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From the President

The festive season is over and most of us are getting back into the swing of things, especially those, like myself, who have had a long summer break. It has not been a good start for the year with the devastating fires in Victoria and the floods in Queensland and New South Wales. Our thoughts are with those who have been affected by these disasters.

On a more positive note, Prof. Pauline Ladiges, stalwart member of ASBS, was, in the Australia Day Honours, made an Officer of the Order of Australia (AO) in the General Division. On behalf of the Society I would like to congratulate Pauline for receiving this highly deserved honour. More information can be found at <http://www.itsanhonour.gov.au> and elsewhere in this issue.

The Society has been participating in TaxA (Taxonomy Australia) and the last meeting was held in Sydney at the Australian Museum (27 February 2009). ASBS was represented at the meeting by Dr Elizabeth Brown (NSW: former ASBS Treasurer). Discussions on the day included an intergovernmental agreement on taxonomy. I am sure we will hear more from TaxA soon.

ASBS has had a string of successful conferences, the last being in Adelaide. As most know, this year's conference is to be held in Armidale, New

South Wales. Jeremy Bruhl has informed me that planning is progressing well. Most of our conferences are held in capital cities and I hope many of you take advantage of the conference being in a regional area. The conference is made the more exciting given the region it is being held in is spectacular, very diverse and rich in local endemics. A good excuse to do some fieldwork. At this conference I will be stepping down as president, having completed my 6th term on Council and I have been informed by Kirsten Cowley (CANB: ASBS Secretary) that she will not be nominating for Council this year. Maybe it is time for you to consider joining the Council? If you would like information on the Council do not hesitate contacting any of its members.

Input into the running of the Society by members is always valued. If you have any ideas/constructive comments on the general running of the Society, conferences, ideas for workshops and the website please do pass them on. The last newsletter contained membership renewal forms. Remember to fill these in ASAP as chasing lapsed members is a time-consuming process for our treasurer.

All the best for 2009 everyone and I hope to see or hear from you soon.

Marco Duretto

Notes from the Editors

Technical points

Alex George has pointed out a couple of items to amend the *Newsletter*. The current abbreviation for the *Newsletter* is not in line with standards used in BPH-2, and hence Alex has recommended that the abbreviation be changed to *Austral. Syst. Bot. Soc. Newslett.* accordingly. He has also noted that some periodicals have a separate ISSN for their on-line copy, largely to accommodate different publication dates and paginations for particular articles, however we do not think this is needed at present as the two are identical except for image resolution.

Colour version for the website?

Some suggestion has been made that a colour version of the *Newsletter* could be placed on the

website for those who would like it. Given that this may increase the file's size, it would not replace the black and white version, rather supplement it. A trial with the current issue shows that there is minimal difference in the size of the final files due to image compression. To gain maximum picture clarity, the image versions are modified independently, however this is a relatively simple task, so if there is sufficient interest in having a colour version made available on the website, we are willing to do the extra work in production. No investigation has been made into the costs of printing the *Newsletter* in colour, but perhaps this could be considered in the future.

We thank you for your contributions to the *Newsletter* and welcome your feedback.

Eichler Research Fund Report

Systematics and Taxonomy of subtribe Dendrobiinae (Orchidaceae) in Australia

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Introduction

Orchidaceae Juss. is one of the largest plant families. Between 20,000 and 25,000 species are classified into five subfamilies and nineteen tribes (Dressler 1981). Within tribe Dendrobieae Lindl., subtribe Dendrobiinae Lindl. is one of the most taxonomically puzzling. Subtribe Dendrobiinae, with approximately 1800 species, has a distribution that extends from India and Sri Lanka in the west to Tahiti in the east, and from Japan and Korea in the north to New Zealand in the south. Subtribe Dendrobiinae comprises some of the most prized species in the Orchidaceae. Many species are

listed as endangered, vulnerable or rare according to the 1997 IUCN Red List of Threatened Plants, including some Australian taxa (Lavarack *et al.* 2000).

Schlechter (1911–1914) divided Dendrobiinae into six genera. Of these, *Dendrobium* is the most significant in the Australian epiphytic flora, being the dominant orchid genus in rainforest and sclerophyll forest and a high interest genus for orchid growers and the commercial orchid industry (Figure 1). Based on vegetative characteristics, Schlechter divided *Dendrobium* into four subgenera (*Athecebium*, *Eu-Dendrobium*, *Rhopalobium* and *Xerobium*), which were then divided further into 41 sections. All four subgenera of *Dendrobium* are represented within Australia. Subgenus *Athecebium* has three sections represented, subgenus *Eu-Dendrobium* has four sections represented, subgenus *Rhopalobium* has only one species in the one section represented, and subgenus *Xerobium* has four sections represented.



Figure 1. *Dendrobium speciosum* var. *curvicaule*

Although subtribe Dendrobiinae has undergone several reviews (Lindley 1850, Kränzlin 1910, Schlechter 1911–1914, Brieger 1981) there is controversy about its classification and thus need for phylogenetic analysis.

Yukawa (2001) presented a phylogeny based on sequencing the internal transcribed spacer (ITS) region of nuclear ribosomal DNA and the chloroplast *matK* gene. The results showed that *Dendrobium* was not monophyletic because *Cadetia*, *Diplocaulobium* and *Flickingeria* were nested in *Dendrobium*. The phylogeny indicated that *Dendrobium* consisted of two major clades, one to the east of Weber's Line and the other to the west of Weber's Line. Within *Dendrobium*, Yukawa (2001) found that many sections were not monophyletic but he did not support the further splitting of *Dendrobium*. He recommended the conservation of the well-established *Dendrobium sensu lato*, which would sink *Cadetia*, *Diplocaulobium* and *Flickingeria*. Clements and Jones (2002) proposed nomenclatural changes to the Australasian Dendrobieae, with 23 new genera. For example, dendrobiums in section *Dendrocoryne* were divided into three separate genera—*Tetrabaculum*, *Thelychiton* and *Tropilis*. Clements (2003) analyzed ITS sequences and concluded that many traditionally recognized sections were not monophyletic.

Project aims

For my PhD research I am investigating the phylogenetic relationships between Australian sections of Dendrobiinae: *Australorchis*, *Conostalix*, *Crumenata*, *Dendrobium*, *Dendrocoryne*, *Dichopus*, *Eleutheroglossum*, *Grastidium*, *Latourea*, *Lichenastrum*, *Monanthos*, *Pedilonum*, *Phalaenanthe*, *Rhizobium*, *Spatulata* and *Trachyrhizum*. Section *Dendrocoryne* is the focus of a more detailed study. The molecular phylogeny based on different sets of sequence data for section *Dendrocoryne* will be compared with phylogeny based on morphological data.

Methods

The ITS region of the nuclear ribosomal DNA is a popular choice for determining molecular phylogeny largely due to the availability of suitable universal primers for sequencing. A limitation of the ITS1 and ITS2 regions, however,

is that the relatively short sequences (≈ 300 base pairs each) may not provide sufficient variable sites to yield a robust resolution of phylogenetic relationships. A broad sampling of Australasian taxa was chosen. Sampling included 65% of all Australian taxa and represented 75% of Australian sections. Included in the sampling were all of the Australian taxa of section *Dendrocoryne*, as well as multiple accessions for the more variable taxa (*D. kingianum*, *D. speciosum* and *D. tetragonum*).

The ITS region was amplified using the primers of White *et al.* (1990) and Kass and Wink (1997). These primers gave variable results. Many taxa were successfully amplified using the White *et al.* (1990) primers; however, in some cases endophytic fungi were preferentially amplified. The primers of Kass and Wink (1997) amplified a few taxa but many resulted in little or no product or in the amplification of pseudogenes. The angiosperm-specific primers of Sun *et al.* (1994) were used subsequently for amplification. This resulted in greater success, although more than one product was still produced for some taxa, necessitating gel purification of the products. In total, 73 ITS sequences were obtained for the Australian taxa. For the phylogenetic analyses, additional sequences were obtained from GenBank to include exemplars of *Cadetia*, *Diplocaulobium* and *Flickingeria*. Outgroups, including Asian dendrobiums and *Epigeneium*, were chosen on the basis of previous studies (Yukawa 2001, Clements 2003), with sequences available on GenBank.

A subset of taxa was chosen for sequencing using a chloroplast region. Initially, the *trnL-trnF* spacer region was trialed for suitability. The region was amplified using the primers of Taberlet *et al.* (1991). The sequences obtained proved difficult to align due to large and numerous indels. An initial trial of the *psbA-trnH* spacer region found that the DNA amplified easily using the primers of Sang *et al.* (1997). Sequences included indels but none so significant as to make alignment problematical. However, while most taxa were easily amplified some proved difficult to sequence. Three new primers, one forward and two reverse, were designed which proved successful.

Data were analysed using parsimony, in *PAUP* (Swofford *et al.* 2000).

ITS results

A preliminary analysis of 54 ITS sequences of Australasian taxa and outgroups is presented. The phylogeny confirmed, with high bootstrap (Felsenstein 1985) and jackknife (Farris *et al.* 1996) support, the findings of others (Yukawa 2001, Clements 2003). There are two major clades in Dendrobiinae: an Asian clade and an Australasian clade. Within the Australasian clade (Figure 2, clade B), *D. cunninghamii* (Winika), a New Zealand endemic, is sister to the rest of the Australasian taxa (Figure 2, nodes 3 and 4).

