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PRESIDENT'S REPORT

The President's Report in the first ASBS newsletter, just over 25 years ago, concerned the mundane but momentous matter of establishing the Australian Systematic Botany Society. The report ended with the announcement that the Constitution and Rules for the new society were accepted unanimously. Prefacing this important business, Trevor Whiffin reported on efforts made to 'gain publicity and recognition for the newly-formed society'.

One hundred newsletters later that publicity has been gained and the recognition earned. If you'll pardon the excruciating analogy, the annual conferences, research grants and website are the showy blooms of our society but the newsletter is its vascular system. I'm sure that when most members think of the society they think of the newsletter. Presumably the newsletter will eventually make a complete migration from paper to PC, but for now (and perhaps even then) it is a strong and important icon for the society.

Promotion of the society is always an issue for the council. Currently we are planning a spectacular poster that will direct people to our website. Once there, folk can gain access to our conferences, grants, medals, membership lists and so on. The intent of course is that they join the society. We have to concentrate particularly on attracting young systematists and doing all we can to help them develop a career or a life-long interest in plant systematics.

Overseas the society seems to have a reasonable profile. ASBS was well represented at the International Botanical Congress in St Louis. I would guess at about 20 members, most of them presenting papers or posters. Australian Plant Systematics has a strong international profile and ASBS is intimately linked to this success through its conferences, support network and of course the newsletter.

Unsurprisingly, gene sequences were used in most IBC presentations to answer the big and small questions in systematics. Equally unsurprisingly it was widely acknowledged that morphological data are needed to interpret the often confusing molecular signals and to translate the results back to most people's reality (to define and discriminate groups). Nevertheless it would be nice to introduce a little more genetics into the newsletter to help bridge the gap between historical bibliography and historical biogeography. I'm not sure how to do this in pleasant and breezy manner but it may be an interesting challenge for the next 100 issues.

In the session I was involved in, on vicariance biogeography using cryptogams, it was stimulating to hear about advances in the systematics of ferns, bryophytes, fungi and algae (again mostly due to molecular sequencing). While specialist societies exist for these groups of organisms, ASBS has an important role in bringing together systematists from all plant-like kingdoms (through links with SASB and zoological societies of course we can benefit even further). To that end, it would be good to have more cryptogamic articles in the newsletter (with flair and flourish, acknowledging the more general audience). The very first newsletter carried an announcement about John Walker's 'List of some mycological and culture collections in Australasia'.

The International Federation of Systematic Societies mentioned in the last newsletter took another step forward with an informal meeting of society Presidents. The Federation will concentrate initially on a website linking together the world's systematists (through their societies) and through broader editorship of *Systematic Botany*. As always, our newsletter will keep you up-to-date with this initiative. In the first newsletter, Trevor Whiffin reported that the society was applying to ANZAAS for affiliation. Today we are part of the formative group for an international scientific affiliation.

On behalf of past and present Presidents, thank you to every newsletter editor and every contributor.

Tim Entwisle

ABRS REPORT

Staff

Jean Just, Director of the Strategies and Research Section of ABRS, retired on August 25. Prior to the reorganisation of ABRS he had held the position of Director Fauna.

Annette Wilson is Acting Executive Editor (Flora). Annette's direct phone number is (02) 6250 9417, and her email address is annette.wilson@ea.gov.au.

Publications

The Families of Flowering Plants of Australia. An Interactive Identification Guide, edited by Kevin Thiele & Laurie Adams, was released at the end of July, and demonstrated at the IBC where it was enthusiastically received.

Flora of Australia Supplementary Series No. 8: Vegetation of Tasmania, published jointly with the University of Tasmania, Forestry Tasmania and the CRC for Sustainable Production Forestry, was released in late July. It has also been enthusiastically received, and has made the best-seller list in Hobart in at least one bookshop. The book was launched at the Botanic Gardens in Hobart by the Governor of Tasmania on September 16, with Tony Orchard acting as MC for the event.

ABRS, in cooperation with the Natural Heritage Trust's Bushcare program, has produced a set of four posters on grasses. They feature the paintings that will be used for the covers of the Flora of Australia grass volumes, as well as many photos, under the titles: Grasses, take a closer look; Coastal and Wetlands; Northern Australia; and Southern Australia. The posters are very beautiful, and FREE. If you would like a set, contact the Community Information Unit of Environment Australia, GPO 787, Canberra, ACT, 2601, or email ciu@ea.gov.au, or phone (freecall) 1800 065 823.

Welwitschiaceae and Stangeriaceae, parts 2 and 3 in the *Species Plantarum: Flora of the World* series, are completed and awaiting final approval by the Species Plantarum Editorial Committee. They should go to press in early October.

Biologue, the annual report of ABRS activities, has been expanded into a bi-annual publication. The September issue will provide information on the Grants program, including articles on some current research grants, as well as on two international endeavours - the Global Taxonomy Initiative and the Global Biodiversity Information Facility. There will also be the usual information on staffing and committee memberships.

Other activities

Tony Orchard attended the Nomenclature sessions and main International Botanical Congress in St Louis, Missouri, from 26 July to 7 August 1999. He spent a lot of time chatting to the many Australian attendees, as well as renewing international acquaintances.

The ABRS Advisory Committee met on 18–19 August, in Canberra, when they assessed the 2000 grant applications. The list of recommended grants is currently with the Minister, Senator Hill, for approval.

The ABRS Editorial Committee will meet on 19–20 October. This will be the first meeting of the combined Flora and Fauna Editorial Committees. Please remember that you can discuss any matters relevant to ABRS with members of either the Advisory Committee or the Editorial Committee, as well as with ABRS staff. Feedback from the scientific community is valuable, and enhances the committee members' ability to provide informed advice to ABRS and the Minister. A list of committee members is available at the ABRS web site - http://www.anbg.gov.au/abrs/grants/biol99.htm

Editing in progress

The following volumes are well-advanced in the editing process, and most should go to press during 1999, roughly in the order listed:

Flora of Australia Volume 17A, Proteaceae 2–*Grevillea*
Flora of Australia Volumes 11A & 11B, *Acacia* 1 & 2
Flora of Australia Volume 43A, Poaceae 1
Flora of Australia Volume 44, Poaceae 3.

Work is underway on an additional group of publications, which should go to press in 2000:
Flora of Australia Volume 43B, Poaceae 2
Flora of Australia Volume 39, Alismatales to Arales
Flora of Australia Volume 51, Mosses 1

Flora of Australia Volume 5, Caryophyllales 2 to Plumbaginales
Nature's Investigator: The Diary of Robert Brown in Australia 1801–1805
Fungi of Australia Volume 2B, Catalogue and Bibliography of Australian Macrofungi 2
Fungi of Australia Volume 15A, Hyphopodiate Asterinaceae.

Annette Wilson
Acting Executive Editor Flora

ABLO REPORT

Summer

Yes - it can happen here! Not much rain and temperatures into the 30's in late July saw much of the Gardens start to turn the colour of a Wheatbelt paddock. Pity the good weather couldn't have lasted until the solar eclipse on Wednesday 11th August at 11.11 am. In the area of totality around Cornwall it was wet and cloudy, but out on Kew Green many staff gathered with a variety of viewing contraptions and were rewarded with plenty of sunny breaks. A 95% eclipse certainly darkened the Green and the temperature dropped noticeably, but perhaps the most remarkable effect was the crescent-shaped shadows falling through the chestnut leaves onto the ground around the gates to the herbarium.

