It has only been in recent years, however, when researching the collections made by the Baudin expedition, that the link between *Mimosa* and Australian *Acacia* species has finally been made for me. Previously I had assumed that the name *Mimosa* must refer to a South American species, since I associated the genus with the sensitive plant *Mimosa pudica* and the Kakadu weed (*Mimosa pigra*) – neither species, of course, has yellow flowers.

Apparently this festival was referred to at the recently held *Acacia* conference in Melbourne and there is now a link on the World Wide Wattle pages (Web ref. 1) to the lecture given by Wolf-Achim Roland of Solingen, Germany. There is also more background information from a study tour conducted by him in 2005, where he investigated the present day growing of Australian acacias in Europe.

The impression is given on these pages that the Mimosa Festival is a recent event. Roland says that the “French holiday areas have been clever to start marketing in 1999 the beauty of the mimosa during the low tourist season, in our winter – when the Mimosa blooms” but in the Tanneron region of France, at least, this festival has been occurring since 1931:

Capitou, an area of Mandelieu-La Napoule, owes its wealth and heritage to mimosa cultivation. As a mark of gratitude to this golden flower, the inhabitants dedicated a great festival to the mimosa in 1931. Since that day, the tradition has been kept alive by Mandelieu residents and the Mimosa Festival takes place every year in February. The event includes many festivities in the town, such as the “corso fleuris” with the “battle” of the mimosa. (Web ref. 2)

During the month of February Mandelieu-La Napoule goes mimosa-crazy, electing its Mimosa Queen to reign over the spectacular parade of flowered floats which form the highlight of the event. For ten days the town celebrates with dancing, singing and theatre. There are a number of processions throughout the week, culminating in a huge parade on the Sunday - a fitting end to dreary winter. (Web ref. 3)

It would appear that the throwing of yellow mimosa flowers is also part of the much older Nice Carnival dating back to the Middle Ages, and occurring at the same time of year. Clearly there has been an evolution here since the mimosa flowers could not have been available for the earlier markings of this festival.

The Mimosa Festival primarily revolves around the Australian species *Acacia dealbata*, although there are others species involved. *Acacia* species are now popular as pot plants as well as for their cut flowers and use in the perfume industry; the collection of Acacias of Mr. Gerard Cavatore in Bormes-les-Mimosas on the Cote d'Azur can be seen on his specialist Mimosa website “Pépinières Cavatore” (Web ref. 4).

Most references attribute the introduction of *Acacia* species to southern France by British botanists in mid to late 1800s (see Vilmerins 1893):

As far as France is concerned, some rich English winter visitors introduced it to the Côte d'Azur in 1850 to decorate the garden of their magnificent residences. From then on, certain species became acclimatized

to the area thanks to the extremely good weather conditions. For example, the “acacia déalbata” started growing naturally in the siliceous soil of Cannes and of the Golf Juan and formed huge groves. This chain has since stretched itself out to the Southern side of the *Chaîne des Maures*, to the *Estérel*, the *Massif du Tanneron* up to Nice and the Italian Riviera and also to the *Pyrénées Orientales* and certain areas of the Atlantic Coast including Brittany. (Web ref. 5)

Acacia dealbata...The bluish-green mimosa bushes bloom in the winter (Nov-Mar) and cover the Tanneron hills, west of Cannes (near [Auribeau](#)) with bright yellow flowers and a strong fragrance. Mimosa was imported from Australia in 1839, and has since taken over the slopes of the Tanneron. It is now cultivated and the cut flowers are sold throughout France and abroad. (Web ref. 6)

And it is not just the French who celebrate this event. In Montenegro, previously part of the old Yugoslavia, it has been celebrated for 40 years:

For four decades, traditional festival of mimosa has been organized in Herceg Novi from the end of December till early March every year. Tourist representatives of this town and a group of journalists founded this festival in honour of the first winter flower – mimosa – the herald of spring. The Mimosa festival starts in carnival atmosphere, and ends with public trial to the carnival at the main City Square. (Web ref. 7)

In Herceg Novi the Festival dates from 1969:

Our city has been celebrating this Festival for 38 years. It was founded in 1969 by the Tourist Association of the Bay of Kotor and the Municipality of Herceg Novi. From 1991, the Mimosa Festival is the member of the Foundation of European Carnival Cities (FECC). The Festival generally takes place from end of January to the beginning of March, however, recently, it has been taking place in February only. The Mimosa Festival is a celebration honoring flowers, most of the all the mimosa flower, which abundantly blossoms during winter in our community while the rest of Europe is covered in snow. (Web ref. 8)

In Italy it is celebrated in Pieve Ligure, on the Ligurian coast to the east of Genoa:

This traditional celebration occurs every year on the first Sunday in February. For one day, Pieve Ligure becomes the capital city of this romantic, perfumed clustering flower, with its brilliant yellow hues which are an unmistakable sign of spring. This is why Spring starts in February in Pieve! The thousands who attend can be assured of a wonderful day, full of the perfume and colour of a flower which has become the Ligurian symbol for Spring. This characteristic town, split between the coast and the hillside, reserves a special welcome for those who journey there to receive the gift of mimosa flowers, to enjoy the music and events, and to sample the delicious sweet dishes and “focaccette”. (Web ref. 9)

And in Switzerland they sell mimosa to raise money for Red Cross each year. From this web page from Vevey:

Mimosa is sold for the Red Cross every year because during the Second World War when France was in danger, the children of Southern France were sent to Switzerland for protection. They were accommodated by Swiss families and given food and shelter. To say thank-you, France gave yellow flowers called Mimosa to all who accommodated the French children.

Today, we sell Mimosa to collect money for the Red Cross. The Red Cross then gives the money to all the children in need in the Canton of Vaud. This year, through the sale of Mimosa, we collected 692 Sfr for the Red Cross. (Web ref. 10)

For eye-witness accounts of the activities surrounding the mimosa in the French Riviera region see the L'Atelier Vert - Everything French Gardening page (Web ref. 11) or an article on the magic of mimosa in *Business Line* (Web ref. 12)

My own feeling is that the introduction of *Acacia* to this region is possibly earlier than cited above. Vilmerin's mid to late 1800s time of introduction is perhaps when the species flourished and became prominent. Australian species of *Acacia* (called “Mimosae from Botany Bay”) were already a major part of the naturalised flora of St Helena Island in the Atlantic by 1805 (Anon. 1805). Empress Josephine was growing a number of *Acacia* species at Malmaison at least by 1810 (Jill, Duchess of Hamilton 1999) and the French are known to have encouraged the spread of Australian plants throughout France and its colonies. Many species were introduced to the Toulon Botanic Gardens, to the south of the French Riviera region at this time (Bonpland 1814).

Acacia dealbata was named by Link in 1822 from cultivated material in Berlin, Lindley had given it a varietal name based on cultivated material in England in 1819 and Dehnhardt, gardener to the Count of Camalduli and his garden in the hills above Naples, Italy, had also given it a name in 1832 (Kodala & Tindale 2001). Dehnhart, author of *Eucalyptus camaldulensis*, gave his source of seed for the *Eucalyptus* species as France, and so it seems likely that this would also have been the case for the *Acacia* (Zacharin 1978). Thus it seems likely that the species was already present in the south of France by the 1820s.

As with most introductions, this is another case where it is difficult to establish just when the plant concerned became naturalised. However unlike most other plants becoming naturalised, here is a case where a weed, originating from Australia, is widely celebrated in its new home, albeit under a name not usually associated with it in Australia.

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News

Kevin Thiele, new head of the Western Australian Herbarium

PERTH is pleased to announce the appointment of Kevin Thiele as head of the Western Australian Herbarium. Kevin starts his position on 4th October and his responsibilities will include the management of the collections and information systems. His contact e-mail will be Kevin.Thiele@dec.wa.gov.au.

Ryonen Butcher

New PERTH taxonomy project: the Biodiversity Conservation Initiative

With the current resources boom in Western Australia, there has been an increase in mining exploration and a concomitant increase in botanical survey work, resulting in the discovery of many putatively new plant species. The Western Australian Department of Environment and Conservation (DEC, formerly CALM) has recently implemented the Biodiversity Conservation Initiative (BCI), with one of the projects titled "Resolution and description of new plant species in the Yilgarn ironstone and Ravensthorpe Range areas subject to mining interest."

This BCI project has been established to assess the distinctness, taxonomic ranking and conservation status of key putatively new taxa from these geographic areas, and to formally describe these. The BCI will also focus on expediting the resolution and description of current manuscript or phrase-named Priority and Declared Rare Flora across Western Australia. To these ends, Juliet Wege, Kelly Shepherd and Ryonen Butcher have

been contractually employed as BCI botanists at PERTH to work directly on this project, including collaboration with other taxonomists, and Terry Macfarlane has a coordination role.

If you have any queries about this project, please feel free to contact us:

- Juliet.Wege@dec.wa.gov.au
- Kelly.Shepherd@dec.wa.gov.au
- Ryonen.Butcher@dec.wa.gov.au
- Terry.Macfarlane@dec.wa.gov.au

Ryonen Butcher

Perth news

A number of events have peppered the last few months here in Perth. As reported in the last Newsletter, we were saddened by the death of Dr Jenny Chappill in early August. Jenny contributed, either directly or indirectly, to the education of a large number of botanists who have graduated in the past 15 years, and has supervised most of the recent higher degrees graduates in WA who have worked in plant systematics. Her contribution to the WA botanical community was substantial, and the hole that has been left will take some time to fill. Jenny's commitment to her teaching was formidable, and she fought long and hard for the maintenance of systematics – as opposed to plant identification – as a component of the Botany (now plant science) course at the University of WA. In true style, she was working on her papers on *Jacksonia* till the very last.

There have been other comings and goings over the last few months. Sue Patrick has retired from the Department of Conservation and Land Management, which itself has been recently 'retired' and combined with the WA Department of the Environment into a new entity, The Department of Environment and Conservation.

The herbarium in Perth has a new head, in the person of Kevin Thiele. Kevin was previously at the Centre for Biological Information Technology at the University of Queensland. At the time of writing, Kevin and entourage have been in town for about two months, but he has been incumbent at PERTH for only two days. We can look forward to more on Kevin in the next issue, after the dust has settled a little...

We have welcomed Juliet Wege back gladly, after her year-and-a-bit as ABLO in the UK. She has taken up a position alongside (or is that 'in cahoots with?') Kelly Shepherd and Ryonen Butcher as botanist for the DEC's Biodiversity Conservation Initiative. The main objective of the employment of the three botanists is to expedite the publication of valid names for as many undescribed priority and declared rare taxa as possible, within the two-year funding life of the programme. I suspect they'll be rather busy in the lead up to the special edition of *Nuytsia* dedicated to this end and planned for publication in late 2007. The project has begun with an open letter inviting experts on particular taxonomic groups to be involved, and will involve a large component of collaboration with such experts.

One of Steve Hopper's last ASBS engagements was to present the Society's Nancy Burbidge medal to Alex George. This was done with acclaim in the Reference herbarium at PERTH, in front of an audience that attested to Alex's long and productive career in plant taxonomy, and which stretched the capabilities of the venue (I'm sure the walls were bulging). Steve's departure for Kew is imminent, and we wish him and his family the very best for the move and transition to his new position.

The Perth chapter has been revived, and we are planning some events over the next few months. If you have any ideas for particular happenings, I'd be glad to hear from you

Kristina Lemson

Bob Harwood leaving Darwin

Technical Officer Bob Harwood has left the Darwin Herbarium to live in Thailand. Rumours that life was too expensive owing to his increased cost of living following the Cairns cyclones – his staple diet (as we've experienced) is bananas – are false. Bob last year published his revision of *Spermacoce*.

Bill and Robyn Barker

CHAH and HISCOM meet in Hobart

The Council of Heads of Australasian Herbaria and its IT advisory committee HISCOM met in Hobart during the week of 9–14 October. The meeting marked something of a watershed for CHAH, with new heads for Darwin (Dale Dixon),

Melbourne (David Cantrill) and Perth (Kevin Thiele), the Universities represented by Sydney University's Murray Henwood, and ABRIS's new Director Cameron Slatyer and Adelaide's new Head of Science, Andy Lowe, taking part (Fig. 1).

Ancient DNA laboratory and climate change initiatives in South Australia

On 24th August the Premier of South Australia Mike Rann and Minister for Environment & Heritage Gail Gago opened the new Ancient DNA laboratory, the latest science addition to the old Tram Barn that has housed the State Herbarium of South Australia since 1999. The Ancient DNA Laboratory is a research initiative of the University of Adelaide, the state's Department for Environment & Heritage (DEH), and the Board of the Botanic Gardens & State Herbarium. It is:

...aimed at studying evolution and environmental change through time using preserved genetic records in human, animal, plant and sedimentary material. Key interests include molecular studies of population genetics, phylogenetics and phylogeography, the behaviour and use of molecular clocks, and general studies of temporally distributed DNA sequences.

On-going international projects include the extinctions of megafauna, impacts of climate change, human evolution, speciation processes, and the evolutionary relationships of extinct species such as moa, Ice Age brown bears, bison and horses, cave lions, Neandertals and Flores Homonoids.