Node 5 lacked support and is a polytomy of a number of lineages. However, some of the relationships that were resolved are of particular interest. Within the *D. speciosum* complex three lineages were resolved. These lineages show a geographical pattern but do not correlate well with the morphological variation observed within the complex. Within the *D. tetragonum* complex two lineages were evident. Preliminary analyses of this clade also indicate a geographical pattern. The Lord Howe Island endemic, *D. moorei* showed a close relationship, with moderately high bootstrap/jackknife support, with the *D. kingianum* complex, which also appears to include more than one lineage. Apart from some base differences in the sequences of the *D. kingianum* complex, there was an insertion with a variable number of AG repeats. The genera *Cadetia*, *Diplocaulobium* and *Flickingeria* were embedded within the Australasian clade, which had 96/99% bootstrap/jackknife support (Figure 2, node 4). Relationships between these taxa and the other Australasian taxa were not resolved. Two putative pseudogenes, one for *D. fleckeri* and another for *D. finniganense*, were discovered. In an analysis of a subset of data, these showed a close relationship (with moderate support) with the functional sequences of these taxa (Burke *et al.* 2008). Within section *Rhizobium* two distinct clades were present but their relationship to each other was unresolved.

Chloroplast DNA results

The use of the three new primers in conjunction with those of Sang *et al.* (1997) enabled amplification and sequencing of the region in two parts. In total, 34 taxa were sequenced.

This included all Australian members of section *Dendrocoryne* (including multiple accessions for variable taxa), *D. racemosum* (*Rhizobium*), *D. schoeninum* (*Rhizobium*), *D. monophyllum* (*Australorchis*), *D. bifalce* (*Latourea*), *D. nindii* (*Spatulata*), *Flickingeria comata*, *D. (Winika) cunninghamii* (*Macrocladium*), as well as two Asian dendrobiums and *Epigeneium amplum*, as the successive outgroups. Results indicate that there is a low level of sequence divergence in the region; however, there are some useful indels. The phylogeny obtained for the *psbA-trnH* region (not shown) is similar to that obtained using the ITS region (Figure 2). Members of section *Dendrocoryne* formed a polytomy, which included *Flickingeria comata*, as well as sections *Latourea* and *Spatulata*. Bootstrap/jackknife support for this clade was only moderate (60/76%). Section *Rhizobium* was sister to this clade with 69/83% bootstrap/jackknife support. Section *Australorchis* and *D. (Winika) cunninghamii* (*Macrocladium*) formed successive sister relationships with moderate bootstrap/jackknife support. Although the sampling was low, there was high support for the Asian dendrobiums forming a separate clade to the Australasian dendrobiums, as was observed with the ITS analysis.

Discussion

The ITS analyses confirmed several of the clades that have been found by others. However, the short lengths of the ITS regions limit the number of informative characters. It had been hoped that the use of a chloroplast marker would resolve the relationships in section *Dendrocoryne* but this has not been the case as the sequences obtained for the *psbA-trnH* spacer region show a low sequence divergence. Results are, however, congruent with the nuclear DNA data.

The use of multiple accessions for some taxa has yielded some interesting results. In the case of *D. speciosum*, three lineages were evident in both the ITS and *psbA-trnH* analyses and this has been further corroborated by a larger analysis of ITS sequences for 21 individuals from throughout the distribution range. The results of this analysis were presented as a poster at the Australian Systematic Botany Society 2008 Conference in Adelaide. Similarly, preliminary results of a larger sample of ITS sequences for *D. kingianum* and *D.*

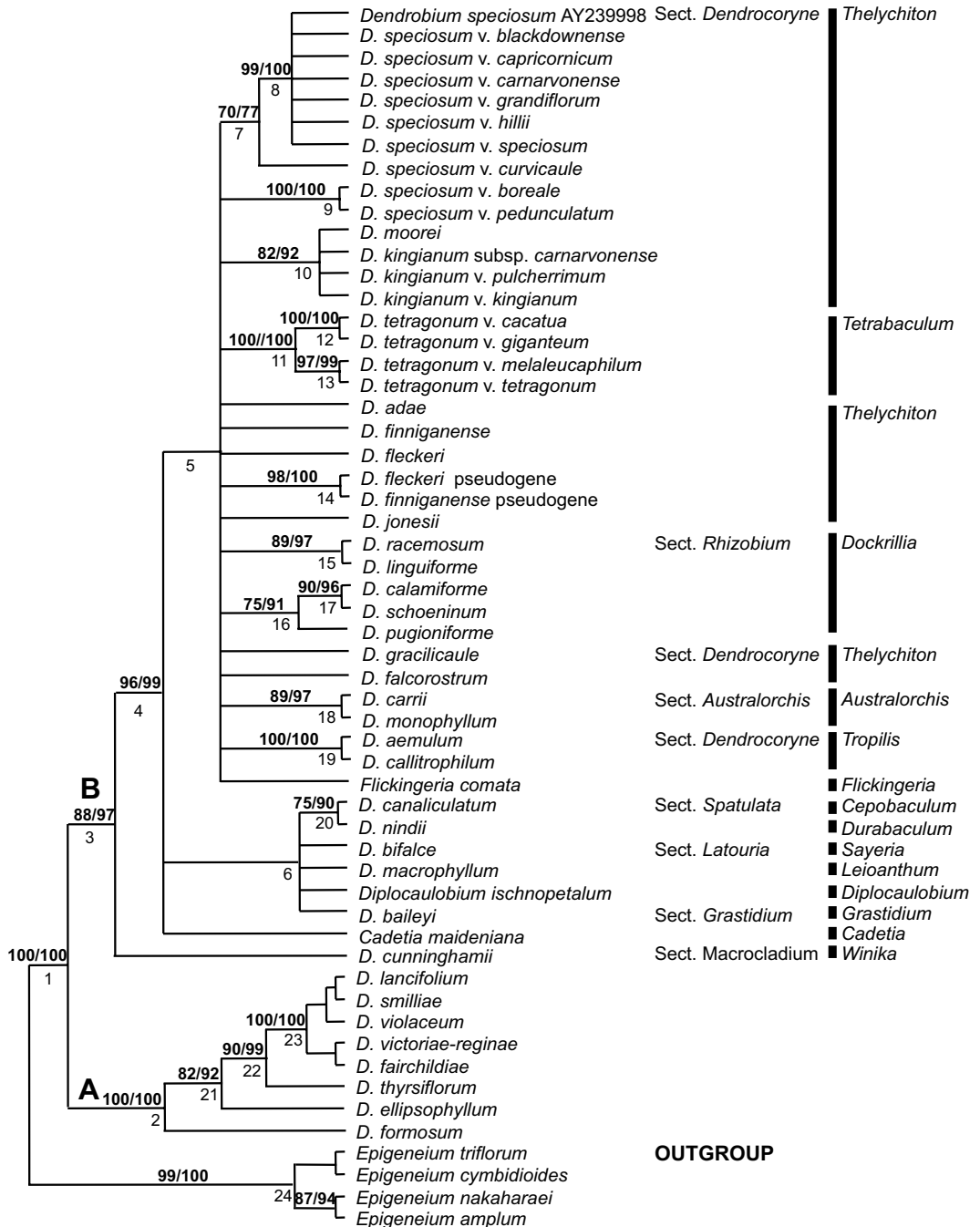


Figure 2. Phylogeny of *Dendrobium* on the basis of ITS sequence data. A strict consensus tree of 1846 most equally parsimonious trees, with *Epigeneium* as the outgroup. Numbers above the nodes are bootstrap/jackknife values; nodes are numbered 1–24. A=Asian clade of *Dendrobium*; B=Australasian clade. Sections are those of Schlechter (1911–1914); to the right are the generic names of Clements (2003).

tetragonum have revealed more than one lineage in each of these taxa. This may have implications for taxonomy, with the various lineages possibly being recognized as new taxa (e.g. subspecies). Clearly greater population sampling is needed to determine how many distinct lineages exist in various taxa. It is possible that different lineages may exist in taxa that show morphological homogeneity, but this was not explored in this study.

The inclusion of *Cadetia*, *Diplocaulobium* and *Flickingeria* within the Australasian clade of *Dendrobium* renders *Dendrobium* non-monophyletic and raises the question of whether to retain these genera as separate taxa or return them to *Dendrobium*. Yukawa (2001) preferred to retain *Dendrobium sensu lato* but Clements (2003) split *Dendrobium* into numerous genera. The results presented here do not resolve relationships within the Australasian clade. Further analysis of the clade at node 5 together with section *Latourea* or section *Spatulata* as outgroups (Burke *et al.* 2008) showed that the taxa that Clements (2003) relegated to *Thelychiton* probably are non-monophyletic. The analysis also found *D. aemulum* and *D. callitrophilum* of section *Dendrocoryne* sister to a clade containing sections *Australorchis*, *Rhizobium* and the rest of section *Dendrocoryne*. Although the relationship lacked bootstrap support it does suggest that section *Dendrocoryne* may be paraphyletic. This is similar to a finding by Clements (2003) that many of Schlechter's (1911–1914) sections are not monophyletic. Based on the evidence presented here it seems premature to be splitting *Dendrobium* into numerous genera on the basis of one marker.

Acknowledgements

I would like to thank sincerely the Australian Systematic Botany Society for awarding me the Hansjörg Eichler Research Award that funded sequencing the chloroplast DNA. I would also like to thank the University of Melbourne for providing support and awarding to me a grant to travel to Adelaide for the 2008 ASBS Conference. Many thanks to my supervisors, Professor Pauline Ladiges and Dr Peter Adams, for all their help and support. A special thank you also to Dr Michael Bayly for teaching me the molecular techniques used in this project.

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Article

IT IS A TREAT AT ANY TIME TO STUDY NATURE¹

AN INTRODUCTION TO THE COLLECTIONS OF HERBERT BASEDOW

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We receive a shock when we find that we are standing upon a table land with a very rough escarpment facing the valley. Deep ravines, chasms and fissures, grotesque weathering of rocks and deep precipitous cliffs make any idea of progress in this direction quite impossible. Some of the cliffs typical "Pilz-Felsen". About these exposures a species of pandanus I have not seen before. Grows on the dry surfaces of sandstone with roots like a mangrove. The whole plant is peculiarly branched and in mature specimens reminds one of araucaria. Leaves very much smaller and

¹ *Brisbane Courier*, 12 September 1928.