Staff

The herbarium's Palynology section has been combined with the Jodrell's Anatomy section to form the Micromorphology Group, under the overall management of Dr Paula Rudall.

Brenda Carey retired in early August after many years at the herbarium as Personal Secretary to Keith Ferguson and more recently Phil Cribb.

Sir Ghillean Prance took his leave with staff at the annual staff BBQ on the evening of the 15th July. Professor Peter Crane took up his post on 15 August and on the 24th he met with reporters from the daily nationals for a photoshoot, along with the ABLO and one of the *Wollemia nobilis* seedlings.

Meetings

On 24th June the herbarium hosted a day-long imaging workshop, where staff considered the range of requirements Kew had for images, with special emphasis on the impact of digital imaging. Especially significant for the herbarium were the reports on the projected life-span of the cibachrome machine and the possibilities of a digital replacement.

Peter Crane answers questions in the Princess of Wales Conservatory.

It was generally agreed that current scanner/printer combinations that could approach the resolution and overall quality of a cibachrome image would be prohibitively expensive (if they existed). However, a working group was set up to monitor developments in the area with the aim of drawing up a set of specifications for an eventual replacement. Issues of archival storage, web access and copyright were also covered.

Of course the big meeting this quarter was the XVI International Botanical Congress in St Louis, Missouri. The Nomenclature Section was, I understand, the most well-attended in the section's history with a reported 265 members. Held at the Missouri Botanical Gardens in a week of 40 degree heat, participants voted down names in current use, biocode-related proposals and any reference to registration.

In the following week the ranks swelled to 5,000 for the main conference in the city centre. Participants would walk past the anti-genetic-modification protesters in the morning and have to choose between a range of up to 19 concurrent sessions available on some days. Or they could browse through the 2,900 posters on display! Around 25 Kew staff attended the congress and I would guess I saw about the same number of Australians there.

By any standard this was a big meeting high on variety, information content and scientific discussion.

Visits and visitors

A number of enquiries took me to the Webb and Tropical Herbaria in Florence during the last week of June. The Australian material I examined, particularly Labillardiere's types, are well-maintained and were made available very efficiently and graciously by Dr Chiara Nepi.

Recent visitors to the herbarium and library included Rod Henderson and Bryan Symon (BRI), Dana Bergstrom (U.Qld), Tanya Leary (PNG-WWF), John van Tigglen (Cambridge U.), Juliet Wege (UWA) and Ken Hill (NSW). On 14th July Carole Flood (wife of the Australian High Commissioner) brought Anne Marie Kemp (wife of the federal Education minister) for a tour around the gardens including a visit into the herbarium and library.

Rodger Elliot visited Kew on the 19th June, three days before being presented with the gold Veitch Memorial Medal from the Royal Horticultural Society (see story elsewhere in his issue).

Handover

Bob Chinnock arrived on 22nd August, the first ABLO from AD for 20 years - for which congratulations all round! He tells me he had been hoping to miss the big move of the collection there into the revamped tram sheds AD will now call home, but that things were running ahead of schedule (unlike the trams)!

I wish Bob all the best for his year in the ABLO room and I look forward to seeing many of you at the Dampier 300 meeting in Perth during the first week of December.

Alex Chapman
ABLO
August 1999

ARTICLES

The significance of the Society and the *Newsletter*

Formation of ASBS, and production of the *Newsletter* in particular, led to greatly improved communication between those working and interested in Australian plant systematics—from the beginning we have had members who are not active in the field but simply wish to keep up with developments. A number of significant conferences and publications have appeared under the auspices of the Society, though it could be argued that many or all of those might have happened without it. The *Flora of Central Australia* was especially important in showing that taxonomists could co-operate nationally, a kind of precursor to the *Flora of Australia*. Without ASBS, however, we would not have the *Newsletter*. It has carried many articles that otherwise would not have been published. Besides Society business, items that I have found especially useful are those from ABRS, the ABLO, herbaria, meeting reports (including the Nancy Burbidge Memorial Lectures) and personal news. The *Newsletter* has succeeded where its predecessor *Australian Herbarium News* did not. Perhaps the earlier one was before its time, or perhaps there were just not enough botanists around then to maintain a momentum. As a historical record the *Newsletter* is already a wonderful resource.

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Corrigendum: Notes on generic concepts in *Rhodomyrtus, Archirhodomyrtus, Decaspermum,* and *Pilidiostigma* (Myrtaceae) by Neil Snow

After going to press the author was informed that *Eugenia myrtopsioides* Guillaumin of New Caledonia also has partial horizontal false membranes between seeds (Dr John Dawson, pers. comm.).

Bramble thickets

D. Symon, K. Evans & J. Hosking

The micro or agamospecies of the *Rubus fruticosus* complex are major weeds in southern Australia. Millions of dollars are spent in attempting their control which ranges from physical grubbing, grazing, chemical spraying and the use of rust fungi. The results have been patchy particularly for the last two and it is recognised that different biotypes may react differently. Work on all aspects of control is continuing with a special effort to increase the effectiveness of the rusts. The rusts in Australia are being typed and tested against the biotypes of *Rubus* at the Waite Campus, University of Adelaide.

However there has been no consensus amongst the State Herbaria on the names used for the taxa present in southern Australia. Some unity of taxonomy is essential for more specific chemical attachment and in particular to make the search for rusts more effective.

The taxonomy of these microspecies is notoriously difficult. It can only be done with any chance of success with adequate specimens of primocane, floricane and petal preparations, but even so see below.

To this end substantial, careful, multiple collections have been made from South Australia, New South Wales, Victoria and Tasmania and sent to two European authorities and the species recognised are shown in the table below.

A couple of cautions apply. It is proving difficult to distinguish *R. armeniacus* and *R. anglocandicans* (= the misapplied *R. discolor* and *R. procerus*) and *R. leucostachys* (= *ulmifolius* hybrids) is proving very variable.

Possibly a measure of the state of *Rubus* taxonomy may be judged from the fact that of the last batch of 60 collections sent away there was only precise agreement on 26 of them – i.e. 43% !!

In addition to the taxonomic effort, the DNA profiles of 200 plants from 141 locations was determined. These have yielded 40 distinct patterns – i.e. many more than the recognised taxa to date. The pair *R. anglocandicans/R. armeniacus* have shown a consistent pattern while *R. leucostachys* has been very variable matching the diversity of its morphology. DNA profiling however does promise

	WA	SA	NSW	Vic	Tas
Rubus					
anglocandicans A.Newton	+	+	+	+	+
armeniacus Focke	+	+	+	+	+
cissburiensis Bart. & Riddl.			+	+	
echinatus Lindl.				+	+
erythrops Edees & Newton		+		+	
laciniatus Willd.		+	+	+	+
leightonii Lees ex Leighton			+		
leucostachys Schleich ex Sm.		+	+	+	+
phaeocarpus W.C.R. Watson		+			
polyanthemus Lindeb.				+	+
rubritinctus W.C.R. Watson		+			
ulmifolius Schott	+	+	+	+	
v. *anoplothyrsus*		+			
vestitus Weike & Nees			+	+	

Note: Plus putative hybrids. Plus some to Series only. No Western Australian material has been available to send overseas and more species are likely to be found there.

to be of assistance in clinching the application of names to some collections otherwise doubtful. It is agreeing with the taxonomy in many but not all cases.

The rust work has demonstrated the specificity of rust biotype to *Rubus* biotypes. The collections of specimens authenticated overseas will allow the more uniform application of names in southern Australia.