A major initiative is the study of human evolution, and we are the sole research centre providing ancient DNA data for the 'Genographic Project' funded by the National Geographic Society and Waitt Family Foundation, which aims to characterise large numbers of mitochondrial and nuclear markers from human populations around the world.

www.ees.adelaide.edu.au/research/acad/

A new research initiative within the State Herbarium, funded by DEH, will use herbarium specimens to develop DNA barcodes for key plant groups to assess vegetation community change in response to past global climate change.

A get well from all of us

Judy West, Head of the Australian National Herbarium and Director of the Centre for Plant Biodiversity Research has spent much of October in hospital with an illness that after considerable investigation has been diagnosed as bacterial endocarditis (Web ref. 1). Judy is being treated with large doses of antibiotics to control the infection. The infection is responding but surgery to repair the valve is very likely. We wish her all the best for a speedy recovery.

Web ref. 1. www.nlm.nih.gov/medlineplus/ency/article/001098.htm



Fig. 1. CHAH in Hobart at the Tasmanian Museum & Art Gallery. Back row. Jim Croft CANB, David Cantrill MEL, Brett Summerell NSW (Chairman), Pat Brownsey WELT, Murray Henwood SYD, Kevin Thiele PERTH, Cameron Slatyer ABRs, Andy Lowe AD, Dale Dixon DNA. Front Row. Bill Barker AD, Ilse Breitweiser CHR, Sheryl Saban NSW (Minutes), Peter Bostock BRI, Gintaras Kantvilas HO (host). Ph. Bill Barker

At the ceremony, the Premier also announced the State Government's contribution of \$250,000 to a Chair of Climate Change at the University of Adelaide. The DNA laboratory and the historical herbarium collections and associated data will have a significant role in this new initiative.

Bill Barker and Andy Lowe

FloraBase phylogeny

A demonstration of the potential for interactive phylogeny browsers has recently been published on *FloraBase – the Flora of Western Australia*.

The Phylogeny Browser provides the user with a view of the higher-level relationship of all plant orders and families, and indicating those occurring in Western Australia. It uses interactive cladograms which integrate with plant family content elsewhere in *FloraBase*, and with other web resources. Once loaded, they also link to further cladograms for the lower plants, which indicate the relative placement of the bryophytes, algae, fungi and lichens in the 'tree of life'.

First demonstrated at an NSF-funded workshop in Gainesville Florida in 2004, the browser differs from many visual tools presenting higher-level phylogenetic concepts in linking deeply into maintained database content, allowing the user to browse through the APGII tree and drill right down to current species and even specimen-level information for a botanically significant region comprising some 3% of the world's angiosperm flora.

Such a tool is useful for a number of user groups, not least the local tertiary education sector,

allowing the WA flora to be readily perceived in context with related families from around the globe, with external links out to the Tree of Life, Angiosperm Phylogeny Web and Families of Flowering Plants sites. It also goes some way to integrating herbarium collections management (often maintained in an aging classificatory sequence) with recent phylogenetic hypotheses.

Note that the data driving the Browser is derived exclusively from the APGII publication (APGII 2003) and does not cater for subsequent phylogenetic hypotheses published elsewhere. This is intentional, providing a stable reference point until further collaborative statements on the angiosperms are generated. Inevitably, changes to the structure, filenames or content on the external sites linked to by the Browser may cause certain links to fail, or return unexpected data.

Web site. <http://florabase.calm.wa.gov.au/phylogeny/>
Alex Chapman,
WA Herbarium

First appointment to ATH, the Australian Tropical Herbarium in Cairns

The new curator of the Australian Tropical Herbarium in Cairns is Frank Zich. Frank will be well known to those frequenting Australian National Herbarium and the Australian National Botanic Gardens in recent years. A tropical Darwin boy, Frank should acclimatize to Cairns and far north Queensland without difficulty.

The Australian Tropical Herbarium is a newly formed joint venture between CSIRO Plant

Industry, the Australian Government Department of Environment and Heritage, James Cook University and Queensland's Environmental Protection Agency. It will be located in the newly constructed research facilities of Australian Tropical Forest Institute on the James Cook University campus, Cairns.

The herbarium collection will be formed from an amalgamation of specimens from the regional and institutional herbaria at Mareeba (MBA), Atherton (QRS) and James Cook University and

staff from both these institutions will be moving to Cairns to the new facilities.

Frank will be moving to Atherton in time for the November ASBS meeting in Cairns and will be commencing planning for the move of specimens and equipment to the Cairns campus for sometime around April 2007. There will obviously be disruptions and restricted access to specimens during this move, but we will try to keep these to a minimum.

Jim Croft
Australian National Herbarium

Miscellanea – 1

The call for more systematists from outside bodies

An article in *The Australian* in the Higher Education supplement on 9th August 2006 by Julian Cribb, under the title *And then we shall be none the wiser* (subtitled *Some knowledge can't be imported from China or India*) made a strong call for systematists (Web ref. 1).

There is for example, a real crisis in the availability of taxonomists. Those trained in the 1960s are now retiring, and almost none have been trained in the past 20 years because governments decided we didn't need any more information about what lived in Australia. In a continent which is, biologically speaking, still 90 per cent unexplored, this was a notably myopic lapse.

A taxonomist may seem unimportant as an individual, but the knowledge they give us will still be in use 1000 years hence, which is more than can be said of much contemporary "knowledge".

And then the Weeds CRC got into the act with a news release on 12th September under the title *Spiderman shortage causes biosecurity risk* (Web ref. 2).

A critical shortage of scientific skills in the identification of insects and plants could confront Australia with serious biosecurity risks – and potential loss of export markets.

Dr McFadyen said that the acute shortage of skilled taxonomists, entomologists and botanists was due to a failure by successive Federal and State Governments to recruit and train more over several decades – despite repeated warnings.

"Worldwide, only governments employ these specialists – and Australia has been taking a very short term view by cutting back on them. In the 1980s there were two or three times as many working here as we have today."

References

Web ref. 1: www.theaustralian.news.com.au/story/0,20867,20061413-12332,00.html

Web ref. 2: www.weeds.crc.org.au/documents/mr_spiderman_120906.pdf

The first issue of *Kanunnah*

Although it has been out for a while now, it took a while to reach our library shelves and so we overlooked welcoming the first issue of *Kanunnah* to the fold of Australian house journals. The first

issue contains three articles of particular interest to botanists – one on the distribution and spread of bumblebees in Tasmania since their introduction in 1992 and just what plants they are feeding on; this article stems from the feedback obtained from a public survey where information was provided to researchers through the web. A second article is a review of the literature on the early weeds of Tasmania and the third a background to the Reverend William Webb Spicer and his activities in Tasmania from 1874–78.

Web site: www.tmag.tas.gov.au/AboutUs/journal.html

Science media

The Australian Science Media Centre has some interesting comments by leading Australian scientists on current science matters on their developing web page. See for instance scientists reactions to the Al Gore film on climate change, comments on "Lucy's baby", the fossil discovery in Ethiopia, and Rob Morrison's article on excessive hype and claims of breakthroughs by scientists leading to decreased coverage in the media.

Web site: www.aussmc.org/scientists.php <<http://www.aussmc.org/scientists.php>>

Acacia – the debate continues

Smith, G.F., van Wyk, A.E., Luckow, M. & Schrire, B. (2006). Conserving Acacia Mill. With a conserved type. What happened in Vienna? *Taxon* 55: 223-5.

Rijkevorsel P. van (2006). Acacia – what did happen in Vienna? *Anales del Jardín Botánico de Madrid* 63: 107-110.

Free access to Royal Society journals for 2 months from September 15th

The Royal Society is offering free on-line access to their journals for the next two months (Web refs. 1–3).

The *Philosophical Transactions of the Royal Society of London* go back as far as 1665. To give some examples of the sort of papers which

can be found: in the 1776 volume (volume 66) can be seen the complete article by Mr. Francis Masson, One of His Majesty's Gardeners, entitled *An Account of Three Journeys from the Cape Town into the Southern Parts of Africa; Undertaken for the Discovery of New Plants, towards the Improvement of the Royal Botanical Gardens at Kew* as well as James Cook's *The Method Taken for Preserving the Health of the Crew of His Majesty's Ship the Resolution during Her Late Voyage Round the World*. In the 1802 issue can be seen the classic Everard Home paper on the platypus, *A Description of the Anatomy of the Ornithorhynchus paradoxus*, to be followed some pages later by his paper on the echidna, *Description of the Anatomy of the Ornithorhynchus Hystrix*. In the 1805 issue can be seen Matthew Flinders' article *Concerning the Differences in the Magnetic Needle, on Board the Investigator, Arising from an Alteration in the Direction of the Ship's Head*.

Browsing the pages is of interest and brings home the fact that most of the botanical articles of the early 1800's were published in the Linnean Society Journal rather than within the Royal Society pages, where one is more likely to find zoological, climate and geological papers.

References

Web ref. 1: www.royalsoc.co.uk/news.asp?id=5165 (announcement)

Web ref. 2: www.pubs.royalsoc.ac.uk/index.cfm?page=1373 (archive)

Web ref. 3: [www.journals.royalsoc.ac.uk/\(hjczmvaecogbtz55hbrep45\)/app/home/main.asp?referrer=default](http://www.journals.royalsoc.ac.uk/(hjczmvaecogbtz55hbrep45)/app/home/main.asp?referrer=default) (the site)

Germinating 200 year old seeds successfully

Making news for the Millenium Seed Bank, Kew, recently has been the successful germination of 200 year old seeds found in the National Archives (Web refs. 1-3). Thirty-two seed packets were found in the notebook of Jan Teerlink, a Dutch merchant who is believed to have collected the seeds during a trip to the Cape of Good Hope in 1803. Seeds from three of the packets have been germinated.

First to germinate was a legume, *Liparia villosa* (15 out of 26 seeds germinated). The second was labelled as *Protea conocarpa* on the original packet, but it is thought to be a species of *Leucospermum* (Proteaceae) (only one out of eight seeds germinated). The third species is thought to be an *Acacia*; here there were just two seeds. One germinated and is now half a metre tall. The second failed, and microscopic examination revealed old insect damage.

The seeds were carbon dated to verify their age and DNA is being extracted from the seeds to complete the study.

References

Web ref. 1: www.kew.org/press/archive_seeds.html (press release)

Taxonomic Research for Australia's Environmental Future PhD Scholarships

CSIRO is spearheading a consortium of research agencies developing a major new initiative in the taxonomy of Australian plants and animals, beginning in January 2007. Collaborating institutions include The Centre for Plant Biodiversity Research, The Australian Biological Resources Study, The Australian National University, James Cook University, La Trobe University (Albury campus), the South Australian Museum, the University of Adelaide, and the Centre for Biological Information Technology.

The initiative will offer training in modern systematic methods and will develop new tools and techniques with a focus on the taxonomy of poorly understood groups. The initial focus will be on ants, aquatic insects, environmental weeds and small terrestrial vertebrates. Significant resources will be devoted to new informatics solutions that increase the rate and range of taxonomic knowledge production.

PhD students training through this scheme will be eligible for operating funds and APA topup grants to assist their research. They also will benefit from the broader inter-institutional research agenda of this initiative.

Prospective students who will be applying for APA scholarships in 2006 for PhD studies starting in 2007 should make contact with one of the researchers below for more information.

Contacts

Dr John Trueman, ANU john.trueman@anu.edu.au ph 02 6125 3059
Dr David Yeates, CSIRO Entomology david.yeates@csiro.au 02 62464282
Dr Judy West, CSIRO Plant Industry judy.west@csiro.au 02 62465113

Web ref. 2: <http://news.bbc.co.uk/2/hi/science/nature/5361396.stm> (pictures)

Web ref. 3: www.24hourmuseum.org.uk/nwh_gfx_en/ART40450.html (pictures)

New date terminology

Puzzled by the use of *CE* with respect to a date in a paper being reviewed, I “googled” it and came up with the following.

CE stands for *Common Era*. It is a relatively new term that is experiencing increased usage and is expected to eventually replace *AD*. The latter is an abbreviation for *Anno Domini* in Latin or *the year of the Lord* in English. The latter refers to

the approximate birth year of Yeshua of Nazareth (Jesus Christ). *CE* and *AD* have the same and value: 2004 *CE* is the same as 2004 *AD*.

BCE stands for *Before the common era*. It is expected to eventually replace *BC*, which means *Before Christ*. *BC* and *BCE* are also identical in value. Most theologians and religious historians believe that the approximate birth date of Yeshua of Nazareth (Jesus) was in the fall, sometime between 7 and 4 *BCE*, although we have seen estimates as late as 4 *CE* and as early as the second century *BCE*.