Figure 1. Portrait of Herbert Basedow, about 1920. Unknown photographer. Herbert Basedow collection, National Museum of Australia.

less jagged than other species. Fruit quite distinct. From 15–25 feet [4.6–7.6 metres].
2 Photographs and specimens (Herbert Basedow, diary, 5 June 1928)².

Introduction

This quote records the first scientific sighting of a new species of *Pandanus* by Dr Herbert Basedow, an early twentieth century scientist, explorer, physician and anthropologist (Figure 1). While travelling through the rugged sandstone country of northern Arnhem Land, little known to scientists at the time, Basedow came upon a few plants of this *Pandanus* which he evidently recognised as a new species (Figure 2). He was correct and two years later Kew Garden's Charles Wright described it, naming it *Pandanus basedowii* (Wright 1930).

This trip to Arnhem Land was the last of more than a dozen expeditions and several smaller trips undertaken by Basedow to several regions of central and northern Australia; the first being in 1903 (Figure 3). On these journeys Basedow collected botanical, zoological, geological and ethnographic items, now distributed in collections across Australia and overseas. This paper provides an introduction to these collections as far as current knowledge permits.³

² Mitchell Library: MSS Set 161.5 Item 19.

³ The author has studied Basedow's ethnographic collections for the past 25 years. Recently, he has begun to investigate



Figure 2. One of two of Basedow's photographs showing *Pandanus basedowii*, northern Arnhem Land NT, 1928. This photograph was used in C.H. Wright's 1930 description of this species. Herbert Basedow collection, National Museum of Australia.

Herbert Basedow—a short biography⁴

Herbert Basedow was born in Adelaide in 1881 to German immigrant parents. His father Martin (1829–1902), born at Dreckharburg near Hamburg, Hanover, was a school teacher, newspaper proprietor and politician. Martin's first wife died in 1867 and Herbert was the youngest child of his second marriage, to Helena (1834–1921) whom he married in 1868. He received schooling in Adelaide and Germany, completing school at the exclusive Prince Alfred College where he won the Cotton Medal for Agricultural Chemistry in 1896. Basedow went on to study science at the University of Adelaide, studying subjects as varied as geology, assaying, mathematics, physics, surveying and chemistry. He graduated in 1902 and the following year was engaged as one of four prospectors on a government expedition to investigate the geology of the far north-west of South Australia. While his geological work was his main task, he made observations and collections in geology, zoology, botany and ethnology. In the years after returning to Adelaide he published two papers on geology and one on anthropology (Basedow 1904, 1905, 1906). For the 1905 paper he was awarded the University of Adelaide's Tate Memorial Medal. In 1905, Basedow was again a member of a government geological expedition, this time examining country to the south, south-west and east of Darwin.

In 1907 Basedow went to Europe to further his studies. By the time he returned to Adelaide, in July 1910, he had two PhD degrees, one in geology and the other in medicine. The following month Basedow was appointed Assistant Government Geologist and in December he was registered as a medical practitioner. He resigned his geologist position to take up the newly created Chief Protector of Aborigines and Chief Medical Inspector when the Commonwealth took over administration of the Northern Territory in 1911.

other collections made by Basedow and is bringing all of this information together under the auspices of a *Friends of the National Museum Foundation Fellowship*.

The terms 'collection' and 'collections' are both used here to refer to all of the artefacts and natural history material assembled by Basedow.

4 For more extensive information on Basedow's life, including his career and travels, see Kaus (2008a) from which this section is extracted. Other sources of biographical information on Basedow are: Harmstorf (1979) and B. Basedow (1990).

He remained in Darwin for only 45 days before resigning, dissatisfied with the working conditions. Before departing for Adelaide, Basedow made a short tour of Bathurst and Melville islands, about 80 kilometres from Darwin. For the remainder of his career Basedow worked as a medical practitioner and consulting geologist.

The remainder of Basedow's expeditions were undertaken for a variety of reasons. In 1916, 1917, 1922 and 1924 he made trips to the Kimberley (W.A.), Commonwealth Hill (S.A.), the Victoria River district (N.T.) and Barrow Creek (N.T.) respectively, to examine geological deposits. In 1919–1920 he undertook three expeditions to inspect the health of Aboriginal people in the settled districts of South Australia and the southern Northern Territory. 1923 and 1924 saw two vice-regal trips to central Australia, firstly with the governor of South Australia (Sir Tom Bridges) followed by one with Lord Stradbroke, Victoria's governor⁵. The two remaining expeditions were to western central Australia, in 1926, and Arnhem Land in 1928. Both were financed by Donald Mackay, a wealthy New South Wales grazier with a penchant for adventure.

Basedow held the seat of Barossa for the Country Party from 1927 to 1930 and he stood for parliament again in 1933, this time as an independent, and was again elected, but died from thrombosis in June of that year.

While he earned his living, mostly, from medicine and geology, anthropology was Basedow's passion. He published over 50 papers and two books (*Knights of the Boomerang* was published posthumously in 1935) and the majority of these were on Aboriginal cultures. Other papers were on geology and, early in his career, a few on zoology. While Basedow collected hundreds of plant specimens this was one area that he did not publish in. This involvement in several branches of science was more than likely inspired by his professor and mentor at the University of Adelaide, Ralph Tate, who did publish in botany, as well as zoology and geology. Basedow's first two published papers included contributions by Tate (Basedow 1901, 1902). Another mentor was Harry Brown, South

5 While the governor continued on to Darwin and returned to Melbourne via western Queensland and Sydney, some of the party including Basedow returned south from Alice Springs.



Figure 3. Map showing the routes of the main expeditions undertaken by Basedow. Other important fieldwork locations for Basedow were the Flinders Ranges SA and Bathurst Island NT. Map by Thylacine.

Australia's government geologist, and it was he who arranged for Basedow to be a member of the 1903 and 1905 expeditions.

Basedow was well-known in the first decades of the twentieth century, particularly in South Australia. His opinion was highly regarded by government and business and lectures he delivered to the public on his travels or Aboriginal cultures were popular and well attended. Without doubt he was one of Australia's most highly qualified scientists of the early twentieth century.

The collections

On his expeditions Basedow made vast collections of plants, animals, rocks and Aboriginal artefacts. This section presents an overview of that material

collected by Basedow now held in Australian collections. While some information is known about material Basedow sent overseas, this is currently limited and largely lacking in detail. Nevertheless, there is significant material held in foreign institutions. Kew Gardens, for example, holds type specimens of *Acacia eriopoda*, *Pennisetum basedowii* and *Ptilotus helipteroides*⁶, and no doubt also types of *Pandanus basedowii*. Other plant material is in Germany, if it survived the 1939–1945 War. Basedow sent the plants he

6 To access information on specimens collected by Basedow on the Kew database see: http://apps.kew.org/herbcatalog/getHomePageResults.do;jsessionid=86E8478FE1737B3B2D39179807A86B64?homePageSearchText=basedow&homePageSearchOption=collector&nameOfSearchPage=home_page&x=11&y=4

collected on the 1903 expedition, which explored north-western South Australia and the south-west of the Northern Territory for minerals, to Ludwig Diels (Basedow 1915: 241). It is not known if Basedow met Diels or Ernst Pritzel on their collecting trip to Australia in 1900–1901.

For ease of discussion, the collections are divided into two groups: ethnographic and natural history. This is because the author has a greater understanding of the former and a rather incomplete knowledge on the latter. Following this overview a brief account of Basedow's collecting will be given.

Ethnographic

Basedow made extensive collections of Aboriginal artefacts on his travels. They are held in museums from Sydney to Perth, with the majority in the National Museum of Australia in Canberra, 1020 items. Smaller numbers are held by the Australian Museum (138), Berndt Museum at the University of Western Australia (3 but possibly 5), Museum Victoria (78) and the South Australian Museum (76). Cooper (1989) notes Basedow-collected artefacts in two museums in England and one in Germany but no details are provided.

There is a range of objects within the collection with a heavy emphasis on men's weapons and tools. An analysis of his National Museum of Australia portion, almost 80 per cent of the collection held in Australian museums, shows that slightly more than two-thirds of the collection comprises men's weapons alone. This high figure is not uncommon for collections made in the early twentieth century (see Kaus 2008b: 299 for comparisons with other collections). The reasons behind this type of bias within ethnographic collections is one often discussed amongst curators but one which has yet to produce a satisfactory answer.

Apart from a selection of artefacts from the Kimberley expedition given to the Australian Museum in 1916 and 1917⁷, Basedow kept the majority of the Aboriginal artefacts he collected with him and displayed them in his home. Following his death in June 1933, Basedow's widow Nell and Sir Colin MacKenzie, director of

the Australian Institute of Anatomy in Canberra, were exchanging correspondence on related matters when Nell asked MacKenzie if he was interested in purchasing the artefacts as well as more than 2,000 photographs (negatives and lantern slides). The following year the Federal Government purchased the collection now held by the National Museum of Australia for £500. The well-known anthropologist NB Tindale, then ethnologist at the South Australian Museum, listed the collection for the Commonwealth and as a quid pro quo that Museum received a number of 'duplicates'. They also received further artefacts, negatives and other material after Hedwig, Basedow's last surviving sibling, died in 1963.

In 1945 Nell sold a small group of Aboriginal and Pacific artefacts to the Australian Museum. In the same year the National Museum of Victoria (now Museum Victoria) also acquired a number of artefacts collected by Basedow; presumably these were also purchased from Nell. The University of Western Australia's Berndt Museum holds three items acquired by Professor RM Berndt's father at a sale of Basedow material after his death. Evidence is emerging that not all artefacts were included in the commonwealth's purchase, nor did the Mitchell Library acquire all of his papers (see below for a brief resume of Basedow's papers), and these were sold separately in the 1930s.