The DNA profiling is of help in defining biotypes and is providing a record of the genotypes being used in the rust assays. In addition the DNA profiles of 'no name' taxa are recorded for future use.

Rubus duplicates will be distributed in due course.

Bioinformatics: Management and publication of institutional descriptive datasets at the Western Australian Herbarium[1]

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Abstract
Computerised methods for scoring, managing and presenting descriptive information have most commonly been used by individual workers. Some institutions are adopting descriptive data-basing, where standard character lists are developed using Description Language for Taxonomy (DELTA) methodologies to provide comparable yet versatile descriptions for families, genera and species. At the WA Herbarium two state-wide datasets have been developed: *WAGENERA* - comprising descriptions of all families and genera, and the *WA Flora Catalogue* with small standard descriptions for all 12,000 species and infraspecies. Databased descriptions can be regularly maintained and the production of interactive keys and descriptions automated. They can then be integrated with related taxonomic datasets into a comprehensive flora information resource on the web, such as Western Australia's *FloraBase*.

Introduction
Institutional datasets are defined (for the purposes of this work) as those for which a scientific institution claims on-going custodianship and are usually related to its regional/political area of responsibility rather than a specific systematic group, which are more commonly the primary responsibility of individuals or small teams.

In the last thirty years institutional information such as census, specimen (eg. herbarium, living collection, DNA extracts and sequences) have become computerised datasets maintained centrally by the custodial organisation. Yet institutional descriptive information still commonly takes the form of floras or monographs with only secondary transformation into an accessible electronic format such as a database. The same can be said for descriptive projects at the national or international level, recent examples of which include *Flora of Australia, Flora of China*, or the recently published *Species Plantarum* volume. All have focused on a printed product and subsequently found different routes to manage or present the information with an electronic approach of some sort.

The capture of descriptive information from the outset using a rigorous method for character definition and comparability has most commonly been the domain of individuals or small teams of scientists working on a specific taxonomic group. We believe this is largely because agreement on the definition, management and dissemination of descriptive character data becomes more difficult to achieve as the number of taxonomic groups (and therefore specialists) increases. Nevertheless, we see that the advantages to an institution in applying the same approach to the management of descriptive

[1] Presented as a poster at the XVI International Botanical Congress, St Louis, Missouri, USA. August 1-7, 1999

data as it does to other fundamental datasets to be equally significant.

This paper outlines the approach taken by researchers at one institution to capture, manage and disseminate descriptive data on the state's flora in a coordinated manner using database methodologies.

Objectives and Methods

The state of Western Australia (WA) comprises 2,525,500 km^2, or one-third of the Australian continent and is home to over 12,000 vascular plant taxa. Of the three major phytogeographic areas it is the Southwest Botanical Province (SWBP) which has the greatest diversity with almost half of the species and up to 79.2% species endemism (Beard, Chapman and Gioia, in prep.). The SWBP is second only to the Cape Floristic Province as a centre of biodiversity for regions with a mediterranean climate. The primary role of the Western Australian Herbarium is to be the centre for inventory and systematic research into the state's diverse and unique flora.

Institutional databasing began at the WA Herbarium in 1985 with the development of a central specimen database. Completion of the backlog of specimen databasing occurred in December 1994 and since that time approximately 30,000 specimens have been added each year to take the current total to 460,000 records. The design of a centralised database of plant names relevant to WA began in 1990 and currently contains circa 17,000 accepted, synonymous and misapplied names (for further details see Chapman and Gioia, 1995).

With the experience of successfully developing these two fundamental datasets, investigations began in 1991 into the feasibility of developing the framework, methods and tools necessary for the systematic long-term capture, maintenance and presentation of descriptive taxonomic information on the state's flora using current computer technology. This project set out to identify:

- a standard for capturing and storing descriptive data,
- mechanisms for integrating descriptive data from various projects,
- flexible methods for interrogating and disseminating this information, and
- strategies for the on-going maintenance of the data once captured.

Additionally, a mechanism for making the descriptive data available seamlessly alongside the other taxonomic datasets under the herbarium's custodianship was required. Rapid changes in computer technology made data capture in open systems a priority.

Results

Previous positive experiences on various systematic projects using DELTA - the DEscription Language for TAxonomy, a general system for coding taxonomic descriptions (Dallwitz, 1980, Dallwitz *et al.*, 1993) and a broad sampling of the various software which implemented the standard made its choice as a codification standard simple. The DELTA system provided the rigour of a standardised coding syntax and an explicit character definition which enabled the capture of comparable descriptive data for the target taxa.

Translation software allowed the codified data to be transformed into a range of outputs, including printed descriptions and keys, phylogenetic or interactive identification matrices. Translation of descriptive information into multiple languages also became possible (eg. Jarvie and Ermayanti, *Tree genera of Borneo*, 1995). That a number of software programmers from around the world were actively developing a range of applications which implemented or supported the DELTA standard was also considered a significant advantage.

To enable the integration or sharing of data between various institutional descriptive projects a multi-level nested set of characters was proposed. In such a system every descriptive data project would contain a small core set of characters along with the project-specific characters. Taken together, all project characters would comprise the institutional character list (see figure 1). Additional potential for data integration could be achieved if subsequent new projects started with the core characters, then selected suitable characters from the institutional list before defining any new characters.

To further increase the potential data compatibility we selected an existing well-developed, clearly defined and widely published character list, from *The Families of Flowering Plants* (Watson and Dallwitz, 1994) as the basis for the initial institutional character list.

Two institutional projects presented themselves for application of these proposed methods, and characters for each were drawn firstly from the newly defined institutional character list. They were:

- *The WA Flora - A Descriptive Catalogue* (Paczkowska and Chapman, in prep.) which

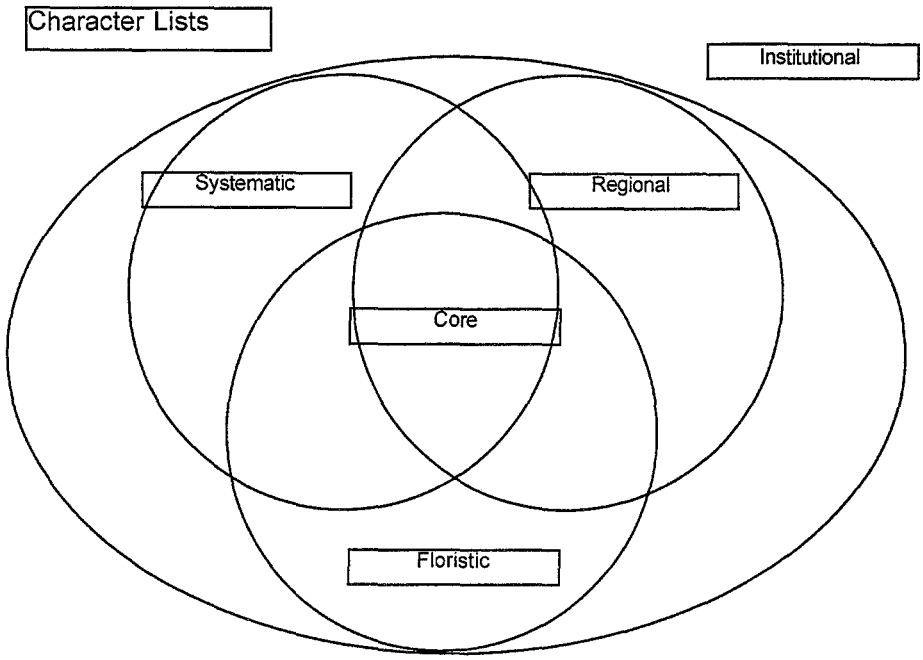

Figure 1. *Illustration of the intersection of character lists from a range of* project *types, each possessing an agreed set of* core *characters and together building into the* institutional *character list.*

scored a dozen basic morphological and edaphic characters for each of the 12,000 vascular taxa in the state, and

- *WAGENERA* (Macfârlane, Watson and Marchant, in prep.) which captured a much larger number of morphological characters for the 1300 genera in WA. Family data from Watson and Dallwitz (1992) was further enhanced and incorporated as part of the project.