Web site: www.religioustolerance.org/ce.htm

ABRS report

New Director for ABRS

Cameron Slatyer has been appointed as director of ABRS. He replaces Mary Colreavy who left ABRS in April to take up the position of acting Assistant Secretary with the Programmes Division of the Australian Government Natural Resource Management team. Cameron comes to us from the Natural Heritage section of the Commonwealth Department of the Environment and Heritage where he has worked for 10 years. He has extensive experience with the Australian Natural Heritage Assessment Tool for evaluating areas for heritage value and listing. Previously he worked for the then State Forests of New South Wales. He has a particular interest in centres of endemism in Australia particularly relating to frogs, landsnails and reptiles. He brings to ABRS a wealth of experience in networking and bringing together species information, its online delivery, mapping and analysis, and use with environmental assessment. A big thanks to Helen Thompson for an extended period of acting in the position since Mary Colreavy left.

Advisory Committee meeting

The ABRS Advisory Committee met on the 30th August with some members also meeting on the 29th to review forms and procedures. Dr Ian Gould, Mr Guy Fitzhardinge, Dr Jane Gilmore, Dr John Pit and Dr Winston Ponder finish their committee membership terms in December. We would like to thank the outgoing Chair and committee members for their outstanding contributions over many years on the grants programme.

Grants and bursaries

Nominations for the ABLO have closed and are currently being assessed. Successful and unsuccessful grantees for the 2006/07 round of grants funding through the ABRS Participatory Programme have been notified by letter. A list of

successful grantees is given on the ABRS website and will be in the next edition of *Biologue* out in October. *Biologue* includes a number of articles from current ABRS grantees.

Staff news

Anna Monro has returned part time to ABRS assisting with editing the next volume of the grasses (*Flora of Australia* volume 44A).

Publications

The ABRS Publications 2006–2007 catalogue is now available at: <http://www.deh.gov.au/biodiversity/abrs/publications/order/pubs/abrs-catalogue.pdf> and a copy will be included with *Biologue*. If you are not currently receiving *Biologue*, but wish to receive a copy please email us with your contact details at abrs@deh.gov.au. The recent publication *Castiarina Australia's richest jewel beetle* has won a gold medal in the category ‘Casebound book’ at the 2006 Printing Industries Craftsmanship Awards (PICA): WA region,

ABRS has recently published the following titles:

- *Flora of Australia Mosses I*
- *Habitat Profiles of Selected Aquatic Invertebrates* (electronic book)
- *On the Fly, The Interactive Key to Australian Fly Families* (CD Rom)

Other publications expected to be published in 2006/07 include:

- *Flora of Australia*
 - Volume 2 - Magnoliales to Papaverales
 - Volume 39 - 16 monocot families
 - Volume 44A - 2nd taxonomic volume on grasses
- *Algae of Australia*
 - Batrachospermales, Oedogoniales and Zygnematales
 - Nemaliales (at the printers)
 - The Green and Brown Macroalgae of Lord

- Howe Island and the Southern Great Barrier Reef
- *Fungi of Australia*
 - Septoria (at the printers)
 - either Ustilaginomycetes or cercosporoid fungi
- ABRIS Identification Series

- FunKey (Macrofungi of Australia): Key to Agarics (Lucid CD ROM)
- Other Publications
 - *Undersea Jewels, A Colour Guide to Nudibranchs of Southern Queensland* (at the printers)

Cameron Slatyer
Director

ABLO report

My final quarter was exceptionally busy as I finalised enquiries, wrapped up research, and prepared to leave London. The past year has been a truly unforgettable experience, with the benefits of spending a year at Kew far outweighing the financial impediment of living in London!

I received 203 requests during my term, the origin and nature of which are summarized in the graphs below. The most requests from Australia were received from researchers based in Queensland and Western Australia. A significant number of enquiries also originated from the UK, mostly from staff at RBG Kew who continue to appreciate the expertise offered by successive Liaison Officers. As expected, a large proportion of requests (c. 30%) were for images of type specimens. In addition to database entry and specimen scanning, these requests often involved providing information on specific diagnostic features (these more advanced requests were categorized as taxonomic enquiries). Other taxonomic enquiries included identification of specimens or photographs, and nomenclatural questions. The information category included requests for information on Australian plant collectors and/or their collections, as well as general information on the Australian or New Zealand flora. Specimen images acquired by recent ABLOs are now available online via Kew's Herbarium Catalogue (www.kew.org/herbcat/).

Visits and visitors

This quarter I returned to Cambridge (CGE) to attend to a significant number of enquiries. I also visited Trinity College Dublin (TCD) to examine their *Styloidium* holdings and to give a talk on the genus. I was disappointed to cancel a trip to Prague (PR) due to the disruptions at Heathrow in the wake of the alleged terrorist plots.

At the end of July I accompanied Keiran McNamara (Director General of Western Australia's newly formed Department of Environment and Conservation), Mark McGowan

MLA (Western Australia's Minister for the Environment) and his Chief of Staff Darren Foster, on a visit to Wakehurst Place and the Millennium Seed Bank. We were given a terrific overview of the facilities by Tim Pearce, Robin Probert and David Warren.

Steve Hopper and his wife Chris spent a week at Kew in July in preparation for an October start. Zoe Smith (ex University of Melbourne) has been at Kew on a three month Lennox Boyd Memorial Trust Fellowship. She has been working in the herbarium with David Roberts on a project modelling species extinctions. Additional Australian visitors to Kew have been Tom North (Australian MSBP coordinator, KPBG); Ellen Hickman (Botanical Artist, Haemodoraceae); Russell Barrett (KPBG, Cyperaceae); Bryan Simon (BRI, Poaceae); Claire Marks (University of Melbourne, Solanaceae); and David Warren (Greening Australia, NSW).

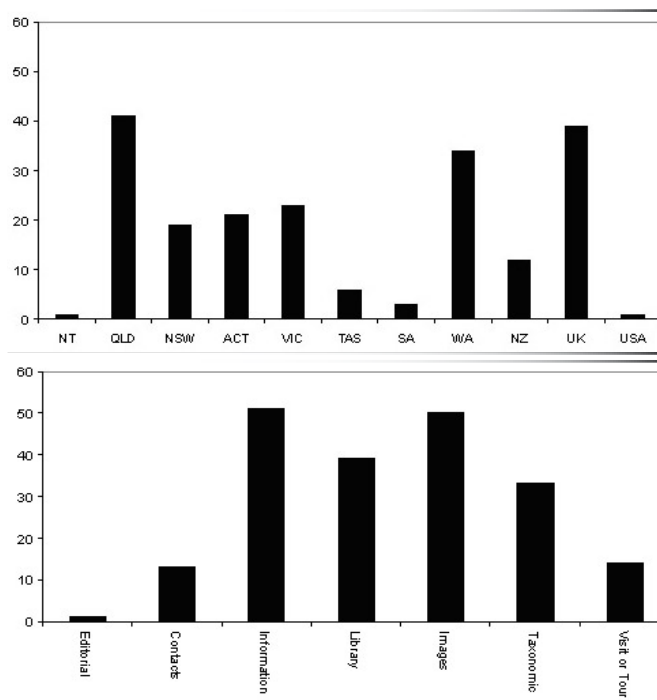


Fig. 1. 2005-06 ABLO enquiries. Top, according to request origin. Bottom, according to request type.

Visitors and staff now enter the herbarium using the old entrance at the front of Hunter House – a change necessitated by the construction of the new herbarium wing.

2006–07 ABLO

Melburnian Jenny Tonkin is the first mycologist to fulfil the role of ABLO. She will undoubtedly split her time between the main herbarium at Kew

and the new Mycology facilities in the Jodrell Laboratory. We had an enjoyable overlap period during the last week of August, which included many of the taxonomic and culinary highlights to be found in west London. I have no doubt that Jenny will enjoy a similarly amazing and productive year at Kew.

Juliet Wege

Book reviews

Flora of Australia launching into mosses

Review by Alison Downing

Department of Biological Sciences, Macquarie University

McCarthy, P.M. (Editor) 2006. *Flora of Australia Volume 51, Mosses 1*. 450 pp. ABR/CSIRO, Melbourne. Hardback (ISBN: 0643092404) AU \$120.00; Paperback (ISBN: 0643092412) AU \$99.00 Contact www.publish.csiro.au.

Australian bryologists will be overjoyed, and also relieved, to hear that the *Flora of Australia, Volume 51, Mosses 1* has finally been published. It has been a long time coming. In August, 1981, at the time of the XIII International Botanical Congress in Sydney, I remember the excitement, almost exhilaration, that accompanied the discussions that took place concerning the proposed bryophyte volumes of the *Flora of Australia*. At the time, with trepidation, I had just embarked on what has become a life-long fascination with bryophytes. I listened in awe as eminent Australian bryologists, Ilma Stone, George Scott, Rod Seppelt, David Catcheside, Helen Hewson, Helen Ramsay and Patricia Selkirk, discussed the format for this exciting new challenge. Also present was Graham Bell who had just completed his honours thesis on arid zone bryophytes. However, in spite of the enthusiasm, ten years later, at the Australasian Bryological Workshop in Canberra in 1991, the impetus appeared to have stalled, and publication appeared to be no closer. Now, in 2006, twenty five years after the first discussions, I congratulate Pat McCarthy and his team in Canberra, and Helen Ramsay who has been a major contributor, for this very comprehensive publication.

The *Flora of Australia, Volume 51, Mosses 1* includes introductory chapters that document the History of Research on Australian Mosses, an Introduction to the Mosses (classification, life history, reproductive biology, ecology, biogeography and evolution) and the Fossil Record. A key to the Genera of Australian Mosses is followed by keys to, and descriptions of, 22 families, 42 genera and 238 species. Maps provide distribution data for each species, and illustrations

include 64 colour photographs and numerous line drawings of habit and anatomy.

The task of summarising the history of bryophyte research in Australia into seven pages is almost impossible but Helen Ramsay has gathered together the most important elements, from the earliest collections of J.-J.H. de Labillardière in 1791 from the south-west of Western Australia through to the studies being undertaken in Australia today. Ramsay has divided bryological studies into two periods of activity: from the early 1800s to 1950, and from 1950 to the present time. The references alone provide a valuable starting point for historical investigations. Understandably, it is an almost impossible task to include everyone. There appears to have been some confusion concerning the entry for Sharon Morley from Deakin University who is, in fact, a lichenologist not a bryologist. The intention may have been to include Sharon Robinson from University of Wollongong, who, with her team of post-graduate students, is studying the eco-physiology of Antarctic bryophytes. Also the revisions of *Touwia* and *Bryostreimannia* should be attributed to Ochyra rather than Ochi. The omission of the very substantial contribution made by Helen Hewson to Australian bryology, is most unfortunate.

I believe that Helen Ramsay wrote the first draft of this chapter thirteen years ago. She is to be congratulated for her persistence, as the long delay in publication has necessitated regular rewriting of the section on bryophyte classification, where change has been so rapid in recent years. It is particularly interesting that in 2006, in order to resolve phylogenetic relationships, there is a revival in the use of morphological and anatomical characters, now used in conjunction with data from molecular sequencing. The section is supplemented by a classification of Australian mosses that appears on the endpapers, based on B. Goffinet & W.R. Buck (2004). The introduction

also includes comprehensive coverage of moss life history, morphology and terminology, reproductive biology, ecology, biogeography and evolution. It has been quite a task to condense so much information into so very few pages.

Gregory Jordan has contributed a succinct but most interesting chapter on the evolution of bryophytes, including discussion of the origin of bryophytes, fossil record of liverworts, hornworts and mosses and fossil records from Australia. I was surprised to learn that there have been so few fossil records of bryophytes from Australia, with the most prolific fossil bryophyte flora coming from the Aptian (Early Cretaceous) Koonwarra Fish Beds from South Gippsland in Victoria. One wonders if bryophyte fossils, in fossil beds that include large and spectacular plants, such as ferns, conifers, relatives of modern day *Ginkgo* and flowering plants, are frequently overlooked as their extant descendants are today?

In Australia, the texts which have widely been used to identify mosses, such as Scott & Stone's (1976) *The Mosses of Southern Australia*,

Catcheside's (1980) *Mosses of South Australia* and Beaver, Allison & Child's (1992) *The Mosses of New Zealand*, have really only been useful for mosses of south-eastern Australia. The key to the genera of Australian mosses in this volume is based on Buck, Vitt & Malcolm's (2002) *Key to the Genera of Australian Mosses* and covers the whole of Australia thus simplifying identification of northern and tropical taxa, at least to generic level. However, it lacks the brief but comprehensive descriptions of each genus, state distributions and illustrations, of the original (2002) publication. I expect that many will find it more convenient to continue to use the original key to determine genus.

As an end-user of the *Flora*, I am delighted to be able to lessen my reliance on older texts and the numerous folders of published taxonomic papers that currently line our laboratory shelves. Although it will always be necessary to use the latest taxonomic reviews, there is an element of

satisfaction in having many families conveniently packaged in few volumes. The descriptions and discussions more or less follow a standard format, thus even with contributions from fourteen different authors, some Australian, some from overseas, it is very easy to use.