The vast majority of these Aboriginal artefacts were collected by Basedow on his field trips. Apart from the 1916 Australian Museum group, the remainder is now poorly documented. With very few exceptions, any labels Basedow had attached to them are now lost. Basedow published some artefacts he collected, including a group of items on Bathurst and Melville islands in 1911 (Basedow 1913). Fortunately, a lot of Aboriginal material culture varies stylistically and it is possible to attribute much of his collection to particular regions, and in many cases to expeditions, which means their place of collection can be narrowed down to some extent, which in turn gives a year of collection.

Basedow's collection also includes a small number of Aboriginal skeletal remains, Pacific Islander artefacts and European Stone Age tools. As these are such a small part of his collection and as virtually nothing is known about them, they have been excluded from this discussion.

⁷ The Australian Museum subsidised Basedow's 1916 expedition to the sum of £50. In return Basedow presented them with Aboriginal artefacts, fossils and animal specimens collected on the expedition.

Natural History

As indicated above the author's knowledge of natural history material collected by Basedow is limited. Enquiries to Australian herbaria indicate that they hold in excess of 1,000 plant specimens and other enquiries and a literature search indicate that collections of animal specimens also number at least in the hundreds. Outside of published information, very little is known about natural history material collected by Basedow.

Basedow seems to have handed natural history museum specimens to organisations soon after returning from his journeys in the main. It may be that he knew individuals within those organisations who were the experts in their fields and handed his collections to them, and in turn they were deposited in those individuals' organisations. For example, after the 1903 expedition Basedow "invited" the conchologist Charles Hedley to examine the molluscs he had collected and deposited them in the Australian Museum where Hedley worked (Hedley 1905: 161). Notwithstanding this example, it is expected that the majority of natural history specimens would be held in Basedow's native state. Certainly, the South Australian Museum holds zoological and geological material as well as the ethnographic items referred to above and the Adelaide Herbarium holds around half of the plants collected by Basedow known to be in Australian collections. Not all of the plants were acquired directly from Basedow, however. Some were acquired from JM Black and at least one orchid from Richard Rogers. In addition, the University of Adelaide holds geological specimens collected on expeditions, and probably others collected on geological explorations in the Adelaide area. The Australian Museum also holds geological material, mainly specimens collected on the 1916 expedition.

Collecting animals and plants in the early twentieth century could result in the discovery of new species. Basedow was the first to collect many species of flora and fauna and several were named after him. For example, 12 species and one genus of plant are named for Basedow. Early in his career he also named some animals himself, both fossil and modern. Today, some of the original names are no longer valid and checking all of the names remains to be completed. Consequently, except

where otherwise noted, information presented here is based on the original sources.

Apart from Basedow's own papers between 1901 and 1906, at present knowledge about natural history material he collected is largely restricted to the 1903 and 1916 expeditions. This is due to the fact that most has been published about these two expeditions, including Basedow's diaries and papers devoted to various classes of fauna collected on these two journeys. Only examination of the collections themselves and their accompanying documentation will enable expansion on this.

Basedow grew native plants and also kept native birds at his Adelaide home. While it is not known if any of the former are included in any collections, skins of Cape Barren Geese, a budgerigar and a Princess Parrot that died in captivity are held by the South Australian Museum.

Botanical

JM Black (1929: 652) described Basedow as "a diligent botanical collector on his journeys through the interior of Australia" (Figure 4). In total, Australian herbaria have 1,413 plants in their databases. Holdings vary between two specimens in Melbourne to more than 700 in the Adelaide



Figure 4. Basedow examining plants on Marrakai station NT, 1922 or 1928. On the 1928 trip Basedow collected two sets of 208 specimens, now held at Kew and Adelaide (the latter incomplete). Photograph by Frank Feast. Herbert Basedow collection, National Museum of Australia.

Herbarium. Overseas, Kew Gardens also holds specimens but to date only 14 specimens have been identified as being collected by Basedow. As previously mentioned, Basedow sent the plants he collected on the 1903 expedition to Germany (a small number of specimens from this expedition are now in Australian collections).

Given that there is an unknown number of specimens held in Australia remaining to be databased, it may well be that the overall number will be expanded considerably. Furthermore, two expeditions are so far represented by single specimens only, and there are another two expeditions where it is reasonable to assume he would have collected plants. There is also an unknown number of specimens overseas. To illustrate this, from Pritzel (1918) it can be established that a further 133 plants can be added to the overall total. *Basedow 307* from the 1903 expedition is the highest of his numbers on any database, whereas Pritzel gives *Basedow 440*, *Petalostyles spinescens*, being collected on this expedition. In the same paper Pritzel (1918: 357) gives *Basedow 513* as being from the same region as other Basedow 1903 specimens, but unfortunately did not indicate when Basedow collected it.

From information attached to herbarium specimens it seems Basedow kept numbered inventories of the specimens he collected. While this is hardly surprising, as yet none of these listings have been located. The closest are lists of plants collected on the 1916 Kimberley and 1928 Arnhem Land expeditions (Maiden 1918, Specht 1958). Both are organised by family; Maiden's list does not include Basedow's numbers whereas Specht's list does. Similarly, Maiden does not indicate the number of specimens represented while Specht states that Basedow sent one set of 208 plants to Kew Gardens and that a second, incomplete set was purchased by the Botany Department of the University of Adelaide after Basedow's death.

A small printed label designed for biological material seems to have been filled out for some but not all specimens. To date, only seven specimen sheets have been located bearing this label; all are specimens at Kew Gardens. As Basedow typed data on these labels (he left the scientific name on five blank), it is likely these were not for recording data in the field but to permanently

label specimens afterward. At this stage it is not known if these printed labels, headed "Dr. Herbert Basedow's Australian Explorations", were used for zoological or fossil material. The categories on the label are "Species", "Locality", "Date" and "Remarks". The remaining plant specimens so far sighted either have paper labels with typed information or were written by Basedow or were labelled by people unknown.

Marine Invertebrates

Basedow's first documented collecting of marine invertebrates was a dredging excursion off the South Australian coast with Adelaide physician Joseph Verco, probably in 1905. Soon after Basedow, with his friend and colleague Charles Hedley, published a paper on South Australian nudibranchs and described six new species based on specimens collected on this trip (Basedow and Hedley 1905). Not all names remain valid however.

Basedow and Hedley again joined forces following the 1916 expedition. Hedley prepared a report to accompany Basedow's journal and he noted that Basedow had collected nearly 60 species of mainly marine molluscs that had not previously been reported in Western Australia (Hedley 1918: 263).

On the 1916 expedition Basedow also collected specimens of five marine crustaceans (McCulloch 1918: 290) as well as a small number of corals and one specimen of the polyzoan *Cellepora laevis* (Briggs 1918).

Terrestrial Invertebrates

JGO Tepper, the South Australian Museum's entomologist, described insects collected by Basedow on the 1903 expedition in two papers published in 1904 and 1905. He noted that Basedow collected 451 specimens comprising 206 species (Tepper 1905: 237). He also commented on their collection:

The collector, not having much time or adequate facilities at his disposal, accounts for the comparative meagreness and not quite satisfactory state of the specimens in some cases (Tepper 1905: 237).

Nonetheless, the collection was significant as Basedow was the first to collect insects in the region

and the condition of the specimens sufficiently adequate for Tepper to be able to describe several new species, including *Periplaneta* (now *Ataxigamia*) *basedowi* (Tepper 1904: 162–163). The Rev. Blackburn, who described the coleoptera also named a new species in Basedow's honour. It also has a different generic name from that originally assigned to it, originally *Bolboceras* but now *Blackburnium basedowi* (Blackburn 1904: 512).

In the 'Special Reports' attached to the 1916 journal the Australian Museum's entomologist, WJ Rainbow, and his assistant, A Musgrave (1918), list the insects and arachnids collected by Basedow. Apart from noting Aboriginal names for two species, one is an exotic species and that the range of one species had been extended, this is simply a list of the 11 arachnid and 58 insect species collected.

In about 1930 the South Australian Museum received further insects from Basedow (Lea 1930). They were collected on expeditions in 1920, 1926 and 1928 in central Australia and Arnhem Land. The museum's entomologist, Arthur Lea, described several as new species and a weevil as a new genus, *Basedowia*.

In addition to marine molluscs, Charles Hedley reported on terrestrial molluscs collected by Basedow following the 1903 and 1916 expeditions (Figure 5). From the first collection Hedley described three as new species, including *Thersites basedowii* (Hedley 1905: 161–162).

Similarly, after the 1916 expedition Hedley (1918) published an annotated list of mainly marine molluscs but also some terrestrial molluscs and, again, named a new species after Basedow (*Eucithara basedowi*).

Vertebrates

Vertebrate specimens collected by Basedow and recorded in the literature comprise specimens of five snakes and seven lizards collected in 1903 (Basedow 1915: 242) and four fish collected in the Kimberley (McCulloch 1918: 289). Other vertebrate specimens known to have been collected by Basedow are:

- the skull and skin of one wallaby and one bat in the Australian Museum collected in 1916;
- the bat, *Scotorepens balstoni*, is a type specimen;
- 82 bird specimens in the Australian Museum mainly collected in 1916;
- 23 bird specimens (including eggs and nests) in the South Australian Museum collected on various expeditions or from animals Basedow kept at his home.