It was also realised that the management of institutional characters across an increasing number of projects would require an automated or database approach. In 1996, Chapman and Choo briefly outlined the functionality of a 'DELTA Integrator' which would provide a range of tools for creating, checking and coordinating DELTA-based projects. The design also allowed individual projects to work independently yet 'synchronise' their data with the institutional character list at suitable intervals.

Chapman *et al.* (1995) and Dallwitz (1996) outlined methods for enabling descriptive datasets over the web, either by the transformation of DELTA-coded data directly to hyper-text markup language (HTML) for browsing and linking, or through the download of on-line data matrices directly into interactive identification software. A number of alternative methods were also being explored by other workers, either using web-enabled database systems or the use of java applets to remotely query descriptive data directly inside a web browser.

Discussion

As data capture for the two descriptive projects progressed and prototyping of output products began, a range of additional components were needed to increase these products' functionality. In particular, character notes, illustrations and images were required to simplify the interactive identification process in newly available software. Similarly, taxon images to aid in the verification of identification became desirable. Distribution data and maps could be drawn from the specimen database which by this time had largely been verified and the records geocoded to a given accuracy.

The creation of these 'standard components' such as taxon images and distribution maps, together with

developments in integrating the specimen and census databases, all through the adoption of the NameID key as the primary computerised identifier for data elements, meant that a great deal of textual and graphical data was readily available. Concurrent testing of the web as a simplified information delivery mechanism and the movement of all datasets onto a single database platform (TEXPRESS, KE Software) facilitated the development of an integrated web-based information system, subsequently named *FloraBase* (Western Australian Herbarium, 1998).

In *FloraBase* three forms-based query interfaces to the names, specimen and descriptive data are available, but there is a common look and feel to the main report pages (exemplified by the sample page in figure 2). The use of the standard component approach allows pages to be assembled 'on the fly' at the time of record retrieval from the database.

In a *FloraBase* description page (figure 2) the classification, name, citation and status data are drawn from the census names table. The distribution statement and map are derived from

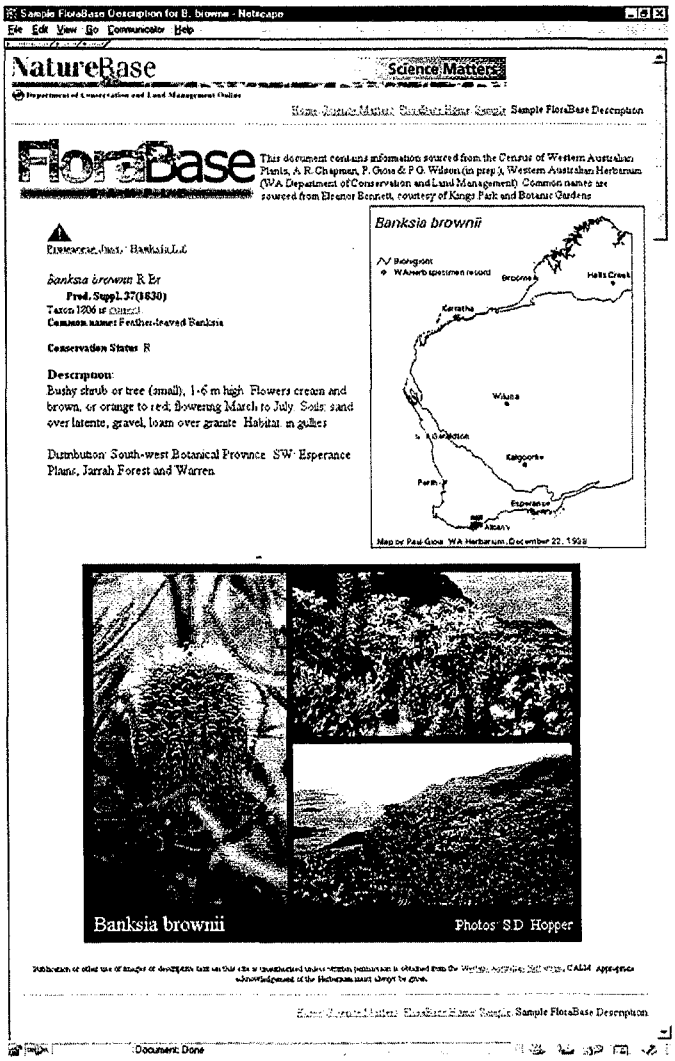

Figure 2. *A screenshot of the main descriptive page from* FloraBase *showing the amalgamation of various standard components (classification, citation, status, brief description, distribution, illustration) onto a single page. Such a page can be generated for every vascular plant species or infraspecies recognised as occurring in Western Australia and with all components present in most cases, excepting the taxon image.*

geocoded records in the specimen database and the full specimen records for the relevant taxon are available by clicking on the map itself. The standard taxon image, illustrating diagnostic features, habit and habitat, is used both for the website and in interactive keys for groups containing the species, and for related CD-ROM products.

The brief description is a warehoused version of the *WA Flora Catalogue* data transformed from its codified DELTA form to HTML and stored in atomic fields in *FloraBase*. It is the textual data that is queryable via *FloraBase*, and that is reformulated on this page as a descriptive paragraph.

The classification hierarchy provides links to comprehensive pages of descriptive data for the respective genus and family, warehoused in *FloraBase* from the *WAGENERA* DELTA database. Use of the data for identification will be enabled not by simple database query as is the case for the species-level descriptions, but utilising the advanced facilities of INTKEY (Dallwitz, Paine, and Zurcher, 1998). It is planned that customised interactive identification datasets to genera will be linked to in each family page. Providing the end-user has already installed INTKEY, the data matrix, character and taxon images will be downloaded as required from the *FloraBase* web site. This approach is now used by a range of descriptive data projects, including the online version of Watson and Dallwitz' (1992) *The Families of Flowering Plants*.

Conclusion

The successful launch of *FloraBase* onto the web in November 1998, and its adoption as the primary source of authoritative data on the Western Australian flora by nearly 1,000 registered users in the following months has created a new model for the dissemination of flora information in the state.

While access to the latest accepted names for the state at the lowest level, or detailed specimen information as an aid to systematic or conservation research at the highest, will remain fundamental to the site, it is envisaged that the most popular and dynamic part of the site will be the descriptive components.

The range and scope of interactive identifications available on the site will expand. It is planned that the small list of characters currently available for species-level descriptions will grow to include the full 'core characters list' as part of the ongoing dataset maintenance. Family and generic level identifications will be added and refined with more illustrations and images, and a closer focus on significant groups can be incorporated. New hypotheses of angiosperm phylogeny may be more readily communicated. Collaboration will see similar methods applied to more general subjects such as horticulture or weeds.