It is not within the scope of this review to comment on each family treatment; however there are some

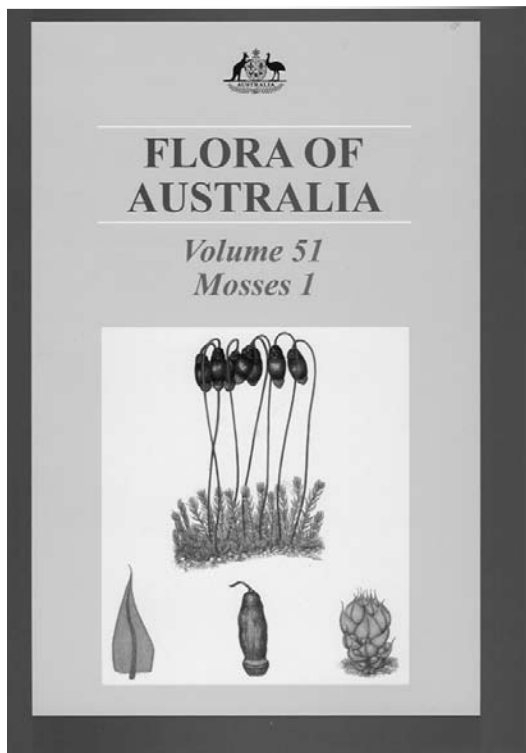
that are dear to my heart. The Bryaceae is possibly the most taxonomically challenging family of mosses. I doubt that there is another family with so many taxa intentionally overlooked by so many collectors. This contribution from John Spence and Helen Ramsay will be greatly appreciated.

Vegetative material of Polytrichaceae has always posed a challenge, so I was delighted to find that Jaakko Hyvönen's key to the species of all the genera of Polytrichaceae and uses vegetative characteristics exclusively. If you are fortunate to have collected material with sporophytes, then there is always the option to return to the *Key to the Genera*.

The taxonomy of *Bartramia* (Bartramiaceae) has been another area of confusion and the treatment by Graham Bell appears to have reduced much of the uncertainty surrounding the genus. Scott Gilmore's work on other genera within the Bartramiaceae, in particular *Breutelia* and *Philonotis*, is also most welcome.

Hypopterygium, a 'dendroid', or tree-like moss, is a spectacularly beautiful moss. Until recently, most collections have been 'dumped' into one single taxa, *H. rotulatum*. Now, thanks to Hans Kruijer, our Australian collections of *H. rotulatum* can at last be more appropriately allocated to their correct taxa.

Sphagnum is another genus that has perplexed Australian bryologists for many years. Rod Seppelt's unambiguous key to the species, his straightforward descriptions and elegant drawings, will have collectors reaching for dusty packets that have been sitting in boxes for aeons,



knowing that now it is possible to confer specific names on their contents.

The *Flora* includes 64 colour photographs in two blocks. Bryophytes are challenging subjects for photographers at any time and Bill Malcolm, Ron Oldfield and Heino Lepp are to be congratulated for not only reproducing accurate, readily identifiable and useful images, but also photographs that are extraordinarily beautiful. Each photographer has his own very distinctive style and this adds another dimension to the colour plates. I have just a few queries. In Plate 36, labelled *Gemmabryum exile*, the sub-floral innovations are more typical of *Philonotis* (Bartramiaceae). Plate 46, labelled *Leptostomum macrocarpon*, a species characterised by leaves with ciliate-branched hair points, is probably *L. erectum* and Plate 44, *Rosulabryum billarderi*, is probably *Gemmabryum pachythemum*, a species that often has an abundance of gemmae in the upper leaf axils.

This volume includes many exquisite and accurate line drawings, although not every taxon is illustrated. In fact, there are no illustrations at all for some families, such as Archidiaceae and Ephemeraceae, or some genera, such as *Bartramia*. My personal choice would be to include many more illustrations in future volumes. The distribution maps are a welcome and very useful addition to the *Flora* although I would prefer to see each map displayed next to its respective taxon rather than grouped together at the end of the *Flora*. In a volume that includes spectacular genera, such as *Hypopterygium*, *Lopidium* and *Cyathophorum*, the choice of cover illustration is uninspiring.

For a publication with contributions by so many authors, the glossary is surprisingly comprehensive. The wording is clear and concise and for the most part written with the minimum use of technical jargon. There are just a few exceptions, for example: “**endostome**: the inner ring of a diplolepidous peristome, formed from contiguous periclinal wall-pairs of the primary and inner peristomial layers.....” I had to chuckle over this as I thought how daunting it would be for newcomers to bryology.

This publication is an essential reference for all those with an interest in bryophytes. There are a few inevitable typographic errors, for example, the authors for Calomniaceae are listed in the *Contents* as ‘G. H. Bell & D. G. Catcheside’ and on page 367 as ‘David G. Catcheside and Graham H. Bell’ (the correct citation), but these are relatively few and insignificant. The introductory chapters contain a wealth of information making it a valuable resource for teaching as well as for research. This is a reference work that will be in regular use, not just referred to occasionally and for that reason, I would recommend purchase of a hard cover rather than paperback version. It is sad that a number of our eminent bryologists, Ilma Stone, George Scott, David Catcheside, Jim Willis and Heinar Streimann are no longer with us to celebrate this, the first of the bryophyte volumes of the *Flora*. However, they would be delighted in the knowledge that their work had inspired such a passionate following of young bryologists.

Reference

Goffinet, B. & W.R. Buck, 2004, Systematics of the Bryophyta (mosses): from molecules to a revised classification., *Monogr. Syst. Bot.* 98:205–239.

Identifying Australian orchid genera

Review by Andy Lowe

State Herbarium and Biosurvey of South Australia

***Australian Orchid Genera, an information and identification system.* By D.L. Jones, T. Hopley, S.M. Duffy, K.J. Richards, M.A. Clements & X. Zhang. CSIRO Publishing and Australian Biological Resources Study (ABRS) . Published July 2006. CD-ROM. ISBN: 0643093362 Price: AU \$120.00**

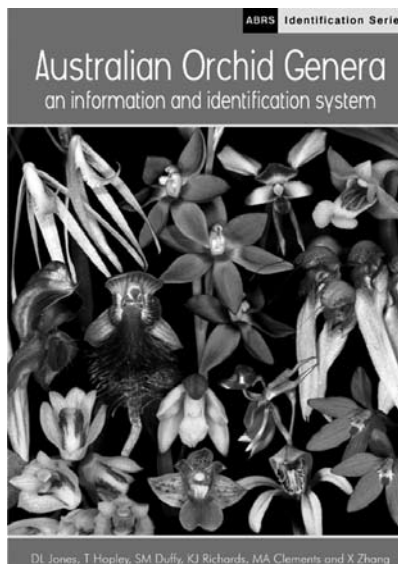
The information and identification tool for Australia’s orchid genera comes as a CD-ROM and is written as a fully interactive key using the Lucid system. The scope and detail of the key are impressive and incorporate all 192 of Australia’s genera of orchids, including recent revisions. The CD is abundantly illustrated with more than 2500 images, including over 260 botanical line drawings. For each genus, a fact sheet format provides a botanical description together with

ecological, biological and geographic information. Being a lucid key it is possible to make generic determinations using a single or a combination of 127 characters. The lucid interface provides a clear list of the characters together with a listing of genera which are excluded (discarded) or remain after a particular combination of characters are chosen.

I have to admit to being a Lucid novice yet I found this key very easy to master and use. It is also a tremendously involving information system and with the intention of only spending a short period of time to do this review, I found myself delving into the specifics of orchid groups for hours. Armed with this key I felt it would be possible to identify any orchid to generic level that I was lucky enough to find on a field trip.

My only reservation is that more detail on species delineation/differentiation is not provided by the key. However I realize with such a large number of species involved this would have been too unwieldy. To facilitate species-level identification, once a genus has been positively discriminated using the key, the identifier can refer to the generic fact sheets, photobank and SEM images, which are given for the majority of species. In some cases the authors even photograph the extreme intraspecific variation that exists within some taxa. The key also comes with a full interactive tutorial and a written guide that really makes the system a pleasure to use.

Other notable features of the guide include: a full species list, a list of common names, name changes, an online link to an



Australian orchid name index (which is constantly updated by the authors), character list (with explanations of floral structure and nomenclature), glossary, bibliography and acknowledgements.

In summary I would highly recommend this information and identification system for students and researchers with an interest in orchid taxonomy and also to field botanists and natural historians wanting to key out field specimens. The CD and key is highly informative and has been well designed for usability and identification delivery.

Homage to *Hebe*, or perhaps a glorious last stand for independence

Review by Barbara Briggs
Botanic Gardens Trust Sydney

***An Illustrated Guide to New Zealand Hebes.*
By M.J. Bayly and A.V. Kellow, with
contributions from Peter J. de Lang, Phil J.
Garnock Jones and Kenneth R. Markham.
Photography by W.M. Malcolm.
350 pages, 2006, Te Papa Press
Cost from Te Papa Store \$NZ 99.99**

A comprehensive, scholarly, beautifully illustrated book about New Zealand's most speciose plant group is very welcome indeed. In this outstandingly attractive, hard-cover volume Michael Bayly and Alison Kellow give us so much more than one would expect from its title.

Each of the 88 species of *Hebe* and five of *Leonohebe* is given the intensive treatment of a two-page spread with description, notes on distinctive features, infraspecific taxa, distribution map, comment on habitats and relationships, together with superb photographs by W.M. Malcolm to illustrate habit and – in close view – details of leaves, flowers, fruits and more. The many taxonomic changes since the last comprehensive account, by Lucy Moore in Allan's *Flora of New Zealand* (1961), have been gathered together and assessed. There are keys to groups and to the species within them. The authors thus fully accomplish their stated main aim "to provide a tool for the identification

of species, subspecies and varieties of *Hebe* and *Leonohebe*, and to serve as a reference on the known variation, distribution and classification of these groups".

But there is so much more. There are chapters discussing the classification and evolution, history of generic and infrageneric classifications, relationships inferred from DNA data, fossil records, distribution patterns and habitats, which range from coastal margins to the altitudinal limit of flowering plants in New Zealand. Phil Garnock-Jones provides accounts of morphology and reproductive biology, flavonoids get their chapter, Peter de Lange writes on conservation, and there is a comprehensive listing of chromosome numbers in this intensively counted group.

Perhaps all this is not quite enough – so continue on and peruse the comprehensive lists of names of genera, subgenera, through to species and infraspecific taxa, with types cited and lectotypified where appropriate. English common names, Māori names, voucher specimens for photographs, mapping of localities onto relief maps and glossary; nothing is forgotten. Only for the numerous cultivars and horticultural hybrids must one seek information elsewhere – and references are given.

Amazingly, a volume that is so comprehensive and scholarly is wonderfully attractive and accessible. All involved in its production, the authors, photographer, Te Papa Press and the Museum of New Zealand Te Papa Tongarewa are to be congratulated on it, and in providing such a book at a very reasonable price.

Surely only a grumpy old botanist would now raise a question: will we continue to know these plants as *Hebe* and *Leonohebe*? Here I must declare an interest. Currently Phil Garnock-Jones in New Zealand, Dirk Albach in Germany and I have just submitted a paper that provides a classification of an enlarged *Veronica*, sinking within it *Hebe*, *Leonohebe*, *Derwentia* and allies. Bayly and Kellow agree that DNA data make clear that *Veronica* must either be enlarged or divided if the classification is to consist exclusively of monophyletic groups.

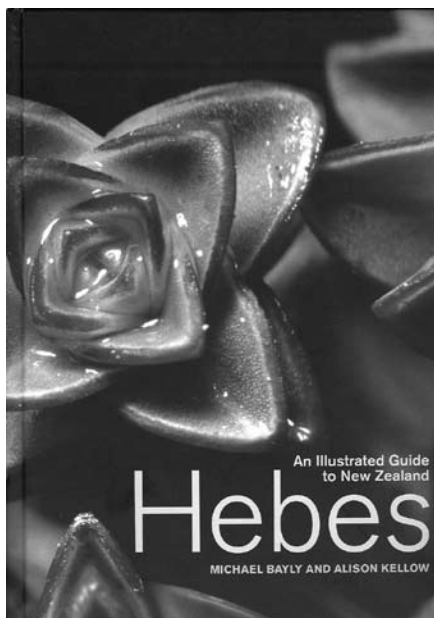
Garnock-Jones et al. recognise the monophyletic clades as sections within a gargantuan *Veronica*.

Bayly & Kellow recognise these 'segregate' genera, considering that the alternative is a classification that is 'information-poor, obscuring obvious diversity and some clear relationships'.

Another view comes from Dick Brummitt (*Taxon* 55: 268-9, 2006) who cites *Veronica* as a notorious case where a satisfactory classification is incompatible with the recognition of only monophyletic taxa. Disagreement about the classification of Southern Hemisphere *Veronica/Hebe* is not new, but will now take the form of two alternative comprehensive classifications to express agreed relationships. As the authors say, 'Once these names [in *Veronica*] are available, users can adopt whichever classification suits their needs, and time will tell which scheme prevails'.

By whatever name we know them, the outstanding reference on the botany of

these beautiful and diverse plants for forthcoming decades will be this excellent book.



Australian seeds

Phillip Ainsley

Seed Conservation Centre,

Botanic Gardens of Adelaide, North Terrace, Adelaide, 5000 South Australia

***Australian Seeds. A Guide To Their Collection, Identification and Biology.* Editors: Luke Sweedman and David Merritt.**

Published by: CSIRO Publishing, 2006.