Geological

As we have already seen, Basedow had a PhD in geology and published several geological papers over his career. Little, however, is currently known about Basedow's collections in this area. To facilitate his descriptions of fossils in earlier papers, it is assumed that he collected specimens upon which these descriptions were



Figure 5. Basedow, on the right, collecting shells in Cooper Creek at Innamincka SA, 1919. The man on the left is either Richard Grenfell Thomas or else Thomas was the photographer. Herbert Basedow collection, National Museum of Australia.

based. Following his 'List of Reports and Papers Previously Published' at the end of the journal of the 1903 expedition, Basedow (1915: 241) noted that his geological specimens still waited "systematic determination and description". This was partly accomplished almost half a century later when EG Robinson (1949) of the University of Adelaide described a number of Basedow's specimens. Robert Etheridge Jnr described fossils collected by Basedow on the 1916 expedition to the Kimberley and his descriptions form part of the 'Special Reports' that follow that journal (Etheridge 1918: 250–262). Some or all of the latter are now in the Australian Museum, along with an ichthyosaur collected in Darwin probably in 1911.

Collecting

Little primary evidence exists regarding Basedow's collecting. His two published journals are the chief source of information, and they cover a range of collecting opportunities undertaken by Basedow. For this discussion it is assumed that they are broadly illustrative of Basedow's collecting activities.

In the journals Basedow makes a number of generally brief mentions of collecting both Aboriginal artefacts and natural history specimens. While they give details on individual items, the earlier journal does not give any indication of the scope of the collections made while the second journal details the range of material collected but not its total extent. What is clear, however, is that his collections are large in number, especially for someone travelling by camel or horse, or on occasion by car, in sometimes very remote areas.

Basedow is sometimes explicit in discussing items collected; at other times he refers to a plant or animal and the fact that he states that it was later identified by an expert suggests he later provided them with specimens on which to base their identification. The following anecdote illustrates this, at the same time providing an example of how his Aboriginal assistants aided in his collecting:

Whilst at work, the "boys" caught a sea eel, which had left the water [of the eastern side of King Sound] and was wriggling in the mud. One of them cautiously handed it to me and said: "This one name

Kulingell, him no more sulky bugger." I did not altogether grasp the latter part of his statement, but upon investigation ascertained that he meant the eel was non-venomous. When I placed the captive in a bottle it became very wild and attempted to bite. It was subsequently determined by the Australian Museum Zoologist to be *Gymnothorax woodwardi* (Basedow 1918: 160–161).

Basedow had more control over his expeditions after 1911, when he left his final government position, and could arrange his itinerary to maximise his opportunities for unrelated activities like collecting. Some clues regarding this can be gleaned from the journals. In Basedow words, on the 1903 expedition:

The duties of my position were essentially practical, but Mr. Wells [Larry Wells, expedition leader] kindly permitted me to make use of my spare time by studying the natural history of the region and collecting what specimens opportunity afforded (Basedow, 1915: 60).

In the 1903 expedition Basedow would have been subject to the expedition's timetable. On the 1916 expedition, Basedow was engaged by a syndicate of Adelaide businessmen to examine a mineral deposit and was in charge of the entire enterprise. He decided to extend his time in the Kimberley to undertake scientific work:

Realising the rare opportunity for conducting scientific research in a tract of practically unknown country, I resolved that, after the work entrusted me by the Syndicate had been completed, I would on my own account continue the exploration farther afield (Basedow 1918: 106).

We do not know for certain that it was Basedow's intent to make comprehensive collections, although it is not too unreasonable to assume that was likely his intent, or maybe hope. As a scientist travelling through country often little-known from a scientific perspective, he would have wanted to find out all he could about it. However, like his ethnographic collection, it is unlikely that his collections of plants, animals or geological specimens are fully representative

either. There are many factors involved in making comprehensive collections of flora or fauna; for example some plants grow only after rain has fallen, and the migration of various animals. The nature of Basedow's mainly brief visits to any one place, frequently two or three days at most, and the fact that collecting came secondary to expedition objectives, would have added an important factor, because limited time reduces opportunities. With local assistance this can be improved. One particularly useful source of local assistance came from Aboriginal people and one example of such assistance was provided above. Basedow generally took one or more Aboriginal men on his major expeditions.

After Basedow returned from Arnhem Land in 1928 he wrote a series of articles for the *Brisbane Courier*. In one he started by saying:

It is a treat at any time to study Nature; but when one is privileged to do so in comparatively new or unexplored country, the pleasure is all the greater. Very meagre information has been recorded concerning the natural history of Arnhem Land; that is why we observed all features most diligently and made extensive collections wherever possible; these will be submitted to specialists in due course for identification and description (Basedow 1928).

While this excerpt does not explicitly state that he wished to make comprehensive collections, it does suggest that Basedow made as broad collections as opportunity permitted.

As we saw earlier, Basedow's ethnographic collections are not comprehensive and it is probable his ethnographic collecting was generally more opportunistic than anything, acquiring what was available to him during his brief encounters with Aboriginal people. For example, while at Todmorden Station, the starting point of the 1903 expedition, Basedow was able to collect a rare form of central Australian spear from a man who happened to be visiting the station at the same time as Basedow:

Among the belongings of the natives camped around the station I found a type of spear which is new to me. It is made from one piece of heavy wood (*Acacia aneura*),

straight, and slightly over seven feet [2.1 metres] in length. The throwing end is, however, fractured, so that originally it must have been longer. The greater part of the shaft is circular in section, tapering slightly towards the throwing end; but the head end consists of a flat blade, about a foot [305 mm] long, with two sharp edges and a point. The new feature about the spear is that at three and six inches [76 and 52 mm], respectively, from the point, on the same flat side of the blade, a pointed wooden barb has been tied (at an angle of about 30 degrees) with kangaroo sinews. Plain heavy spears without barbs, and light spears with only one barb, are common throughout Central Australia, but I have never found this type before. I have secured the specimen from the owner, who is an Aluridja man on a visit to Todmorden (Basedow 1915: 63).

By the time Basedow was undertaking his fieldwork there was an established market for Aboriginal artefacts, one which Aboriginal people in many parts of Australia actively engaged in. People made artefacts for sale or exchange, and also traded objects that they made for their own use. At Meda Station in the western Kimberley in 1916 Basedow:

attended to a levee of gins who were anxious to do business by exchanging their throwing sticks and boomerangs (kailis) for pocket knives and tobacco (Basedow 1918: 148).

Basedow first visited Meda on his way from Derby to the Patterson Ranges. This "business" occurred when he returned to Meda nearly three weeks later. The above quote suggests Basedow made it known that he was collecting artefacts, and that he would exchange them when he returned for goods that were desirable to the local people.

Sometimes Basedow's acquisition of Aboriginal artefacts reflected deeper relationships than those exhibited by opportunistic collecting. This is best reflected in the acquisition of men's secret ritual objects. On the 1903 expedition, the Aboriginal man attached to the expedition, Arrerika or Punch, made a bullroarer and presented it to Basedow.

There are several references in Basedow's journal to the two men interacting and presumably Arrerika gave Basedow the bullroarer in recognition of a relationship between them, and probably also in recognition of Basedow's interest in Arrerika's culture. Arrerika was an Arrernte man and had a Luritja wife (Figure 6). After the expedition Basedow published linguistic information on both languages (Basedow 1908). There are several other similar objects in Basedow's collection but the circumstances surrounding his acquisition of them are not known.

Basedow's collecting of natural history specimens did not always go to plan. While waiting, in 1916, for a swamp at Native Well to dry out sufficiently to cross, Basedow, and his assistant Sanders, set off to do some collecting but soon ran into trouble:

Mr. Sanders and I penetrated the "Pindan" in the afternoon, collecting, but the tall, rank speargrass (*Heteropogon contortus*) impeded progress, and we reluctantly retired after but a short advance. The grass in places stood from 12 to 14 feet [3.7–4.3 metres] high, and its growth was so dense that nothing could be seen of the landscape (Basedow 1918: 117).

On another occasion Basedow was with one of his Aboriginal assistants and was unsuccessful in securing specimens of a bird:

Jacky soon drew my attention to some large, but very shy, pigeons in the tall timber ahead of us, which he said were "Good fella tucker, all same hen." I allowed him to approach the game and have a shot; but he missed. I regret this since it was the only time we saw these birds, and I was anxious to secure a skin (Basedow 1918: 184).

Despite such setbacks, Basedow was still able to make substantial collections. It just remains to determine their full extent.

Papers

Before concluding, I will make a brief comment on Basedow's papers. Initial discussions between Nell and McKenzie indicate the former was not sure how much to ask for the collection. The sale

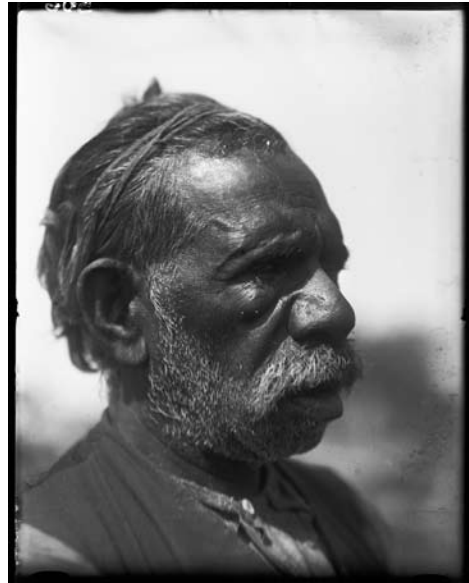


Figure 6. Arrerika or Punch, an Arrernte man who acted as an assistant to two expeditions that Basedow participated in, photographed by Basedow in 1920. Arrerika contributed at least one item to Basedow's collection, a bullroarer. Herbert Basedow collection, National Museum of Australia.

of her husband's collection was to contribute toward establishing her financial future and the price agreed upon with the federal government, namely £500, must have been insufficient in the end as the collection as acquired by the commonwealth did not include her husband's papers. Most were acquired by Sydney's Mitchell Library and include expedition diaries, notebooks, other notes, two photograph albums and loose photographic prints. Other papers are held by the South Australian Museum (mainly miscellaneous family-related material) and the State Library of South Australia (largely press cuttings and a small amount of correspondence). The Australian Museum Archives also holds some correspondence relating to the 1916 and 1919 expeditions and one or two other matters. It is presumed other diaries and photograph albums existed but, if so, their whereabouts is not known.