Advantages extend beyond the immediate increase in institutional profile. Faster access to the full range of authoritative data for staff, combined with moderated end-user access which empowers them to, for example, perform their own identifications of the state's flora, will enhance the focus on systematic research at the herbarium, which benefits the long-term goals for the institution and systematics generally.

Comprehensive information systems concerning state or regional floras and managed by the custodial institution should naturally 'anastomose' into national or global flora information systems. Cornerstones to such a network are now coming into existence with projects such as the *International Plant Names Index* (Croft *et al.*, 1999). Coordination remains the key.

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The "Tempting Fate" ASBS Picnic

Peter Jobson
National Herbarium of NSW

Rain in Brisbane, Rain in Melbourne, Rain in Perth.... For a week, I studied the entrails of sacrificed chickens and made offerings to appease the Gods. Every day for a week, I made my daily pilgrimage to St Marys Cathedral and lit a candle for St Govan, whose feast day it was, all in the hope of fine weather. And it worked! On the morning of Sunday 20th June, Sydney ASBS members awoke to a glorious sunny day.

As I made my descent into Bobbin Head in the Ku-Ring-Gai Chase National Park, north of Sydney, however, my heart sank. For although I had prayed for fine weather for this picnic, I hadn't prayed for parking. As far as the eye could see were cars, and not just your standard suburban car. Oh no! Our picnic had managed to coincide with a car rally for the combined Hot Rod Car Associations of NSW, along with the Chevy Car Club of NSW and numerous other societies. (I regret not praying harder to St Govan. A hermit who spent most of his life in a cave, he would have appreciated our desire for plenty of space.)

So, in the tradition of previous picnics, we bent the National Parks rules and parked on the kerbing, much to the annoyance of one Ranger at least. Fortunately, we managed to persuade the Ranger to turn a blind eye, mainly through gentle cajoling and plying her with Melting Moments biscuits.

After this minor hiccup, the rest of the picnic ran smoothly and most enjoyably. As per usual we had enough food to feed an Albanian refugee camp for a week and most of the time was spent soaking up the warm winter sun. Andrew Perkins (Sydney Uni) and his father came with sea kayaks and were last seen heading for Auckland. Frisbee throwing was the game for this picnic and we discovered that Murray Henwood had obviously spent more time perfecting his technique than he did attending uni lectures as an undergrad.

Murray was most impressed with the Hot Rods and in particular the subculture that was associated with it and hoped that future ASBS picnics would be coupled with their car rallies. Other suggestions for future picnics included Martin Place in the Sydney CBD. This is currently having its paving replaced for the Olympics and as a consequence is only 3 feet wide, rather than its normal wide promenade. The new bus terminus opposite Central Railway Station was also mooted for similar reasons. Neither have any parking at all.

We tried to finish the day off with coffee, but North Turramurra is not the inner city and Una's Teahouse had just closed for the day and we didn't fancy instant coffee through the espresso machine in the Take Away joint across the road. It didn't matter about the coffee though, we had had an excellent day as it was.

The Gold Veitch Memorial Medal is awarded to Rodger Elliot

The Gold Veitch Memorial Medal is conferred annually on persons who have helped in the advancement and improvement of the science and practice of horticulture. Unlike some of the other RHS awards, this prestigious and highly coveted medal does not depend on having British nationality.

The Veitch Memorial Medal was instituted in 1870 in commendation of James Veitch (1815-1869), who was one of the leading nurserymen of his day and a Council member of the Royal Horticultural Society (RHS).

On 22 June 1999 at the Annual General Meeting of the RHS at Vincent Square, Westminster, the President Sir Simon Hornby awarded the **Gold Veitch Memorial Medal** to six individuals, one of whom was Rodger Elliot.

Rodger Elliot is an authority on Australian plants and their use in the landscape. He has lectured about his native flora in the USA and has led tours of Australia, western USA and China. After working with the renowned landscaper Edna Walling, he ran a retail and then a wholesale nursery specialising in Australian native plants. He has received the **Australian Institute of Horticulture Award for Excellence**, the **Australian Natural History Medallion** and the **Australian Plants Award (Commercial Division)**. He is also an Honorary Life Member of the Australian Plant Society.

Elliot has written many books on the Australian flora, and together with his colleague David L. Jones, they have produced an epic, multi-volume masterpiece entitled **Encyclopaedia of Australian Plants suitable for cultivation.** The first volume appeared in 1980 and six more have appeared since then, together with updated supplements. Another two volumes are expected. It contains, simple but accurate botanical descriptions of taxa, including hybrids and cultivars, has information on natural habitats, specific cultivation requirements and notes on horticulture, propagation and uses, accompanied by superb photographs and excellent line drawings.

To those of us outside Australia, who have to deal with the many Australian taxa in cultivation throughout the world, this work is a model of what a modern horticultural flora should be. It is to be hoped that this supreme international accolade will give just recognition to Elliot and Jones for producing this invaluable reference work.

Susyn Andrews
Horticultural Taxonomist
Herbarium, Royal Botanic Gardens, Kew

Landcare Research

Landcare Research, as a government-owned research institute is the holder of the main collection and associated databases for New Zealand plants (with a significant Pacific Islands collection). A process of internal and external reviews has led to some realignment of research directions and management of botanical biosystematics and collection activity. A research programme 'Biosystematics of New Zealand Plants' is now funded by the Foundation for Research, Science & Technology and is aimed at delivering taxonomic information and databases to a wide range of users. User needs are now beginning to play a significant role in establishing research directions.

This process has required us to realign responsibilities and staffing in line with funding and research needs. The following is an update on staff of the programme Biosystematics of New Zealand Plants.

Programme Leader: Dr Ilse Breitwieser
Research:
Dr Ilse Breitwieser (New Zealand Angiospermae, esp. Compositae)
Murray Dawson (cytotaxonomy)
Dr Allan Fife (Flora of New Zealand: Mosses)
Kerry Ford (research assistance; weed identification newsletter; *Carex*)
Dr David Galloway (Flora of New Zealand: Lichens)
Sue Gibb (research assistance: moss and grass Flora)
David Glenny (New Zealand Angiospermae, esp. Gentianaceae; Hepaticae)
Dr Peter Heenan (New Zealand Angiospermae, esp. Brassicaceae, Fabaceae)
Mary Korver (research assistance)

Vaughan Myers (research assistance: SEM and TEM, anatomy)
Debby Redmond (research assistance)
Andy Glazier (research assistance: molecular systematics)
Rebecca Wagstaff (botanical artist)
Dr Steve Wagstaff (molecular systematics)
Dr Colin Webb (Seed Atlas)
Dr Aaron Wilton (New Zealand Monocotoyledonae, esp. *Luzula*)

Herbarium and associated databases:
Herbarium Keeper: Dr Ilse Breitwieser
Herbarium Administrator: Dr Peter Heenan
Database Keeper: Dr Aaron Wilton
Database Administrator: Michelle Breach
Plant Identification Register: Murray Dawson
Curation: Murray Dawson, Kerry Ford, Sue Gibb
Curatorial assistance: Mary Korver, Debby Redmond
Scientific curation, enquiries and plant identifications: Dr Ilse Breitwieser, Dr Allan Fife, Dr David Galloway, David Glenny, Dr Peter Heenan, Dr Steve Wagstaff, Dr Aaron Wilton
Friends of the Herbarium: Daphne Banks, Ngarita Johnstone, Valerie Lovis, Jean McCallion, Elisabeth Ross.
(Please send all herbarium enquiries to Peter Heenan, database enquiries to Aaron Wilton, and plant identification requests to Murray Dawson).