272 pp. ISBN 0-643-09132-7. \$99 (hardback)

As a seed biologist working on native Australian species there are very few published texts focused on Australian seeds. Whilst titles including *What Seed is That?* (Bonney 2003), *Germination of Australian Native Plant Seed* (Langkamp 1987) and *Growing Australian Native Plants from Seeds* (Ralph 2003) have all been heavily relied upon by people in the field, there is a niche opportunity for a good all round text within Australia focused on seed biology. So after waiting for more than 10 years, when "Australian Seeds" was finally published, I was excited by the thought that maybe this is the text that many of us have been waiting for.

The book is a large format, and currently available in hardback form, although a paperback version will soon be available. There are 10

main chapters, with multiple contributors, and a foreword written by Carol and Jerry Baskin (University of Kentucky). Whilst the majority of the chapters are written by peers from Western Australia, there is some input from researchers at the Millennium Seed Bank (UK) and University of Adelaide.

Chapter 1 is a brief one, providing an introduction to the book and setting the context of seed banking as conservation tool both nationally and globally.

Chapter 2, written by Stephen Hopper, Kingsley Dixon and Robert Hill traces the evolution of seeds from native Australian plant species through time, using fossil and geomorphic records. It covers the role of seeds in ensuring species continuity, and provides some explanation relating to the diversity of seed morphology and germination mechanisms that are present today in our native plant species.

Chapter 3, written by Paul Wilson and Margaret Wilson, introduces seed and fruit structure.

Examples of different seed and fruit types are provided along with some diagrammatic examples.

Chapter 4, written by Dave Merritt and Deanna Rokich is focused on seed biology and ecology. This Chapter is only 6 pages long, and really only provides an introduction to this field. The concept of dormancy is defined, along with some of the seed dormancy classes that occur within Australian species. Species examples are provided and related back to adaptability for maximising survival in the Australian environment.

Chapter 5, written by Luke Sweedman and Grady Brand is focused on seed collection. It provides good practical information on general principles for collecting seeds, assessing plant material before collecting, field trip planning, equipment sampling strategies and record keeping.

Chapter 6, written by Luke Sweedman covers drying and cleaning seeds after collection.

This chapter is practical, and provides useful information and tips for handling seed both immediately after collection (whilst still in the field) and on return from the field. A range of options for drying seeds is presented (depending on ones budget) as are various methods for cleaning seed.

Chapter 7, written by Dave Merritt covers seed storage and testing. This chapter introduces the classification of seed types based on their storage requirements/ability, and recommendations/guidelines for drying and storing seed for the longer-term. The relationship of seed water content and storage temperature in extending the storability of seeds is also covered. Techniques for determining moisture content, assessing seed viability, testing germination and assessing storage conditions are outlined.

Chapter 8, written by Anne Cochrane and Leonie Monks covers the use of materials in seed banks and the role they play in plant conservation. Three case studies (of Western Australian species) are introduced to reiterate this.

Chapter 9, written by Luke Sweedman provides photographs of seeds from 1,260 native plant species. Whilst some of the images are a bit small, they are significantly improved in comparison with those in *What Seed is That?* However, I am probably biased, as I think the standard for images of seeds to be used as an identification tool should be as per Webb & Simpson (2001).

One slight frustration with this chapter is that there is no index to species/images.

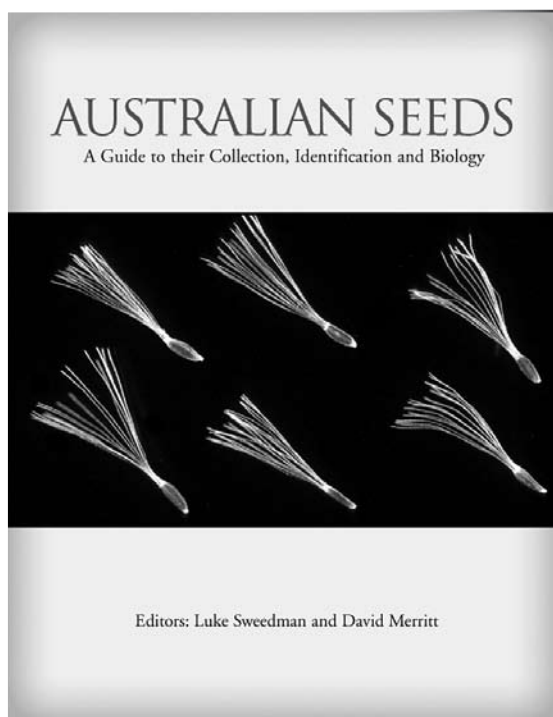
Chapter 10, written by Luke Sweedman and Grady Brand describe specific collecting techniques for 260 genera of plants.

In conclusion, I think it is fair to say that this book is for seed practitioners. If you are a scientist looking for information on seed biology and guidelines for germinating seed from Australian natives, you won't find many answers. However if you are seed collector/practitioner then this book will appeal. Whilst there has been some criticism that is biased towards the

Western Australian flora, many of the guidelines and information are applicable across all Australian species. The seed images will prove useful for identifying seed – even if it is only to the genus level. Overall, it's easy to read and has been well edited. Its large size makes it a bit cumbersome as a field guide, but at \$99 it is good value, and probably the best of its kind that is currently in print for Australian species.

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- Landkamp, P.J. (ed) (1987). *Germination of Australian Native Plant Seed*. Inkata Press, Melbourne, Australia.
- Ralph, M. (2003). *Growing Australian native plants from seed for revegetation, tree planting and direct seeding*. Murray Ralph/Bushland Horticulture, Fitzroy, Australia.
- Webb, C.J., and Simpson, M.J. (2001). *Seeds of New Zealand Gymnosperms and Dicotyledons*. Manuka Press, Christchurch, New Zealand.



An Otway Flora

Review by John Reid

National Herbarium of Victoria, Royal Botanic Gardens Melbourne

***Flora of the Otway Plain and Ranges 1: Orchids, Irises, Lilies, Grass-trees, Mat-rushes and other petaloid monocotyledons.* By Enid Mayfield. 232 pp., 2006, Linton Press, ISBN 0-9775712-0-3. Page size: 23 cm x 17 cm; portrait**

This superb field handbook covers all the indigenous petaloid monocotyledons in Victoria's Otway Plain and Otway Ranges natural regions. This amounts to about 180 different taxa of which over 130 are orchids. A second volume covering dicotyledons is in preparation.

The author, Enid Mayfield, is an Illustrative Researcher based at the Geelong Botanic Gardens. She is an Honorary Associate at the Royal Botanic Gardens Melbourne. She has illustrated for many scientific works including the *Flora of Victoria*, *Flora of Australia*, books and scientific journals. In her new book, Mayfield has demonstrated enormous skill in combining scientific precision with aesthetic beauty and her great love of bushland plants. She has succeeded admirably in producing a book that will serve both beginner and boffin by communicating a considerable amount of scientific information in a format capable of igniting the first sparks of interest into something much bigger.

Mayfield has brought an extremely strong vision to the creation of this book; a vision that brings together several key elements to produce the book that the author in her own words "wanted to have when I went out into the field".

Firstly, there are the beautiful illustrations for which she is best known. There are hundreds of them, all meticulously drawn in full colour. The text is full to the brim with information and detail, yet paradoxically free of clutter. The writing is precise and economical with key identification features for each species presented as brief notes next to the drawings. The content is underpinned by strong science, yet a concerted effort has been made to make scientific information accessible to

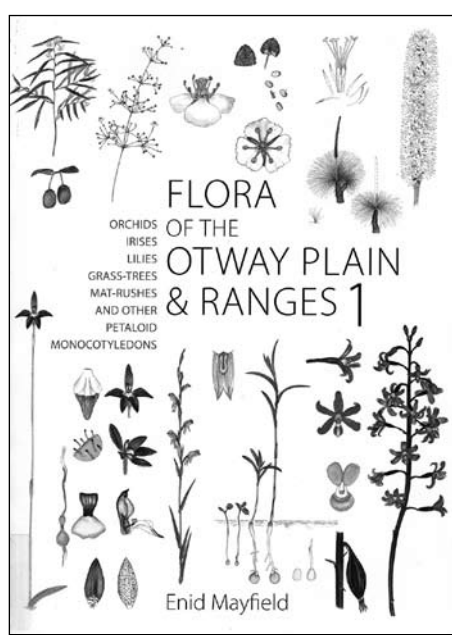
a more general readership. A thorough glossary of terms used in the text is provided. Each term is clearly defined and many are accompanied by helpful drawings.

Superb design and layout further elevate this book into a class of its own. Dense blocks of text are avoided by dividing each page into segments to create the appearance of a beautifully illustrated nature diary. Drawings and associated notes appear in boxes with rounded corners that make them easy on the eye. For some of the orchids there are illustrations of pollinating insects and notes on mycorrhizal relationships with soil fungi. A narrow bar at the base of each page includes the habitat, habit, status and flowering time of each species. This is a particularly nice touch that allows important information to be quickly accessed.

There are no dichotomous keys. Instead there is a visual key to all the included genera. On the species pages characters that separate species within a genus are noted in point form alongside the illustrations. This enables comparison

of characters and is effectively the key to species. Each species page also includes a general description, again in point form, and plant structures are illustrated and explained. The emphasis on detailing and explaining structures is a real strength of this book. Many people learn to name plants without understanding floral structure or botanical terms. A higher level of understanding will be gained by identifying a plant by using this book than by using, for example, a book relying largely on colour photographs with names attached.

The book would have benefited from an introductory page explaining its scope, and the scope of future volumes. There is no clear statement that only species indigenous to the study area are included. The fact that it deals only with indigenous species would be obvious to the more experienced reader but the beginner may be confused if they discover a patch of South African Iridaceae or the weedy orchid *Disa bracteata*.



A page outlining “How to use this book” would also be helpful to inform and inspire the potential user and to convey the author’s vision for how it could be used. I would also like to see a brief note about the importance of conserving indigenous vegetation and the need for readers to be mindful that all plants covered in the book are significantly depleted and many are extremely rare. We should never assume that such things are sufficiently understood. The emphasis on structural detail may encourage readers to look at plants more closely and while this is a positive thing, they should be

encouraged to examine specimens carefully in situ with a hand lens rather than picking them. Legislative protection and permit issues are also relevant in this context and warrant a mention.

However, these are minor points, especially when considered alongside the numerous positive features of this book. *Flora of the Otway Plain and Ranges 1* is an outstanding piece of work and I recommend it highly to anyone with an interest in bushland plants and their conservation. There is a place where head and heart unite and it’s a good place to go. This book takes me there.

Tangled trees

Review by David A. Morrison

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***Tangled Trees: Phylogeny, Cospeciation, and Coevolution.* By Roderic D. M. Page (editor). University of Chicago Press, Chicago, IL. Published 2003. x+350 pp. ISBN 0-226-64466-9 \$US32.50 (paperback); ISBN 0-226-64467-7 \$US85 (hardback).**

All systematists know that the study of historical processes benefits greatly from a phylogenetic perspective, and they also know that the notions of co-evolution and co-speciation have been of general interest to biologists for many a long year. It therefore can come as no surprise that the last 20 years has seen many developments integrating the study of phylogenetic congruence into studies of co-evolution and co-speciation in host–parasite, mutualistic and symbiotic systems. This book is intended to bring together many of these developments, from both the theoretical and practical sides. It concentrates on host–parasite systems as exemplars, but the principles and practice have wider relevance.

In spite of the subtitle, this book isn’t really about co-evolution in the broad sense. If it was, then it would need to include a wider range of discussions about co-adaptation between parasites and hosts. For example, there is nothing here about epidemiology modelling, which is a large part of the practical study of host–parasite co-evolution, nor is there anything about parasites and their transmission vectors (as opposed to hosts). If you are looking for that type of thing, then the book by Poulin et al. (2000) would be a better bet. Instead, the book reviewed here is very much about co-phylogeny, and as such it is probably of more direct relevance to systematists than would be a more general book on co-evolution. Moreover, by focusing on the topics that it does, this book provides unique material about co-phylogeny and co-speciation, presenting

both an introduction to the topic and a detailed exploration of its ramifications.

If you are interested in this topic, then this is pretty much the only book available, so that it needs to cover a lot. The Introduction and first four chapters provide a good coverage of many aspects of the methodology and theory, while the remaining eight chapters provide a feast of empirical examples. However, principles and practice are neatly tied together by most of the authors.

There is still some way to go before we have a robust methodology for co-phylogeny mapping, as the theory is more complex and the practice is messier than we would like. This book summarizes what has been achieved so far and raises many of the methodological issues that still need to be addressed. These latter issues include the effects of phylogenetic uncertainty, concurrent timing of proposed co-speciation events, and distinguishing real co-speciation from other co-evolutionary events (e.g. resource tracking), as well as statistical tests of co-phylogenetic congruence in the face of increasing levels of host switching. There is plenty here to keep the theoreticians occupied for quite some time to come.