Conclusion

Herbert Basedow was one of Australia's most qualified scientists of the early twentieth century. He was highly educated and well-versed in the natural sciences and anthropology. He extended this knowledge, and his experience, into practical and political matters, such as the development of

the Northern Territory and the rights and condition of Aboriginal people.

Basedow had an applied bent to his science and made extensive collections of Aboriginal artefacts, plants, animals, fossils and other geological specimens on numerous journeys into central and northern Australia. Aboriginal cultures—their study, preservation and welfare—were Basedow's passion but he also devoted considerable energies to the natural sciences. While he retained possession of the majority of artefacts he collected, possibly as material evidence of what he saw to be a 'dying race' heading for extinction, he tended to pass on natural history material to various individuals and sometimes organisations. After a short period before 1910 where he described some new species himself, Basedow provided specimens for experts to describe. The natural history material, then, seems to have been collected as a contribution to extending scientific knowledge of the areas in which he travelled.

Basedow's collections are distributed across Australia and knowledge of them as a whole is just now being assembled. As this knowledge is brought together it also helps to raise awareness of Basedow and his place in the history of Australian science.

Acknowledgements

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ABRS Report

Staffing

We welcome Brooke Glasser and Leah Schwartz, working with Amy Jarrott on policy issues and new funding initiatives. Brooke will be with us at least until the end of the financial year and Leah, who is a member of the Department's graduate programme, will be here until May.

Australian Botanical Liaison Officer

There is currently no Australian Botanical Liaison Officer (ABLO) for 2009/10 and, in spite of increasing the funding available for the position in 2010/11, only a single applicant for 2010/11. The value of the ABLO is universally acknowledged by the Australian botanical systematics community, however ABRS has struggled to fill the position for a number of years. ABRS is therefore reviewing the feasibility and value of the ABLO through consultation with the Council of Heads of Australian Herbaria and the ABRS Advisory Committee. The result of this review will be circulated later this year.

ABRS Grants Programme

Most ASBS members would now be aware of the changes to the National Taxonomy Research Grant Program. The next grant round will be called in late August 2009 and applicants are advised to consider possible avenues for matching

funding now. Cash co-funding from any source will be considered and potential applicants should note that the salary of a principal investigator is included in the definition of cash co-funding. ASBS members should also be aware there will be only one call for bursary applications this year, in April 2009.

Eureka Prize

Entries for the ABRS Eureka Prize are now open. In 2009, the prize is focused on researchers under 35 years of age and members are encouraged to nominate outstanding researchers in this category for the award. Entries close 1 May. For more information visit: www.austmus.gov.au/eureka/

This prize was first awarded in 2008 and the winner was Dr Bill Humphreys, based at the Western Australian Museum, for his work in documenting a unique array of underground freshwater animals (stygofauna) and working with government and industry to enhance their conservation.

Recent publication

Flora of Australia volume 44A, Poaceae 2, was published in late February. Available from CSIRO Publishing or your favourite bookshop for \$130 (hardcover, ISBN: 9780643096295) or for \$110 (softcover, ISBN: 9780643096301)

This book documents four subfamilies of the grass family Poaceae, describing 80 genera and 405 species.

The largest subfamily is the Pooideae, a predominantly temperate group with many annual species. It includes the large endemic genus *Austrostipa*, an important component of native pastures, but one which also contaminates wool and injures stock with its penetrating 'seeds'. *Poa*, also largely endemic, grows mainly in southern areas of Australia and is characteristic of higher altitudes. The subfamily also includes our most important grain crops, wheat, barley, rye and oats and introduced temperate pasture grasses. There are also many weedy genera such as *Briza* and the economically significant *Nassella*. The largely tropical Bambusoideae is poorly represented in Australia, with only three native species and another three naturalised. Many ornamental species of bamboo are grown in Australia, but few have become naturalised. Also tropical is the subfamily Pharoideae. It includes *Leptaspis*, with its strange inflated florets, the subject of the cover painting. The final subfamily, the Ehrhartoideae, contains another important grain crop, rice, as well as the widespread weedy genus *Ehrharta*.

In press

Flora of Australia volume 57, due April

2009. The book will be available from CSIRO Publishing for \$180 (hardcover) or \$140 (paperback).

Volume 57 is the fifth volume of the *Flora of Australia* which documents the lichens. Complete or partial accounts of 21 families are provided, including 77 genera and 654 species and infraspecific taxa. One genus and 26 species are described as new to science and 36 new combinations are made.

Sales of ABRS publications

ABRS made a decision late last year to cease distributing and selling books directly and has contracted CSIRO Publishing to act as our publications distributor. Details of all our publications will continue to be available on the ABRS website but from January 2009, CSIRO will market and distribute all our publications.

For more information on how to order from CSIRO Publishing, visit www.publish.csiro.au/nid/26.htm

Cameron Slatyer & Annette Wilson

ABLO Report

It is hard to believe that another 3 months have gone by, and we are now more than half-way through our tour. However, the seasons are turning, so it must be true. London at present is a sea of daffodils, crocuses and scillas, plus the odd early tulip. And the temperatures suddenly soared into double figures.

Visit to NMW

On 13 February we visited the National Museum of Wales in Cardiff, having been asked to search for some Australian material thought to be in the herbarium (NMW) (it wasn't). We were warmly welcomed by the Curator, Dr Tim Rich, and put in a productive day on various personal research projects. NMW is the youngest of the UK national herbaria, having been established in 1912. As such it lacks older historical material, although through bequests etc. it has the odd surprise. About 60% of the estimated 250,000 collections are from Wales, and about 30% are from the rest of the

British Isles. Of the foreign material, the vast majority is from the northern hemisphere, and the few Australian and New Zealand collections are "mainly the collections of holiday makers". Most Australian and NZ collections are dated around 1920–1930. However there are the odd gems. I found an Allan Cunningham specimen of *Poa poiformis* (1822, one of their earliest collections), and noted collections by James Fullagar (c. 1885), St. E. D'Alton, Daniel Curdie, Samuel Hannaford (Tas.), J.G. Luehmann (1843–1904), Albert Morris (15 specimens 1919–1928), F. Mueller (30 specimens) and one from the Beechey Expedition (Kamskatchka). For the tourist (or touring botanist) Cardiff Museum and Art Gallery and Cardiff Castle are well worth a visit, but choose your date carefully—we inadvertently went on the weekend that Wales were at home playing England in the Six Nations Rugby Series, and food, accommodation and a quiet corner were all hard to find!

Temporary closure of Main Library and Archives at Kew on Mondays and Fridays

The following notice is self-explanatory, and the closure should have no effect as far as requests sent via me are concerned, as I will be able to access the library as usual. The only effect will be on personal visitors.

The Main Library and Archives will be closed to external users on Mondays and Fridays from the beginning of June 2009 to the end of December 2009. During this time, on those days, it will not be possible for external users to come into the Library and we will not be able to respond to any telephone or email enquiries. We will not ordinarily be able to host any group visits on these days either. Although Kew staff will be able to access the Main Library, LAA staff will not be available to assist you. We thank you for your cooperation and understanding. We remain open as normal on Tuesdays, Wednesdays and Thursdays.

We are closing on these days to create the time required for moving a very substantial part of the whole LAA Collection into our new space in the Herbarium and Library extension. The move involves the complete relocation of our Archive and Art Collections and the greater part of our print collections.

If you have any queries or concerns about the closure, please contact Christopher Mills, Head of LAA, at c.mills@kew.org.

Temporary closure of BM (and K) collections

The move of the General Herbarium at BM into its new quarters has begun, and will continue for some months. While the move continues the collection is unavailable for study or loans. In special circumstances, it may be possible to negotiate images of a very limited number of specimens during the move. Anyone requiring this should let me know, and I will see what can be arranged. The Cryptogam Herbarium at the Natural History Museum is not affected, and remains open as usual.

Kew is scheduled to take delivery of their new wing at the end of March, all going well, and the move into that area will take place progressively during 2009 and 2010. The Library closure mentioned above is the first stage of this. Minor

rolling disruptions to access to the specimens of some groups, notably the daisies and legumes, will also occur, but this will not significantly impact on my ability to service requests about K specimens.

Visit to OXF

On 6 March we visited the Fielding-Druce Herbarium at Oxford (OXF), to pursue enquiries for various people and advance our own research. This herbarium of about 500,000 specimens contains a number of historic specimens of interest to Australasian taxonomists. In particular we were somewhat surprised to find that it holds thousands of Drummond collections, most of them complete with numbers, and substantial numbers of Sieber collections. Also noted were large numbers of Allan Cunningham collections (most, unfortunately, lacking collection details), Gunn (some with numbers), Herb. W.W. Spicer (collections by various people including Simson and Milligan), many hundreds (probably thousands) of C. Fraser collections, some Lhotsky material, and a notable number of French collections from Australia (ex P in the 1880's), especially by Baudin, and a very large number by Verreaux (1844–1845). Unfortunately, it seems that these specimens have had very little use by Australian taxonomists. Only two sets of det. slips were noted in the groups we looked at. However, where the specimens had been critically examined, many isotypes had been discovered, particularly among the Drummond and Sieber material. If you are searching for isotypes by these collectors, OXF is worth a look. I will be visiting there again in the next month or two, so I can check for anyone needing information on holdings of their favourite group. Please send me lists arranged by species names and particular collectors/specimens if you are interested. There will not be time to service very broad-scale requests, of the kind "tell me everything they hold on genus x". Most types are not flagged as such, so I will need collector/collection details.