We expect these changes to lead towards plant biosystematics research that increases its responsiveness to user needs and maintains high quality research. We will also aim to expand our services to Government agencies, involvement with Botanical Societies and provision of loans to overseas Herbaria.

My Land Rates at Work

Peter Jobson
National Herbarium of NSW

I am fortunate enough to live in one of the heritage precincts of Newtown, an inner Sydney suburb. The advantages include living in a huge Victorian terrace with 18 foot ceilings & and marble fireplaces, and being only minutes walk from the café society of King Street. The disadvantages include however, being constantly inconvenienced by film crews using the street or houses as film sets, and having to get approval from the whole street to do any modifications to the exterior of our houses.

So, when one of the original plantings of *Ficus macrophylla* died opposite our house, we were expecting trouble with our council and I had written a letter stating that in my professional option the tree was not going to recover. We had a public meeting with our council about three months ago where we drew the council's attention to the tree's demise. About a week ago this notice, wrapped in plastic and tied onto the tree with industrial strength sticky tape, appeared.

Tree Removal Notice

Loc: Georgina Street.

Species: *Ficus* spp.

Council proposes to remove this tree on or after 14 September 99.

Reasons for removal: 1/ Tree is dead. 2/ Structurally unsound.

Residents wishing to comment on this action should contact Councils Tree Management Officer in writing or phoning prior to the above date.

I'm hoping they remove the tree soon, as I am now constantly being interrupted in my garret bedroom from the laughter of all and sundry who read this notice. It's nice to know I'm getting something for my land rates.

EUREKA PRIZE

The Australian Museum is proud to announce the launch of the 2000 Eureka Prizes, winners of which will be announced at a ceremony during National Science Week 2000. Your help in publicising the prizes, and passing this message as widely as possible, would be appreciated!

From their modest beginning in 1990, when three prizes were awarded, the prestigious Eureka Prizes have grown into Australia's leading national science awards. In 1999, eleven prizes worth $100,000 were awarded.

The Eureka Prizes are a unique cooperative venture between the federal government, the NSW state government, educational institutions and a range of high profile private sector companies and organisations. The Prizes raise the profile of science in the community by acknowledging and rewarding outstanding achievements in Australian scientific and environmental research, science communication and journalism, and the promotion of science.

While the final lineup of the 2000 Eureka Prizes is still being finalised, the prospects are for a record number of prizes in this, the tenth anniversary series.

Entries and nominations are now invited for:

- The $10,000 Allen Strom Eureka Prize for Environmental Education Program
- The Australian Museum Eureka Prize for Industry
- The $10,000 Australian Skeptics Eureka Prize For Critical Thinking
- The $10,000 Environment Australia Peter Hunt Eureka Prize for Environmental Journalism
- The $10,000 POL Eureka Prize for Environmental Research
- The $11,000 University of Sydney Eureka Schools Prize for Biological Sciences.

Entries for all prizes (other than the Eureka Schools Prize) close on 11 February 2000. Candidates can either enter themselves or be nominated by others.

Entry forms and full details of the 2000 Eureka Prizes are available at the Museum's webpage at http://www.austmus.gov.au/eureka or from Roger Muller on 02 9320 6230.

Roger Muller
Associate Director's Office
Australian Museum

OBITUARY

Herbert Knowles Charles Mair

Knowles Mair was a botanist in the Sydney Herbarium from 27 May 1946 , became Senior Botanist 12 December 1948, and Director & Chief Botanist 20 March 1968, and he retired 30 June 1970. Knowles was born 8 April 1909 at Toongabbie, NSW, educated at Narrabeen Public School and Sydney Grammar School, and graduated from the University of Sydney with 1st Class Honours in Botany.

Despite outstanding administrative ability, Knowles always said he was a botanist. He was instrumental in acquiring land for the Mt Tomah Botanic Garden, and he achieved the reuniting of the Gardens administration with the Botanical side. Also, he had ecological work established from the Gardens.

Knowles served in the Army during World War 2 from August 1941 to January 1946, in Melbourne,New Guinea, Borneo and Labuan.

I was fortunate to share a "room" in the Herbarium with Knowles long before he became Director. I was a junior new graduate, and Knowles was "Mr Mair" to me, but after some time he told me to call him Knowles. He was always generous with his botanical knowledge, and has been a good friend for 53 years.

Knowles is survived by his wife, Joan, and sons Ian and David and their families.

George Chippendale

REVIEWS

Would a panicle by any other name smell as sweet?

Die Infloreszenzen Band II, Teil 2, Monotele und polytele Synfloreszenzen

Focko Weberling & Wilhelm Troll†
Gustav Fischer Verlag, Jena, Germany 1998 DEM 238

Systematics demands the recognition of homologous structures in different taxa, so that synapomorphies characterising evolutionary lineages can be distinguished. For complex structures such as many inflorescences, we need to determine whether differences are related to position on the plant or location within a repeated growth unit, or to the extent of replication of processes such as the initiation of floral buds. Further, are structures suppressed or proliferated, and how do they relate in form and timing to the vegetative growth? Comparative analysis of the structures and their component parts is essential for distinguishing characters to be appropriately defined.

When the late Lawrie Johnson and I sought to compare inflorescences throughout Myrtaceae, we found one school of precise inflorescence description--that of Troll and Weberling. Translating much German text of earlier volumes in this monumental series was rewarded by its precision and logic, unmatched in the interpretation of inflorescences by other authors. The contrast with the generally muddled descriptions in the English language is well shown in the clear

structural definition of 'panicle', so often applied elsewhere to any highly floriferous and much-branched inflorescence, whatever its underlying structure.

As explained in the Foreword to this volume, Focko Weberling made a promise to his late teacher, Wilhelm Troll, that he would continue Troll's work, and this he has faithfully and energetically done. Weberling has used some illustrations and notes from Troll's draft manuscript, but deals here with families that he has himself studied in detail.

In our work on Myrtaceae, we found the Trollian precision to be essential, but we argued that Troll's concepts were influenced by the frequent use of reduced, herbaceous plants of the Northern Hemisphere as the norm, giving insufficient attention to their woody, often tropical, relatives. Some of the same emphasis continues, since the families treated are Rubiaceae, Asclepiadaceae, Polemoniaceae, Convolvulaceae, Campanulaceae, Fabaceae, Lamiaceae, Scrophulariaceae, and Plantaginaceae. There are also brief updates on changes to the classification of the following families treated in earlier volumes: Papaveraceae, Ranunculaceae, Crassulaceae, Rosaceae, Lythraceae, Thymelaeaceae, Caprifoliaceae and Apiaceae. In Rubiaceae and Fabaceae, in particular, many woody examples are given (including various Australian Faboideae and *Acacia*), but herbs dominate the volume. Indeed in the Foreword, Weberling explains that a whole volume on woody groups was originally planned, but that such studies are not far enough advanced for inclusion here.

There are general discussions of the characteristics of monotelic and polytelic synflorescences and the derivation of the latter type from the former. The final chapter, dealing with the general phylogeny of inflorescences is, however, extremely brief. In scarcely more than a page of text, the proposition is developed that single flowers terminating leafy shoots have been considered to be primitive, but that many inflorescence types are reductions from a panicle. Also that, despite the studies made of fossil flowers, there is still much to learn about the origin of the flower and the steps between the flower and multiflorous inflorescences with axes terminated by flowers.