As far as methodology is concerned, it is valid to ask how up-to-date this book is. The genesis of the book was in 1997, the associated symposium was held in 1999, the Preface is dated 2001, and the book is copyrighted for 2003. Has the study of co-phylogeny changed much since then? The answer is both “yes” and “no”. The two main games in town are still Brooks Parsimony Analysis (BPA) on one hand and Reconciliation Analysis (RA) on the other, as presented in this book. These two general approaches have received several comparative reviews in the literature (the most recent being that of Stevens,

2004), and they still make regular appearances in empirical studies (although BPA may be more popular in biogeography studies rather than in host–parasite studies). For the interested, BPA has been subjected to a long series of commentaries over the past five years in both *Cladistics* and the *Journal of Biogeography*. More recently, the PACT method of Wojcicki and Brooks (2004) has been introduced, to replace the previous BPA methods, although no computer program yet exists. Perhaps the biggest limitation of RA is that the main computer program, TreeMap v.2, is still listed as a beta release after more than 3 years, with no manual, although the paper by Jackson & Charleston (2004), will give you some useful hints on usage and interpretation. The recent release of the competing Tarzan program (Merkle & Middendorf, 2005) might liven things up in this area, especially as it is claimed to be faster and to deal with larger data sets. Of the few alternative methods, the approach implemented in the TreeFitter program is discussed in the book chapter by Ronquist, and data-based methods are discussed by Huelsenbeck et al. and Johnson & Clayton, but the ParaFit method (Legendre et al. 2002) gets no mention at all.

As far as empirical practice is concerned, it is the biological basis of co-evolution that is of most interest. The book authors address this basis from many different perspectives, reflecting the diversity of potential causes and influences that creates much of the co-phylogeny messiness. Most of the factors discussed are ecological ones, including geography and demography, with a strong genetics and comparative flavour. Thus, macroevolutionary patterns are interpreted as the product of microevolutionary events. However, few of the authors provide broad syntheses, preferring instead to illustrate their points with a specific example. The example parasites include pinworms (Nematoda), retroviruses, and (inevitably) lots of lice.

In terms of empirical studies, another collection of papers appeared in 2004 in *Systematic Biology* 53(1):92–173, based on a symposium held in 2002. This collection of seven papers (plus introduction) focuses on co-evolution in

a slightly broader sense than the co-phylogeny one discussed here. It is a worthwhile addition to the growing literature on the historical aspects of inter-species interactions, as well as a neat complement to the collection in this book.



The book editor notes that two groups of organisms are not explicitly represented by empirical examples in his collection: plants and bacteria. The absence of plants, at least, probably gives the book a biased assessment of co-phylogeny, in the sense that researchers seem to find it much harder (although not impossible) to detect examples of co-speciation involving plants (e.g. the recent studies of Brändle et al. 2005; Machado et al. 2005; see also the discussion by Percy et al. 2004). That is, co-phylogeny studies between animal parasites and animal hosts may actually be preferentially sampling “successful” examples of co-speciation, and thus giving us a rather one-sided view of co-evolutionary processes. If this turns out to be a general phenomenon (and it is certainly a testable hypothesis), then a review of botanical studies would have been a useful addition to this volume.

In the absence of bacteria, perhaps the most intriguing choice of host–parasite relationship in the book is that of malaria (Sporozoa; Protozoa) and their lizard hosts. This is interesting because the study of co-phylogeny between Sporozoon endoparasites and their hosts is almost non-existent (see also Ricklefs et al. 2004), and yet such studies could actually be even more useful within this group than they are elsewhere. For example, one problem with studying the evolution of these unicellular organisms is trying to date any of the hypothesized events. There is no fossil record, for instance, that can be used to provide “known” dates for historical events, from which other phylogenetic events could then be dated. Therefore, dating usually involves untestable assumptions about fixed rates of molecular evolution (e.g. Morrison 2005). One solution to this problem might be to search for examples of unequivocal occurrences of co-speciation, because if the host speciation has a known date then this would also provide a reference date within the parasite phylogeny. The

practical limitations of such an approach should be obvious (e.g. the co-speciation time may be pre-emptive, synchronous or delayed), and there are theoretical problems as well, such as potential coalescent effects (e.g. the very large population sizes of protozoans means that discrepancies between gene trees and species trees are to be expected, due to deep coalescence). Nevertheless, this approach is no different in principle to using geological events to date biological events, and it shows the potential of co-phylogeny studies to contribute to evolutionary studies of “difficult” groups.

Not unexpectedly, given finite space, there are many topics that are not covered by the chapters of this book and many problems that are not addressed by the authors. Perhaps the most obvious of these is the lack of consideration given to life-history stages. Many parasites, for example, pass through several distinct stages in their lives, with different life-history stages obligately parasitizing different types of host. Many Sporozoa have their sexually reproductive phase in one host (the definitive host, e.g. a carnivore) and an asexual stage in another host (the intermediate host, e.g. a herbivore), while parasitic Platyhelminthes commonly have up to three hosts during their life (e.g. a mollusc, a fish and a bird). The question, then, is: which of these hosts is the parasite co-speciating with? Presumably it is only one of them, as it seems unlikely that it could be several of them simultaneously. Unfortunately, all of the case studies in this book consider only parasites with a direct (i.e. one-host) life cycle, and so we do not get an answer to this question. Even for those parasites (e.g. malaria) that have an obligate transmission vector, the vector has also been ignored in co-phylogeny (but not co-evolutionary) studies.

This issue of multiple hosts is not a trivial one for studies of co-evolution in the more general sense. As one specific example, my only contribution to the genre has been to test the (possibly hare-brained) idea that parasites of human-associated hosts might preferentially show recent demographic expansions as a result of the rapid expansion of human populations in the last 10,000 years (Morrison & Höglund 2005). However, the empirical test of this hypothesis ended up being restricted to Nematode parasites with a direct life cycle, because multi-host parasites usually have only one human-associated host (thus confounding the hypothesis test), and the asexual stages have almost no within-population genetic variation (which is necessary for the calculations). This produced a very biased test of the co-evolutionary hypothesis. Moreover, the decision to use only mitochondrial DNA sequences effectively excluded all data from plant-parasitic nematodes (which had all been studied using RAPDs and

microsatellites), thus producing exactly the sort of additional taxonomic bias that I referred to above. These sorts of methodological problems need to be addressed and their potential for producing misleading generalizations evaluated, but the book authors leave most of them for future consideration.

Another issue worth raising is the fact that taxon sampling in parasitology is opportunistic more often than not, to a much greater extent than occurs in studies of non-parasitic organisms. Infected hosts cannot always be identified a priori, and then only at autopsy can the parasite be located (particularly endoparasites), so that co-evolutionary studies can be wildly inaccurate (especially if they involve estimates of prevalence or intensity). Furthermore, for some parasite groups only those species with domesticated animals or plants as their host have been studied. This means that many phylogenetic trees of parasites are very incomplete, unless they refer to a relatively small group of species that has been specifically targeted for a particular study. It is difficult to evaluate whether it is even worth doing a co-phylogeny study under these circumstances, as this limited sampling only compounds the sorts of methodological limitations highlighted in this book. So, there is very little empirical evidence that can be used to evaluate just how biased are the well-known instances of host-parasite co-speciation. The book authors remain optimistic, but only time will tell.

For any systematist embarking on a host-parasite study for the first time, or for a biologist wanting a readable entrée into the topic, this book is a good place to start, as it still provides the only comprehensive introduction to the theory and practice of co-phylogeny analysis. For the seasoned practitioner of co-evolution who has still not fully appreciated the potential benefits of a phylogenetic perspective, this book provides a critical synthesis of much of the current thinking as well as coverage of the possible future directions. It should enthuse anyone with an interest in the historical aspects of inter-species interactions.

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Conference reports

Eighth International Mycological Congress, Cairns, 2006

The eighth International Mycological Congress was recently held in Cairns on 20–25 August; the first time that the Congress has come to the Southern Hemisphere. There were about 700 delegates from more than 50 countries, with the largest contingents from Australia, the United States and Japan. Symposia were held in five concurrent sessions during each day. There were also more than 600 posters across ten themes, which paralleled the diversity of topics in the symposia: Phylogeny, Systematics and Evolution; Mycorrhizae; From Genomics to Proteomics; Food Mycology and Mycotoxins; Plant and Fungal Pathogens; Animal Pathogens; Cell Biology and Physiology; Population Genetics; Biodiversity and Conservation; and Industrial Mycology. The Congress was preceded by various workshops, on topics such as Insect Pathogens, Rust Fungi and Hypogeous Fungi.

The first of five Plenary Addresses was a fascinating overview of the ‘Fungal tree of life’ by Franz Oberwinkler, who included an update of the fast-changing classification of fungi. Oberwinkler stressed the importance of links between fungi and their plant hosts in understanding the evolution of both plants and fungi. The final plenary by Mike Wingfield on ‘Emerging fungal diseases threaten world forests’ included mention of Guava Rust on Myrtaceae and Heteropyxidaceae (both Myrtales) in South America, which is a fungus that we will be hearing a lot more about in Australia (although we hope we never see it here – see Pam Catcheside’s article in the last issue of the newsletter). David Hawksworth gave an entertaining special lecture on ‘Mycology and Mycologists’, which included a glimpse into the good old days at the then Commonwealth Mycological Institute, where men in suits sat smoking pipes while looking down microscopes.

The Cairns Convention Centre provided an excellent venue, with sufficient room for all the different activities, and a convivial meeting place in the main hall, where displays and a cafe were provided. There was also plenty in the Cairns

region, especially as far as the natural surrounds of rainforest and reef, to entertain delegates, overseas and Australian alike. The number of delegates was about half that at the previous Congress, which was held in Oslo. I did hear the odd grumble about how far some people had come to attend, but given the reverse is usually the case I reckon its not too much to ask to have the Congress in the Southern Hemisphere every couple of decades. Trond Schumacher, President of the International Mycological Association, which is the sponsoring organisation of the Congress, pointed out that part of the reason for moving Congresses around is to stimulate mycology in the host country. The Congress was certainly one of the largest ever gatherings of Australian mycologists, and there was also a good representation of mycologists from Asia and South Africa, although unfortunately not so many from other parts of Africa or South America.

Most papers included at least a little, and often a lot, of molecular data. Even some of the reports based on PhD studies utilised four or five DNA regions across numerous species. A symposium on DNA barcoding included some interesting presentations where the utility of barcoding (using a standard sequence such as COX1 or ITS) was tested in genera where the taxonomy is already well-known, such as in certain groups of *Penicillium* and *Trichoderma*. The approach worked well enough, although there were some species that could not be differentiated on these sequences. Symposia on Gondwanan Fungi and Phylogeography both included papers which utilised molecular data across the global diversity of particular genera, families or orders. Intriguing suggestions are emerging from these approaches that the basal members of some groups are from Gondwanan regions: *Armillaria* in Africa, the Hysterangiales in Australia and *Laccaria* in various regions of the Southern Hemisphere. Such results certainly mean that taxon sampling, up to now a little light on south of the equator, must be more complete as far as

global geography in unravelling relationships and biogeography. Some completely unexpected relationships were revealed, such as that reported by Peter Johnston between the bright blue disc fungus *Chlorosplenium* (wood infected by this fungus is used to make Tunbridge ware) and the Beech Orange, *Cyttaria*, which is an obligate parasite of *Nothofagus*. Also intriguing was the report of whole lineages at family or order level, detected from analyses of DNA extracted from environmental samples, but unknown from fruit-bodies or cultures.

My favourite paper was a talk by Kazuhide Nara about mycorrhizal fungi associated with the primary succession of plants on the volcanic desert at Mt Fuji in Japan. The colonising plants are scattered in small patches, containing different numbers of individuals of one or several species, forming a superb template against which to test how the associated mycorrhizal fungi colonise the newly formed environment.

A round table discussion on Tuesday evening considered 'Is it time for a mycological Code of Nomenclature?'. Some participants voiced the opinion that the 'botanists' were holding back mycological nomenclature, and it would be best to part company. However, there were in fact two quite separate issues on the table. The first that of a separate mycological code, the second the question of whether to abandon Article 59 of the International Code of Botanical Nomenclature. Article 59 allows for dual nomenclature for fungi with a pleomorphic life cycle – that is, those with anamorphic (asexual) and teleomorphic (sexual) forms. This Article was a necessity when it was not possible to classify species for which no sexual stage was known; because characters of the sexual spores and the structures which produce them were an essential part of fungal classification. Being allowed to have a formal name for an anamorph was also useful for naming commonly encountered asexual stages of species that rarely produced sexual spores. These days, molecular data means that anamorphs can potentially be placed in the general system of fungal classification. Thus, a system of one name for each fungal species can be envisaged (whether that species is known only from the anamorph, from both teleomorph and anamorph, or only from the teleomorph). If one name for one fungus is adopted, widespread changes will be required, in particular to names of genera. There will be a need for innovative and practical nomenclatural solutions, and it is likely that conservation will have to be extensively used, since many of the fungi concerned are of significance in medicine, plant pathology and industry.