HerbCat. as a resource

During the last 6 months I have had a number of requests for information or images that could be resolved by consulting the Kew website, particularly its online Herbarium Catalogue (HerbCat). This resource lists all Kew specimens

that have been databased, and for many (in fact most) records there is also a scanned image of the specimen attached. The indexing function works well (remember to click the correct button for collector, number, country, etc.). Be inventive in your search. The databasers have not always identified the collector or collector number or locality fully or correctly, so search in different ways (name, country, collector) to make sure you find everything relevant. If you are lucky enough to

find what you are looking for, the scanned images are of very high quality and can be zoomed for a closer look. HerbCat. is available at <http://apps.keew.org/herbcat/navigator.do> and is being added to daily. Most of the material that I have to pull from the collections to answer enquiries is being databased and scanned before being returned, although there may be a lag of several weeks before this happens.

Tony Orchard
ABLO 2008-09

News

Pauline Ladiges AO

Congratulations to Prof. Pauline Ladiges FAA, from The University of Melbourne, who was recently made an Officer of the Order of Australia (AO) in the General Division. The citation was “For service to the advancement of botanical science and research, particularly in the field of taxonomy and plant systematics, and to the conservation of Australian flora and fauna” (Web refs 1, 2). This recognises both Pauline’s substantial achievements in this field, and her sustained commitment to the teaching of plant systematics and training of post-graduate students. It follows from an earlier award, in 2001, of an Australian Centenary Medal “For service to Australian society

and science in the biogeography and ecology of Australian plants”. Pauline’s achievements need little explanation to ASBS members and they were also recently recognised by the society through establishment of the “Pauline Ladiges Prize” for best oral presentation by a student at an ASBS conference (see article by M. Duretto in the previous newsletter).

Web ref. 1: http://www.itsanhonour.gov.au/honours/honour_roll/search.cfm?aus_award_id=1139660&search_type=simple&showInd=true

Web ref. 2: <http://moonee.yourguide.com.au/news/local/news/general/native-treasure-earns-australia-day-honour/1415686.aspx>

Mike Bayly

Vale George N. Batianoff Q.D.A., B.A.

Botanist, Ecologist and Weed Scientist at the Queensland Herbarium.

Born: Culdja (Yining), Sinkiang, China, 24 April 1945.

Died: Brisbane, 20 February 2009.

George Batianoff’s life was marked by overcoming many obstacles and barriers in his life, and this resulted in a very full and productive life doing what became his passion, his deep interest in the vegetation of Queensland coastal communities, the ecology of Queensland serpentine vegetation and the study of invasive and weedy plants.

He was internationally respected for his scientific contributions to seashore vegetation including the mapping, ecology and management of beaches, the flora and ecology of serpentine vegetation, and the relationships between seabirds and plants on Raine Island. At the time of his death George

was undertaking coral cay, serpentine ecology and weed research.

He was a prolific writer who believed passionately in publishing his work, and he published 95 scientific papers of which he was the primary author of 81. However, he collaborated widely with 57 other co-authors. He had a diverse range of ecological research interests which ranged from beaches and coastal vegetation (22 papers), to a love of island vegetation (30 papers) and seabirds (4 papers). He had a fascination with the unique flora of serpentine regions worldwide, and was an expert in the serpentine flora of central Queensland (11 papers). His other quest was to document the impact of invasive plants on the environment and the development of appropriate management practices (18 papers). He was always driven towards real conservation outcomes from his work and his research on Mt Coolool lead to the unique flora of this area being



George Batianoff

protected as a National Park. George is honoured by having three Queensland coastal plants named after him; a scrambling and spiny shrub *Capparis batianoffii*, a herb *Plectranthus batianoffii* and a grass *Paspalum batianoffii*.

George Nicholaivich Batianoff was just two weeks old when his father Leonid Nickolaivich Aksarin was killed in World War II and his mother, Elena Petrovna Volodina, married his adopted father Nikolai Andeivich Batianoff five years later. From the early age of six George learned to identify plants at the foot of the Altai Mountains, by collecting herbs, fruits, nuts and berries for food, which was stored for the long winters. He lived among the tribal people with their array of colourful costumes for 13 years, speaking the local Turkish dialect of the Uygur language.

In 1958 his family was displaced, travelling as refugees to Shanghai, eventually migrating to Australia via Hong Kong. Aged just 14 and unable to speak any English, George arrived in Brisbane with his mother and two sisters in November 1959. During his adolescent years he worked part-time as a fruit and vegetable picker, factory hand, kitchen hand in hospitals and a builder's labourer, while attending East Brisbane and Cavendish Road State High Schools. He took out Australian

citizenship in 1963 and served for four years in the CMF (Civilian Military Force). In the same year he won a scholarship to the Queensland Agricultural College at Gatton, graduating with a Diploma in Agriculture in 1965.

From 1966 to 1973 he worked as an Experimentalist for the Department of Primary Industries, firstly in Charleville for three years on wool funded research projects into the ecology of mulga scrubs and soil moisture of Mitchell grass black clay soils. He met his wife Judy in Charleville and was married in 1969. For two years he worked in Ipswich researching forage crops under irrigation, also attending University of Queensland part-time studying Botany and Zoology. In 1971 he was given the responsibility of managing Agrostology projects at the Brigalow Research Station near Moura. However, at the age of twenty-nine he wished to pursue a career in plant ecology and joined the Queensland Herbarium in Brisbane in February 1974.

From 1974 to 1991 he worked as a coastal survey officer involved in assessment of vegetation and coastal floristic inventories from the Coral Sea to the Gold Coast. From 1979–1985 he attended University of Queensland part-time and gained a B.A. majoring in Biogeography and was appointed a Principal Botanist in 1992. Since 1990 his research activities have included environmental weeds, serpentine flora and rehabilitation of mined areas in Central Queensland, ecology of coral cays particularly the *Pisonia grandis* rainforest and the seabirds breeding habitats. He collected and incorporated some 20,000 specimens into the Queensland Herbarium, with duplicates sent to other herbaria. Some of his important collections of Queensland flora include about 7,000 specimens of naturalised plant species and a large number of native species from offshore islands.

George was a very colourful character and collaborated enthusiastically with other people throughout Queensland, as well as nationally and internationally. He was well known for his mischievous sense of humour, “belly” laughter and his direct comments. He had a critical mind, a knack of questioning the scientific position and logic of his colleagues and the ability to think outside the box. He was a risk-taker, with the ability to write original work but was not too

concerned with the niceties of bureaucracy. He was very much an individual, with a strong sense of fair play and a creative mind. He was always happy to share his knowledge and support and mentor the younger generation of botanists and ecologists. His love of the Australian landscape, its wildlife and his enthusiasm to collect plant specimens to improve our botanical knowledge rubbed off on others.

George was a devoted husband to his wife Judy for 40 years and father to Andrew, Anne-Louise and Nicholas. He is also survived by his mother Elena.

During his short and devastating battle with Motor Neurone Disease, George exhibited great courage and a positive attitude. He never lost his sense of humour and was busy writing reports and checking manuscripts till the last day.

George's life was celebrated at a funeral service at Corinda Catholic Church on 27 February and afterwards at a wake at the function room of the Brisbane Botanic Gardens, Mt Cootha-tha.

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Compiled by staff of the Queensland Herbarium, Brisbane Botanic Gardens, Mt Cooth-tha, Toowong, Qld 4066.

Food for thought

The fascination of new species: Do we have to sell naming rights or resort to giving plants funny names to promote our field?

Robyn Barker

State Herbarium of South Australia

There seems to be an endless fascination with new species and their names. New species of the cute and cuddly or charismatic variety seem to generate endless press. Take for example the finding of a single new robin in Gabon (Web ref. 1) which generated a lot of interest. Or those organisms which are up for sponsorship or naming rights on BIOPAT (Patrons for Biodiversity), a German-based non-profit-making association set up to raise funds for use in taxonomy and preservation of biodiversity. Here donors are offered the opportunity of sponsoring newly discovered animal or plant species, mostly from tropical countries, and also of giving them a scientific name. Specimens presently on sale range from frogs, spiders and shells to ferns and orchids, all from various parts of the globe (Web ref. 2) and with costs ranging from Euro2,600 to Euro4,500.

Likewise the Scripps Institute of Oceanography who earlier this year indicated that they had several species available for naming. Even though the cute and cuddly soubriquet might not be so applicable here the costs start at \$US5,000 but

rapidly rise to \$US10,000 for a spiny worm found in the kelp forests, \$US15,000 for an orange, speckled nudibranch, \$US25,000 each for two worms found living on deep-sea whale bones and \$US50,000 for a rare hydrothermal vent worm. Donors who name a species receive a framed print of their named organism, as well as a copy of the scientific publication in which it is first described (Web ref. 3).

Even less appealing perhaps, but nevertheless gaining publicity because they are named after famous people, are Arizona State University entomologist Quentin Wheeler's naming of an Indian whirligig beetle species after Roy Orbison (Web ref. 4), or his earlier involvement in the naming of new species of slime-mold beetle of the genus *Agathidium*, after Darth Vader, President George W. Bush, Vice President Dick Cheney and former Secretary of Defense, Donald Rumsfeld (Miller and Wheeler 2005). One wonders whether they just didn't run out of ideas since they had 65 new species to play with ! and Pocahontas and Cortez didn't receive the same interest.

And look at the publicity attained by Kelly Shepherd and Stephen van Leeuwen for describing their hitherto overlooked samphire species as resembling a Michelin Man (Web ref. 5).

Perhaps we might have to resort to giving some thought to generating publicity for our field by either thinking outside the square when we give our new species names or by prostituting our science and offering them up for sale.