If you wish to describe and compare inflorescence structures precisely, then encourage your library to buy this important volume. If the German language is not your strength, study the abundant and excellent illustrations to narrow-down the amount of translation needed by finding useful comparative examples illustrated, and often diagrams indicating the directions in which evolutionary change is considered to have occurred. Meanwhile, live in the hope that the precision of these descriptions and interpretations may one day be combined with the phylogenetic understanding of flowering plants that has recently emerged from DNA studies, and also encourage the development of interpretations of inflorescence structures based on according equal rights to the largely woody component of floras of the tropics and Southern Hemisphere.

Barbara Briggs
National Herbarium of New South Wales
Royal Botanic Gardens, Sydney 2000
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Flora of Australia Volume 17B, Proteaceae 3, Hakea to Dryandra

Melbourne: ABRS/CSIRO Australia (1999)

Volume 17B of the *Flora of Australia* covers some critical genera of the Proteaceae, *Hakea*, *Dryandra* and the small rainforest genera *Austromuellera* and *Musgravea*. The treatment of *Dryandra* is very welcome, with this difficult genus now presented in its (current) entirety in one place. However, I want to focus on the only genus that receives a lengthy introduction – *Hakea*. Both the introduction to this genus and the taxonomic treatment are the result of a lot of work by Bill and Robyn Barker and Laurie Haegi. I won't call this a culmination, since they make it very clear in the introductory section that their work on *Hakea* is far from complete. Nevertheless, they pull together a large amount of data, much of it their own, in a wide-ranging review of what is known about this genus.

Like most proteaceous genera, *Hakea* becomes more fascinating the more it is studied, and this chapter provides much food for thought, plenty of room for debate, and enough research ideas to keep many people occupied well into the future. I would like to concentrate on a few of these, which I choose

because they happen to be of particular interest to me.

A particular focus of interest in Tasmania over the last few years has been the apparently ancient nature of some individual plants. One is the Huon Pine (*Lagarostrobos franklinii* – Podocarpaceae) which is a sorry story of half-baked science turned into a sensational story by the media. This may end up causing major damage to the entire area where it occurs if, as seems likely, tourists are allowed on to the Mt Read summit to see this (allegedly 10,000 year old) plant. However, the other is far more legitimate. Lynch *et al.* (1998) reported that *Lomatia tasmanica* produces sterile flowers and only reproduces vegetatively. Its current geographic spread suggests a very ancient origin for what was almost certainly a single plant in the first place, and fragmentary fossil evidence suggests an age in excess of 43,000 years. Barker *et al.* add two species of *Hakea* to this list of proteaceous species with sterile flowers. *Hakea aenigma* now covers an area of 30 x 15 km and regenerates via underground suckers from horizontal roots, while *H. pulvinifera* occurs on a single small hillside. They also note a species of *Grevillea* with a similar reproductive syndrome. This seems a very productive area for research. While mechanisms for the production of these plants in the first place obviously exist, tests for them will be hard to conceive and even harder to apply. However, the question of why at least some of these plants have been so successful and spread to such large areas is well worth investigating.

An aspect of *Hakea* that has clearly captured the interest of the authors is the way in which various species have evolved protection against herbivory. They note camouflage of fruits in a variety of ways and protection of fruits by spiky leaves in some species. They provide the innovative hypothesis that mimicry in developing fruits may provide a defence against predation of *Hakea* seed. They suggest that horns produced on some *Hakea* fruits closely resemble those on the larvae of a geometrid moth that feeds on the plant (but not the seeds). This resemblance is most striking when a larva is disturbed and arches out from the twig in a defensive aggressive posture. Black cockatoos like to eat *Hakea* seed and Barker *et al.* note that the response of these birds to the moth larvae would be interesting to observe. That is, if they avoid them, then the plant may gain by mimicking them. This has not been tested, but it would make a great research project in evolutionary theory.

Finally, I can't resist commenting on the suggested interaction between *Hakea* and the megafauna. Barker *et al.* believe that rigid, spine-tipped or margined leaves which characterise not only *Hakea* but also many other groups in the Australian heaths may have been selected in response to browsing. They also suggest that the long ascending branches ringed by sharp terete leaves, that are characteristic of several species scattered throughout the genus, may be a defensive response to browsing. This makes an interesting comparison with Tim Flannery's (1994) hypothesis about the interaction of between the megafauna (or more specifically the megaherbivores) and the scleromorphic vegetation. For Flannery's hypothesis to work, the main food for the megaherbivores was not the scleromorphic vegetation, but other, more nutrient-rich vegetation, which was severely depleted by fire due to excessive fuel build-up once the megaherbivores were extinct. Of course, part of the reason why the megaherbivores did not favour scleromorphic vegetation as a food source may have been because it had well developed mechanical defences, such as are described in this book. As the authors note, there is abundant scope for imaginative research on the potential interactions among the living Australian flora and the extinct megaherbivores which at present is largely untouched.

I commend this book to anyone who is looking for inspiration about what lateral thinking can do in the hands of herbarium taxonomists. It also goes without saying that this is an invaluable addition to the *Flora of Australia* series, adding a large degree of completeness to one of our most important families.

Bob Hill
Environmental Biology
University of Adelaide

FORTHCOMING MEETINGS

FINAL REMINDER!!

DAMPIER 300

Biodiversity in Australia 1699–1999 and beyond

Perth, 6–10 December 1999

The second circular for this conference was distributed in August, rather later than we had intended, but members would have been aware of important details through this newsletter as well as the Conference web site at http://www.museum.wa.gov.au/Dampier300/Dampier300.htm.

Going by papers and posters offered so far, the program will include a broad spectrum across our biodiversity.

Almost all of Western Australia has received good rains at various times this year. Indications are that cool, damp weather will maintain the late spring wildflowers and encourage a good showing of early summer ones for the conference tours.

The aerial tour on 5 December is still on, provided that sufficient seats are booked. If it is cancelled a full refund will be made.

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'Four Gables', 18 Barclay Road, Kardinya, Western Australia 6163
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NEWS FROM FASTS

FASTS' Response to Green Paper on Higher Education Research Funding

DRAFT
14 August, 1999
Peter Cullen

1. The nexus between basic research and innovation

FASTS welcomes the Green Paper which recognises the links between the basic research system and the innovation cycle. We believe that a knowledge-based economy is the only one that holds an attractive future for Australia. Globalisation is making the world more and more competitive. International competitiveness is now seen as being driven by knowledge and innovation, rather than resources or cheap labour. The Green paper recognises this goal, and identifies ways in which the Universities can better focus their investments to achieve this goal. The Green Paper is unashamedly about making Australian research a driver of knowledge based industry.

Given this appreciation it is odd that the paper does not better appreciate the failings of our national innovation system. The Government needs to ensure that basic research is given attention at the National Innovation Summit. It is a paradox that as we enter the knowledge age, our investment in R&D by both business and Government is being reduced.

The present Australian capital gains taxation and takeover rules almost require Australian innovators to go offshore to develop their ideas. Far from achieving a level playing field we have managed to handicap Australian entrepreneurs and innovators. It would seem that the drop in the tax deduction rate from 150% to 125% has caused a marked drop in Business Expenditure on Research and Development (BERD). Given the failure of Government rhetoric to increase BERD in the face of these tax changes, it is unclear why they expect the universities to have more success at attracting industry investment in R&D.

Government expenditure on R&D in general and on universities is also shrinking. Government research spending in the recent budget is down 0.4% over 1998-9, despite a healthy 29% increase in medical research; there was a drop of 5% in targeted R&D in universities, 5.5% to the CRC program and 0.5% to CSIRO. This flies in the face of the strategies being put in place by many of our major competitors who are increasing funding to basic research to underpin their innovation strategies.