Many mycologists seem to be in favour of abandoning dual nomenclature, but there is currently no particular solution that has wide

acceptance. It is also clear that there are many who do not want change. However, it would be fair to say that the way that questions are put about changes to Article 59 can have an influence on how people vote on the matter. The situation has some parallels to the republic debate in Australia in the 1990s, where the lack of a single, widely-supported model for a republic no doubt contributed to the failure of moves to abandon Australia's connections with English monarchy.

Frankly, I doubt that most non-mycologists take any notice whatsoever of Article 59. If the mycological community comes up with a workable proposal for abandonment of dual nomenclature for fungi, the next International Botanical Congress will no doubt support such a recommendation. It is not the 'botanists' who are the sticking point with Article 59, but rather the problem is in coming up with a preferred or consensus option which is acceptable for mycologists. The special committee that is being set up to deal with Article 59 has some interesting discussions ahead of it!

Personally, I think that a separate mycological code would be a retrograde move, and if anything, the move should be towards harmonisation of biological nomenclature. I wonder if those mycologists who are dissatisfied with the 'Botanical' Code realise the amount of work that goes on behind the scenes to support the Code, not only by the particular committees for Fungi, Bryophytes and Spermatophytes etc. It would be misplaced mycological chauvinism to demand a separate Code. Perhaps the simple expediency of changing 'plant' to 'plant and fungus' in the text throughout, and the title to 'International Code of Nomenclature for Plants and Fungi' will suffice.

Members of the IMC8 Organising Committee, the Local Scientific Committee and the International Scientific Advisory Committee deserve congratulations for a well run and stimulating Congress. In particular, Deputy Chair of the Organising Committee Ceri Pearce (Department of Primary Industries and Fisheries, Queensland) put in the effort to ensure the Congress went to Cairns in the first place, and much further hard work on the ground over the four years of preparation, in a location without a large pool of local mycologists. Chair of the Organising Committee Wieland Meyer (University of Sydney / Westmead Hospital) also worked very hard to make the Congress a success, bringing a positive attitude and a freshness of approach, as well as his very snappy style in suits.

The next IMC is in Edinburgh in 2010, which gives mycologists time to sort out the issues around Article 59 a year before the 2011 Melbourne International Botanical Congress.

Tom May
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Acacia 2006 conference

Meeting report *Acacia 2006 Conference* – “The Science Behind Acacia: Current research and recent discoveries”

The “Acacia 2006” conference was recently held in Melbourne on 26–28 August 2006. Entitled, “Knowing and growing Australian wattles” this conference was jointly hosted by the Royal Botanic Gardens (RBG) Melbourne and the Australian Plants Society Victoria, as part of the biennial F. J. C. Rogers seminar series. The conference was divided into two parts, a Horticultural Program held on Saturday 26 August at the Karralyka Centre in Ringwood, and a Scientific Program, which I will be reporting on here.

The RBG Melbourne hosted the one day scientific seminar on Monday 28 August 2006 at the National Herbarium of Victoria. Called “The Science Behind Acacia: Current research and recent discoveries”, the seminar consisted of 14 talks on a broad range of topics related to the study of acacias. The talks were divided into three sessions: *Evolution and diversity of acacia*; *Interactions of acacia with other organisms* and the *Utilisation of acacia*. It was a significant achievement to have an international presence at the conference with speakers from the USA, Germany and India.

Evolution and diversity of acacia

Keynote addresses were given by Bruce Maslin (Department of Conservation and Environment, WA) and Joe Miller (University of Iowa and formerly CSIRO Plant Industry). Bruce Maslin set the scene, with a clear summary of the current situation regarding the nomenclature of *Acacia* and its segregate genera, following the conservation of the name *Acacia* with a new type at the Vienna International Botanical Congress (see www.worldwidewattle.com). Joe Miller followed with a comprehensive overview of the current state of knowledge regarding the phylogeny of the Mimosoid legumes and particularly those branches of the phylogenetic tree that were once *Acacia* and are now *Vachellia* and *Senegalia* and two smaller genera from the New World, *Mariosousa* and *Acaciella* (syn. *Acacia* sect. *Filicinae*). Following the keynote addresses were two systematics talks focussing in more detail on select lineages of mimosoids. Gillian Brown (University of Melbourne and RBG Melbourne) provided a thorough review of the taxonomy and phylogeny of the relatively poorly studied mimosoid legume tribe Ingeae. Gill’s results showed that the most likely sister taxon to *Acacia* s.s. is *Paraserianthes lophantha*, thus resolving this long standing question. My talk focussed on recent phylogenetic results for the wattles – *Acacia* s.s. (formerly *Acacia* subgenus *Phyllodineae*), including some of the implications for the traditional classification of this diverse and almost exclusively Australian lineage.

It is significant that all speakers in the systematics session used the names of the segregate genera from *Acacia*, following the retypification of *Acacia* with an Australian type. *Acacia* s.s. (formerly *Acacia* subgenus *Phyllodineae*, synonym *Racosperma*), *Vachellia* (formerly *Acacia* subgenus *Acacia*), *Senegalia*, *Acaciella*, and the “*Acacia coulteri* group” (which will soon receive the generic name *Mariosousa*). New combinations for species in the segregate genera *Vachellia* and *Senegalia* have now been made for most of the Australian and New World species (Kodala & Wilson 2006; Pedley 1986; Seigler & Ebinger 2005; Seigler et al. 2006). Overall, the systematics talks reinforced the message that *Acacia* s.l. is polyphyletic and therefore the



Fig. Mueller Hall at the National Herbarium of Victoria, was decked with wattle for the *Acacia 2006* conference.
Ph. Dan Murphy.

recognition of a paraphyletic *Acacia* (as advocated by some) is not possible and a continuing state of uncertainty with respect to names is not in anyone's interest. Therefore, for the sake of nomenclatural stability, it is hoped that the new combinations into *Vachellia* and *Senegalia* will be soon made for the African and Asian species currently assigned to *Acacia*.

As an extension of the systematics theme, PhD student, Stuart Gardner (University of Melbourne), explained his recent findings on the development of the *Acacia* phyllode in comparison to bipinnate foliage, his results will require us to reassess the nature of the phyllode and its development, in line with recent advances in the understanding of leaf developmental genetics.

Interactions of acacia with other organisms

The afternoon session began with Laurence Mound (CSIRO Entomology) giving a fascinating talk about the *Acacia* thrips – a diverse lineage of thrips found exclusively on Australian *Acacia*. Laurence used the *Acacia* thrips to highlight the significance of studying invertebrates, both as a model for understanding the development of social behaviour in organisms, and for investigating the interaction between invertebrates and *Acacia*. However, he lamented the lack of knowledge in other invertebrate groups found on acacias. Peter Thrall (CSIRO Plant Industries) broadened the theme of the interactions between acacias and other organisms, he demonstrated the importance of root nodulating bacteria for the successful growth of acacias, and highlighted the importance of harnessing this interaction for revegetation efforts, especially in salinity affected areas. Robin Adair (Department of Primary Industries Victoria) gave a timely warning about the potential of Australian species of *Acacia* to become weeds, both within and outside of Australia. His work on the development of biological controls for Australian species is critical for weed control to reverse the loss of biodiversity in a number of areas.

Utilisation of *Acacia*

The final session of the day spanned the vast array of uses for acacias. John Faragher (Department of Primary Industries Victoria) spoke about the development of acacias for use as cut flowers, particularly for the Japanese market. In his comprehensive review of the utilisation of the highly variable species, *Acacia* (*Vachellia*) *nilotica*, in India, Manjit Saggoo (Punjab University), explained the level of difference between the Indian varieties (or subspecies) of this species; differences that may warrant recognition at a higher taxonomic level.

Moving back to Australian *Acacia*, Maarten Ryder (CSIRO Sustainable Ecosystems) discussed wattle seed as food, and the initial attempts to quantify and improve yields in this fledgling industry. Maarten also introduced the conference attendees to the delights of an *Acacia* liquor. Bruce Maslin (who went above and beyond the call of duty during the conference with 3 talks in 3 days) summarised the results of the AcaciaSearch project in which species of *Acacia* were flagged and evaluated for use as woody crop plants in the 250–650 mm rainfall zone of southern Australia.

In an inspiring finish to the conference, the talks by Ben Boxshall (UWA Albany Centre) and Tony Rinaudo (World Vision Australia), enlightened the audience to the ability of *Acacia* to cure the salinity problems of Australia and save the world from hunger – if only others could see the light, and take advantage of the humble Wattle!

Acknowledgements

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Further information

- Conference website: www.rbg.vic.gov.au/acacia2006/
- For more information about the nomenclature of *Acacia* see: www.worldwidewattle.com
- Proceedings for the Horticultural Program of the Conference are available for purchase from the Australian Plants Society Victoria for \$25.00.
- The proceedings from "The Science Behind Acacia: Current research and recent discoveries" will be published in a special edition of *Muelleria* in 2007.

Dan Murphy
National Herbarium of Victoria

New books

Rainforest Trees and Shrubs: a field guide to their identification

By Gwen Harden, Bill McDonald & John Williams, 264 pp. ISBN 0 9775553 0 5.
Gwen Harden Publishing, PO Box 186,
Nambucca Heads, NSW 2448

This book, in familiar *Flora of New South Wales* format, offers identification of rainforest trees and shrubs from Rockhampton to Victoria. See the flyer in this newsletter for details and a special price. We hope to bring you a review in the next newsletter.

Plankton: A Critical Creation

By Gustaaf Hallegraeff, School of Plant Science, University of Tasmania.
100pp. ISBN: 1 96295 282 5
Purchase from the School of Plant Science for AUD\$50, in person, by faxing a purchase order to 03 6226 2698 or through the web page (Web ref. 1: links to the review mentioned below).

Reviewed by Julian Cribb in *The Australian* on 16 Sep. 2006 (Web ref. 2)

Web ref. 1. <http://fcms.its.utas.edu.au/scieng/plantsci/newsdetail.asp?INewsEventId=1721>

Web ref. 2. <http://theaustralian.news.com.au/story/0,20867,20398844-5003900,00.html>

François Péron – an impetuous life

By Edward Duyker
Miegunyah Press, 352 pp + 2x8 pp inserts,
hardbound, 234 x 153 mm, 25 b&w pics.
ISBN : 0-522-85260-2
Price: \$59.95 from www.mup.unimelb.edu.au/catalogue/0-522-85260-2.html

We hope to bring you a review of this volume in the next issue.

Weeds of the South-East - an identification guide for Australia

By F.J. & R.G. Richardson and R.C.H. Shepherd.
Published in 2006 by R.G. & F.J. Richardson, 438 pp., full colour, gatefold cover. ABN 20 556 029 011.
Price \$69.95, from secure website www.weedinfo.com.au or call/fax 03 5286 1533 or email richardson@weedinfo.com.au.

A comprehensive identification guide for weeds in the south-east region of Australia with over 2000 plant species and 1600 photographs.

Production has been supported by the Weed Societies of Victoria, New South Wales and South

Australia, and the Council of Australasian Weed Societies.

Grasses of South Australia publications

Grasses of South Australia – an illustrated guide to the native and naturalised species.
By John Jessop with illustrations by Gilbert R. M. Dashorst and Fiona M. James.
Wakefield Press, Kent Town, SA,
hardbound, 250 x 176, 560 pp., copiously illustrated throughout, 20 colour plates.
ISBN 1 86254 694 0
Price: \$49.95 from www.wakefieldpress.com.au/books/grassesofsouthaust.html

Even though only just released, Wakefield Press may no longer have copies of this as it is already going in to a second printing. However copies are available through the State Herbarium of South Australia for the same price. Email pbcs@saugov.sa.gov.au to arrange a copy.

Native Grasses Playing Cards

Cost: \$39.95. Further information and order forms can be found on www.topdecknativegrasses.com.au/ by emailing deck52@bigpond.net.au or by phoning 08 8339 5528 or 08 8568 5065.

A spin-off from the above book *Grasses of South Australia*. Bob Myers and Wayne Brown are both native grass enthusiasts, Bob being the main promoter of the book. They have used the undoubted talents of one of the artists, Fiona James, to produce a pack of playing cards illustrated with seed heads of South Australian native grasses. The red playing cards all represent C4 grasses, with hearts representing perennial, and diamonds annual, grasses. The black playing cards represent C3 grasses. Discreet symbols on the grasses indicate whether they are annual or perennial and whether they are winter or summer flowering.

Accompanying the deck of cards is a similar-sized reference set of 52 cards giving information about the genera of South Australian grasses as well as a booklet giving further information about grasses and the cards. All of these are packed into a sturdy box.

Two State Library of SA publications

Matthew Flinders Private Journal; from 17 December 1803 at Isle of France to 10 July 1814 at London.

Edited and with an introduction by Anthony J. Brown and Gillian Dooley. Foreword by Witgat Hitchcock. Preface by Paul Brunton. Transcribed from the manuscript held by the Mitchell Library.

Published by The Friends of the State Library, Adelaide. ISBN 1 876154 46 2 (standard) ISBN 1 876154 45 4 (deluxe) Limited to 850 copies, 150 of these numbered and bound in quarter leather. Available through Friends of the State Library of South Australia, the standard edition is cited as \$AU130.

Web site: http://www.slsa.sa.gov.au/site/page.cfm?area_id=15&nav_id=681;
email: friends@slsa.sa.gov.au;

There are 34 pages of introductory material and 566 pages of the journal. While predominantly the private journal, it also includes such items as the record of Flinders interrogation by Decaen, the report of Decaen back to France and a

modern day analysis of the medical condition causing Flinders' death. Illustrations scattered throughout the book include portraits of people associated with this phase of his life, views of Ile de France, monuments and memorials to Flinders and Flinders General Chart of Australia or Terra Australis produced in 1804.

Peron - Voyage of discovery to the southern lands Volume 1.
Limited edition of 400 copies, colour plates, maps: \$A115.
http://www.slsa.sa.gov.au/site/page.cfm?area_id=15&nav_id=1308

The first English translation of Volume II (Book IV) by Francois Peron and Louis de Freycinet. Further details should be available soon on the web site.

Exhibitions

Margaret Flockton Award report

Winners of the 2006 Margaret Flockton Award for Scientific Botanical Illustration were announced in July.

First prize of \$5,000 went to Catherine Wardrop from the RBG in Sydney with second prize of \$2,000 awarded to Margaret Tebbs from the RBG in Kew. Highly Commended Awards were awarded to Lesley Elkan from the RBG in Sydney, Rogerio Lupo from San Paulo in Brazil, Lesley Randall from Davis in California, Lucy Smith from RBG Kew, Lisa Waters from Adelaide and Heidi Willis from Terrigal.

The Award, sponsored by the Friends of The Gardens, commemorates the contribution Margaret Flockton made to botanical illustration. Flockton was the first botanical illustrator at the Royal Botanic Gardens in Sydney, who for 27 years from 1901 executed hundreds of botanically accurate drawings, lithographs and coloured sketches.

With 32 entries from around the world, the award, now in its third year, is well respected by the botanical art community both within Australia and overseas. The only one of its kind, it is unique in that recognises the art of scientific botanical illustration as opposed to botanical art.

The judges, Hendrik Kolenberg from the Art Gallery of NSW, Professor Carrick Chambers and Mrs Margot Child from The Friends of The Gardens were very impressed with the high standard of entries.

The Award Exhibition, which drew over 1,200 visitors in its first two weeks, is on in the Red

Box Gallery in the National Herbarium of New South Wales until 29 September 2006.

Entries for the 2007 Award close on Friday 16 February 2007. The winners of the 2007 award will be announced at the opening of the Friends of the Gardens *Botanica* exhibition on 15 March 2007.

Selected entries will then be exhibited in the 'Margaret Flockton Award Exhibition' to be held at the Red Box Gallery in the National Herbarium of New South Wales from 16 March 2007 until 15 June 2007. Negotiations are underway to tour the exhibition during July to September 2007.

Application form and an information package available from the Botanic Gardens Trust website (Web ref. 1) or the Friends of The Gardens at

Telephone: 02 9231 8182
Email: Friends@rbgsyd.nsw.gov.au

Web ref. 1. www.rbgsyd.nsw.gov.au (search for Margaret Flockton).

Tony Martin
Royal Botanic Gardens, Sydney

The Art of Botanical Illustration Exhibition 2006

The Eighth Biennial Exhibition presented by the Friends of the Royal Botanic Gardens, Melbourne will be held in Domain House, Dallas Brooks Drive, South Yarra from 11 to 26 November 2006.

The Celia Rosser Medal, inaugurated in 2002, is awarded to select Botanical Artists exhibiting in the Art of Botanical Illustration Exhibitions.

Web site. www.rbg.vic.gov.au/support_us/RBG_support_groups/friends_melbourne/Botanical_illustrators

Theses

Systematic Studies in Homoranthus (Myrtaceae: Chamelaucieae): Species Limits, Phylogenetic Relationships and Generic Boundaries.

By Lachlan M. Copeland B.Nat. Res. (Hons.) Botany

Centre for Ecology, Evolution & Systematics, The University of New England, Armidale, NSW, 2351. lcopela2@une.edu.au

A thesis submitted for the degree of Doctor of Philosophy in the Faculty of Sciences at The University of New England on September 2005, accepted with minor changes January 2006; graduation April 2006.

Supervisors: Associate Professor Jeremy Bruhl, Dr Curt Brubaker, Mr Lyn Craven

Abstract

Homoranthus is a genus of shrubs endemic to eastern and southern Australia. Several species are particularly morphologically variable and some putative new species are known. Relationships between *Homoranthus*, *Darwinia* and *Verticordia* are unclear. This study aimed to define species limits and estimate the phylogeny of *Homoranthus*.

Phenetic analyses of morphology tested the limits of all currently recognised and putative species of *Homoranthus* using 48 morphological characters and 139 specimens. A total of 28 (6 new) species were recognised. *Homoranthus bornhardtensis* is synonymised under *H. prolixus*.

A cytological investigation was carried out to determine the taxonomic utility of chromosome number variation in *Homoranthus*. Original chromosome counts were made for 27 species. All were found to be diploid and chromosome

numbers ranged from $2n = 14-20$. Chromosome number variation was found to be useful for distinguishing some morphologically similar species (e.g. *H. biflorus* and *H. binghiensis*). The cytological data are considered to be of limited use in phylogeny reconstruction due to recent dysploidy.

Cladistic analysis of 42 morphological characters and 38 taxa provided weak to moderate support for the paraphyly of *Homoranthus*. Some species of *Darwinia* were found to be nested within *Homoranthus* and this clade was sister to *Verticordia*. High levels of homoplasy, here as well as in other studies of Myrtaceae, call for extreme caution when assessing generic boundaries based on morphological data.

Nucleotide sequence data for 37 taxa from three regions of the chloroplast genome (matK, the spacer preceding matK, and the atp β -rbcL intergenic spacer) were analysed to reconstruct phylogeny of *Homoranthus*. Topologies from maximum parsimony and Bayesian analyses were congruent but were poorly resolved. *Verticordia* was recovered as paraphyletic with strong support but the relationships within the *Homoranthus-Darwinia* clade were largely unresolved. Although morphologically dissimilar, the sympatric *H. coracinus* and *H. zeteticorum* were found to have identical DNA for the cpDNA examined. This evidence of introgression and gene sharing, together with evidence against the monophyly of *Homoranthus*, highlights the need to study nuclear genes. These additional data are considered necessary before a revised classification of *Homoranthus*, *Darwinia* and *Verticordia* can be proposed.

Lachlan Copeland

From TAXACOM

Flora Brasiliensis (1840-1906) on-line

Flora Brasiliensis on-line, a complete digitized and databased version of the books published between 1840 and 1906 by editors Carl Friedrich Philipp von Martius, August Wilhelm Eichler, and Ignatz Urban, with the participation of 65 specialists from various countries, is now available, including all taxonomic treatments of 22,767 species, mostly Brazilian angiosperms, printed in 15 volumes with 40 parts, for a total of 10,367 pages

All plates, digitized in high resolution, are accessible on-line and there is a searchable database.

Web site: <http://florabrasiliensis.cria.org.br>

Linnaean Plant Name Typification Project – seeking comments

To coincide with the tercentenary of Linnaeus' birth, the Linnaean Plant Name Typification Project is publishing a major work entitled *Order out of Chaos – Linnaean Plant Names and their Types*. This will be the culmination of the work of many years and will, apart from much new explanatory material, also include individual records for all Linnaean names that relate to binomials that fall under the remit of the International Code of Botanical Nomenclature. For each of these names, the place of publication, stated provenance, type collection and place of type designation, current name etc. will be provided, together with relevant explanatory notes.

During the last two years, an intensive programme of data checking has been under way in order to include previously overlooked references etc. and, for example, to explain and account for the type choices that are being accepted in the Project's publications. The Linnaean Project's website (web reference 1) has recently been updated and now includes much revised information (although in a more restricted form than will appear in the book). Many of you have been kind enough to point out errors and omissions in these online records since this database became available in this way and I am writing now to ask for your assistance in scrutinising these data ahead of their incorporation into the book.

In order to improve the quality of these data, I would like to ask if you might be able to find

time to look at the online database records for Linnaean names in those plant groups with which you are familiar, and let us know of any errors or omissions. It is inevitable that some relevant references containing type designations will have been overlooked, and we would be delighted to hear of any you may know of. If you do have comments, please can you send these, if at all possible by 16 October 2006, to my colleague, Katherine Challis (k.challis@nhm.ac.uk) who is currently collating such matters.

Web ref. 1: www.nhm.ac.uk/research-curation/projects/linnaean-typification/databasehome.html

Dr Charlie Jarvis
Department of Botany, Natural History Museum,
London
email: c.jarvis@nhm.ac.uk

Miscellanea – 2

Paper and journal citations

An interesting article by Bernard Lane on the way that journal citations can, and have been, manipulated by publishers and scientists appeared in the 9th August 2006 Higher Education supplement of the Australian. This can still be seen on the web at Web ref. 1.

All sorts of methods have been used for ranking papers and journals in the past and Peter Wilson (NSW) has pointed out a recent Viewpoint item in Bioscience (Chapron & Huste 2006) where this subject is reviewed and a new, fairer measure suggested when compared with the usual ISI Impact Factor (a discussion of how this is assessed can be found at Web ref. 2).

And have you noticed that all CSIRO Publishing journals now feature a Most Read page. The

Most Read ranking is based on the number of downloads from the CSIRO Publishing website (Web ref. 3) with the statistics updated daily. In keeping with the previously mentioned article on manipulation of figures, it is fairly obvious how these figures might be affected relatively easily!

References

Chapron, G. & Huste, A. (2006). Open, fair, and free journal ranking for researchers. *BioScience* 56: 558-9.

Web ref. 1: Lane, B. Over-citation puts integrity under cloud www.theaustralian.news.com.au/story/0,20867,20063447-12332,00.html

Web ref. 2: The ISI Impact Factor at <http://scientific.thomson.com/free/essays/journalcitationreports/impactfactor/>

Web ref. 3: <http://www.publish.csiro.au/nid/17.htm>

Coming conferences

Cheeseman conference – New Zealand Plant Conservation Network conference

20-22 November 2006 (see *Newsletter 125*).

Web site: www.nzpcn.org.nz/news_events/conference.asp

Southern Connections

22-26 January 2007, University of Adelaide.

Early-bird registration has closed, but there is not a lot of difference from the current fee.

Web site: www.ees.adelaide.edu.au/events/Southern_Connections/

3rd Global Botanic Gardens Congress

16-20 April 2007, Wuhan, China

Web site: www.3gbgc.com

Australian Systematic Botany Society, 2007, Darwin

More information in the next issue of the *Newsletter*

Linnaean tercentenary celebration, Sydney

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Botanic Gardens Trust SYDNEY

The University of Sydney

The Linnaean Society of New South Wales,
in conjunction with the Botanic Gardens Trust
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A festival of systematics and history!

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- Historical perspectives in systematics
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Enter the dates in your diary now!
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For Registration and Presentation of Papers or Posters contact:
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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

AD tel: (08) 8222 9307 fax: (08) 8222 9353 www.flora.sa.gov.au	HO tel: (03) 6226 2635 fax: (03) 6226 7865 www.tmag.tas.gov.au/Herbarium/ Herbarium2.htm	MEL tel: (03) 9252 2300 fax: (03) 9252 2350 www.rbg.vic.gov.au/ biodiversity/	NSW tel: (02) 9231 8111 fax: (02) 9251 7231 www.rbg Syd.gov.au/conservation _research/herbarium_&_services
CANB tel: (02) 6246 5108 fax: (02) 6246 5249 www.anbg.gov.au/	BRI tel: (07) 3896 9321 fax: (07) 3896 9624 www.epa.qld.gov.au/nature_ conservation/plants/ queensland_herbarium	DNA tel: (08) 8999 4516 fax: (08) 8999 4527 www.nt.gov.au/pwcnt	PERTH tel: (08) 9334 0500 fax: (08) 9334 0515 http://science.calm.wa.gov.au/ herbarium/
QRS tel: (07) 4091 8800 fax: (07) 4091 8888	MBA tel: (07) 4048 4745/4743 fax: (07) 4092 3593	NT tel: (08) 8951 8791 fax: (08) 8951 8790	<i>Australian University Herbaria</i> Contact CHAH representative: Jeremy Bruhl UNE (02) 6773 2429
<i>Council of Heads of Australian Herbaria (CHAH)</i> Chair: Dr Brett Summerell (NSW) brett.summerell@ rbgsyd.nsw.gov.au www.chah.gov.au/	ABRS tel: (02) 6250 9554 fax: (02) 6250 9555 email: abrs@deh.gov.au www.deh.gov.au/biodiversity/ abrs	<i>Australian Botanical Liaison Officer (ABLO)</i> Jenny Tonkin Herbarium Royal Botanic Gardens, Kew Richmond, Surrey TW9 3AB England tel: 44-20-8332 5270 fax: 44-20-8332 5278 email: ablo@rbgkew. org.uk	

These listings are published in each issue. Please inform the Editors of any change

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, Epacridaceae, *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.

Postage rates: Those quoted apply only within Australia. Please e-mail for prices to other locations.

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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, ABRIS) 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.

Advertising

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

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