2. The role of the ARC

FASTS strongly supports the enhanced strategic role for the ARC. Whether this new role will result in genuine strategic thinking or the chasing of fads and special interests will depend on the calibre of the people involved. It could degenerate into narrow central control which could destroy our research capacity. On the other hand, setting broad directions could help individual universities focus their investment to work towards national goals.

The reality will probably be that all universities will seek to have activity in the areas chosen for preferment, and so the strategy may not be sufficient to achieve concentration of research groups. Universities will have the challenge of deciding to maintain and further build their research capacity in areas of traditional strength, or whether to refocus on the emerging areas. It is plain that building scientific capacity takes sustained investment over time, and this provides a tension with the view that we should redirect investment to follow fads.

The ARC should be more effective given the changes proposed, and giving it a statutory basis and some administrative independence from DETYA is welcomed. It is pleasing the Government has recognised the importance of excellence in allocating research funds, and recognises the role of peer review in identifying excellence. We do not see the inclusion of some industry "end users" of knowledge as a threat to the peer review process, and we welcome the reforms of the review process which has been creaking under the load in recent years.

FASTS believes the funding associated with the ARC small grants scheme and for postgraduate training should continue to be administered through the ARC rather than shifted into DETYA, which has demonstrated limited understanding of research management.

3. University-Industry partnerships

There are a number of trends emerging in University-Industry interaction which are recognised in the Green Paper:

Research is now being seen as an investment rather than a cost.

Industry is realising that supporting mediocre research groups is not good business and are looking to focus their investment to a small number of excellent research teams. They are looking for long term on-going relationships rather than short-term contracts. They seek such collaborations in the global arena.

An emerging model of co-production of new knowledge where industry works with researchers to develop knowledge rather than try to transfer it at some point. The Australian CRC program is at the cutting edge of such developments.

The development of what Gibbons call Mode 2 research involving genuine multi-disciplinary knowledge generation within a problem context. The Green Paper recognises the emerging emphasis on collaboration across disciplines and across institutions which reflects an emerging international trend.

4. Postgraduate scholarships

The portability of postgraduate scholarships, and the operating funds that go with them may improve the postgraduate experience by encouraging universities to look closely at the experience and how it can be achieved. In reality, moving university after 12 months is hardly likely to be attractive to high flying students who want to finish and move on. It will be a useful safety net for students having an unsatisfactory experience. It will probably lead to considerable advertising and incentives to poach students from other institutions which may not be in the interests of the student or the nation.

There is a need for the universities to look again at the postgraduate learning experience. There are levers to encourage them to see whether it is efficient in terms of what it seeks to do, and whether it is effective in meeting the needs of a wider range of possible employers than the universities themselves and CSIRO. Exposing students to a greater range of role models and encouraging a culture of innovation are already seen as one of the great successes of the CRC program, and these benefits need to be made available to more students.

On the other hand the proposal to perhaps require students to pay fees once they complete the three and a half year scholarship period is a retrograde step and will penalise students, including those who choose to change universities in mid stream.

5. Infrastructure Funding

We note the proposal to attach infrastructure funding directly to grants. This will make it much harder to see what amount is being invested in infrastructure, and may make it more difficult for universities to budget for ongoing centralised research facilities such as libraries and computing facilities. Given that the present forward estimates show a halving in the infrastructure funding over the next five years, we are concerned that the amounts available will fall, and that the state of equipment and research facilities in universities will deteriorate even further.

6. Block Funding Formula for Universities

It is regretted that peer review publications have been dropped from the funding formulae. We appreciate the difficulties this indicator has caused, but note that it is the only output-oriented indicator in the formulae.

There are concerns with the prospects of including consultancy income in the University funding formula, and more detail needs to be made available before this can be assessed. There are dangers with this approach.

We are concerned that if the universities are encouraged to put more emphasis on applied research and innovation that this will divert scarce resources (people and funds) from the basic research effort of the nation, which we believe underpins innovation.

7. Funding

The Government has already accepted the need to increase funding in the medical research areas. This Green Paper provides a new framework for research in the universities, but to achieve the goals the Government sets will need further funding.

The Government should follow the lead of the Wellcome Trust in the UK which decided to provide a significant salary boost to its leading researchers, given the general lowering of conditions for University staff. A similar initiative here might assist in keeping the most able researchers working in Australia. At the lower end of the scale, issues like job security and promotion prospects for research fellows and others need to be addressed.

We believe the Government should at least maintain the level of funding of basic research through the ARC programs, and we are deeply concerned by the major drop shown in the forward estimates for the ARC.

We believe the Government needs to provide additional funds to allow the universities to increase their capacity in the applied research, development and commercialisation elements as the Government wishes. Additional support to encourage the universities to ensure science graduates receive a better grounding in these aspects in their science courses would also make a contribution to the national innovation effort.

FASTS recently completed a survey for DISR, Scientists commercialising their Research. This pointed out a number of barriers to commercialisation including knowledge of how to do it and the level of institutional support. This included incentives in terms of joint ownership of IP and the inclusion of such element in promotion criteria. Addressing these aspects should be part of a Universities Research Management Plan.

"Australian needs, Australian research"

The event went well. There were 4 good speeches in the morning, together with a welcome and summary from Peter Cullen and an opening address from Minister Tony Abbott.

All of these are now up on the FASTS' web site (except Minister Abbott's):
http://www.usyd.edu.au/su/fasts/

You may already have seen and heard media coverage by the ABC, and in the Australian Financial Review, the Age, the Australian and the Canberra Times. This coverage complements the live broadcast of Tim Besley's speech, and will help the ideas reach a wider market.

The event should also be a financial success with about 115 attending the morning and an extra 50 coming in for the lunch.

Comments, criticisms and suggestions for future events would be welcome. To FASTS' office please.

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A.S.B.S. PUBLICATIONS

History of Systematic Botany in Australia

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

For all those people interested in the 1988 A.S.B.S. 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

A.S.B.S. Newsletter Number 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*.

Evolution of the Flora and Fauna of Arid Australia

Edited by W.R. Barker & P.J.M. Greenslade. A.S.B.S. & A.N.Z.A.A.S., 1982. $20 + $5 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.

Ecology of the Southern Conifers

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.

Australian Systematic Botany Society Newsletter

Back issues of the Newsletter are available from Number 27 (May 1981) onwards, although several issues have now sold out. Cover prices are $3.50 (Numbers 27-59, excluding Number 53) and $5.00 (Number 53, and 60 onwards). Postage $1.10 per issue.

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This list will be kept up to date, and will be published in each issue.
Please inform us of any changes or additions.

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 and forwarding it, with the appropriate subscription, to the treasurer. Subscriptions become due on January 1 each year.

The Newsletter

The *Newsletter* appears quarterly, 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.

Contributions should be sent to the editor at the address given below. They should preferably be submitted as: - an unformatted word-processor file on an MS-DOS or Macintosh diskette (Microsoft Word 6 or an earlier version is preferred), accompanied by a printed copy; as an email message or attachment, accompanied by a fax message reporting the sending of the file; or as two typed copies.

The deadline for contributions is the last day of February, May, August and November.

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

Notes

A.S.B.S. annual membership is $35 (Aust); full-time students $15. Please make cheques out to A.S.B.S. Inc., and remit to the treasurer. All changes of address should be sent directly to the treasurer as well.

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