Reference

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Web ref 2: http://www.biopat.de/englisch/index_e.htm

Web ref. 3: <http://scrippsnews.ucsd.edu/Releases/?releaseID=894>

Web ref. 4: http://asunews.asu.edu/20080126_orbisonbeetle

Web ref. 5: <http://species.asu.edu/topten2008.php>

2009 ASBS Conference Update

“Systematic botany: from science to society”

(highlighting discovery, analysis, synthesis in plant diversity research and its impact on society) and a workshop on

“National accreditation of providers of biological identification”

When:

- Tuesday–Friday, 1–4 December

Where:

- University of New England, Armidale NSW

Venue:

- Biological Sciences Lecture Theatre (S003) adjacent to Botany and the N.C.W. Beadle Herbarium, UNE

Broad timetable:

- Mixer and registration: late afternoon 30 November
- Further registration: early morning 1 December

- Conference presentations and workshops 1–3 December
- ASBS AGM followed by Conference Dinner: starting late afternoon, Wednesday 2 December
- Field trip, Friday 4 December

Check the ASBS website for updates:

<http://www.anbg.gov.au/asbs/conferences/2009-UNE/index.html>

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



Photos: J. Bruhl

The CPBR 2009 Students' Volunteer Botanical Internship Program

Hottest Interns Ever!

Bronwyn Collins

Student's Volunteer Botanical Internship
Program Coordinator
Centre for Plant Biodiversity Research,
Canberra

Just as members of staff were struggling back after the Christmas-New Year break, the Centre for Plant Biodiversity Research (CPBR) was filled with the sound of excited and enthusiastic interns undertaking the 2009 Student's Volunteer Botanical Internship Program. The energy they brought to the program shocked staff out of their summer torpor in order to provide a hectic program of seminars, workshops and training sessions for the next seven weeks.

Six students completed the Botanical Internship this year. They came from the Canberra area, Sydney, southern Queensland, and as far afield

as James Cook University in Townsville. With diverse backgrounds in botany, conservation and land management, coastal studies and horticulture the interns experienced working in the Australian National Herbarium environment and were exposed to many of the different botanical, conservation and research fields open to them in their future careers.

Interns provided support to herbarium technical staff as well as working with CPBR researchers providing technical support to both the orchid research and *Acacia* programs. Despite the extremely hot weather and failure of the Herbarium air-conditioning resulting in stifling working conditions (ameliorated slightly by the provision of ice blocks at afternoon tea), they updated and incorporated thousands of specimens into the collection during their stay. The interns also undertook a small independent project,



Figure 1. Kate Brooks (USC), Michele Greenfield (UNE) and Chris Cargill (CPBR) investigate the cryptogams in the ANBG. Photo: Lesleigh Davis



Figure 2. Dave Mallinson (CPBR) imparts some collecting wisdom to Duncan Jardine (JCU). Photo: Bronwyn Collins



Figure 3. Lesleigh Davis (MSIT) gets to grips with Proteaceae identification. Photo: Carl Davies, CSIRO Plant Industry VRU

choosing an Australian native plant growing in the Australian National Botanic Gardens (ANBG) to research. The results were presented to staff in a morning of seminars and these will be written up for inclusion on the ANBG's Growing Native Plants website (<http://www.cpbr.gov.au/gnp/index.html>).

While the interns worked hard inside the Herbarium they were occasionally allowed out, undertaking some work in the ANBG, a field trip in the local area, and a four-day visit to beautiful Jervis Bay on the New South Wales South Coast. This provided the opportunity to talk to Booderee National Park and Botanic Gardens staff about park management, weed control and indigenous joint-management issues. Interns were also able to practice their mapping and GPS techniques and undertake an intensive plant identification exercise. The chance to repair to the beach after a hot day in the field helped to make this trip a highlight of the program. We can also recommend the Mexican restaurant in Vincentia for dinner.

This is the 17th year the program has been run, with over 240 interns from both Australia and overseas

having participated during that time. The response from past interns has been overwhelmingly positive, with many finding that the experience helped them decide future career directions and provided them with a distinct advantage in the job market, as well as being a lot of fun. Previous interns now work in areas including state and federal government environment and natural resource management departments, non-government organisations, environmental consulting agencies, universities, botanic gardens and herbaria.

For a report on the outcomes of the 2009 CPBR Student's Volunteer Botanical Internship Program and further details on the Program see our website (<http://www.cpbr.gov.au/intern/>). I would greatly appreciate it if ASBS members could mention the Program to students and other potential participants. Some of our best interns have found out about the Program through ASBS members and have gone on to further study in plant systematics.

For more information please contact me directly on 02 6246 5133 or at bronwyn.collins@csiro.au.

Book review

Ainsworth & Bisby's *Dictionary of the Fungi*, 10th edition

Pam Catcheside

State Herbarium of South Australia

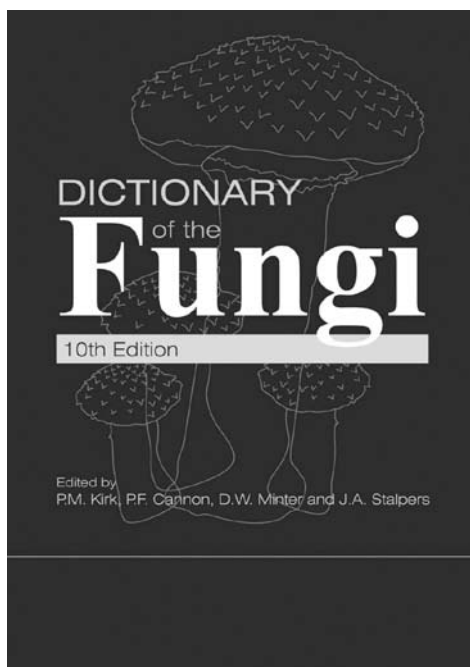
***Dictionary of Fungi* (10th edition) Edited by P.M. Kirk, P.F. Cannon, D.W. Minter, J.A. Stalpers. Publishers: CSIRO PUBLISHING / CABI. Publication date: November 2008. Format: Hardback 771 pages, 245 x 175 mm. RRP: AU\$175.00. ISBN: 9780643095731.**

Mycology has come a long way since the publication in 1943 of the first edition of Ainsworth and Bisby's *Dictionary of Fungi*. Geoffrey Ainsworth and Guy Bisby compiled their dictionary during World War II at the then Imperial Mycological Institute, Kew, England while on night fire-watch duty as bombs fell on London. In the Preface to that edition they state that they set out "to give a list of all the generic names of *Fungi*.... that have been in use to the end of 1939". Subsequent editions and editors have not only updated the lists by adding new data but have expanded the original by including mycologically-related topics such as fungal systematics, mycological practice and the rapidly developing molecular technologies.

This new edition is an exciting 'upgrade' and an essential item on a mycologist's bookshelf. Like its predecessor, it covers the whole spectrum of fungi and associated groups including mushrooms, disc fungi, slime moulds, water moulds and yeasts. There are obvious similarities to previous editions: generic names, families and

orders of fungi are listed and the authority, date of publication, systematic position, number of accepted species, distribution and key references are provided for each genus. But, following the tradition of the Dictionary it is far more than a mass of lists, it is full of erudition, scholarship and fascinating information.

The differences with previous Dictionaries are substantial. The seven years since the 9th edition have seen an almost revolutionary change in fungal classification, especially of the higher ranks within the *Fungi*. The huge advances in our understanding of phylogenetic relationships and the evolution of the Kingdom *Fungi* are due in large part to the AFTOL (Assembling the Fungal Tree of Life) project, a project to reconstruct the fungal tree of life by using multi-gene sequence analyses across all major fungal clades. The vast amount of data resulting from these phylogenetic studies has enabled a new approach to fungal classification based on well-established monophyletic groups. The mycological community owes a great debt of gratitude to the editors of the Dictionary who have responded to the challenges of incorporating these datasets into a very much revised classification of the *Fungi*. This major revision of the classification of the higher ranks within the *Fungi* includes the addition of the rank of subphylum to those of phyla, subphyla, classes, subclasses and orders.



Further significant developments featured in the 10th edition include the incorporation of taxa at family level into the classification system (albeit with cautions about the numbers of families of fungi for which there are no available sequence data) and the continued integration of anamorphic (asexual state) and teleomorphic (sexual state) genera into this system. The editors have also decided on the somewhat courageous but realistic decision to divide the Dictionary into three parts, a “*Dictionary of the Fungi*” (pp. 1–746), “*Dictionary of the chromistan fungal analogues*” (pp. 747–757) and “*Dictionary of the protozoan fungal analogues*” (pp. 759–771), the last two covering those organisms that are fungi-like or historically thought of as fungi, such as *Phytophthora* species and slime moulds. This separation of the Kingdom *Fungi* from those organisms that more precisely belong in the Kingdom *Chromista* or *Protozoa* serves to emphasise their difference.

To reflect its international character, there is a considerable increase in the number of biographical entries to include mycologists from European, Asian and South and Latin American countries not previously covered. There are many new topics, and references to publications continue to be updated and expanded. However, keys have not been updated and are not included due, as stated in the Preface, not only to lack of resources but to the difficulty of construction of morphology-based keys when molecular characters are being increasingly used in species determination. The “Systematic Arrangement” section at the end of the 9th edition has been omitted. Again, this may be due to lack of resources but it is a feature that I shall miss.

New topics include AFTOL, Climate change, Genomics, Radiation and fungi, while those on Molecular biology are very much expanded and rearranged, many entries having been transferred and placed under DNA fingerprinting and DNA sequencing. All molecular techniques and analysis methods are explained with characteristic succinctness and include most useful and up-to-date references. Another new entry, Phylogenetic analysis, covers methodologies and explains briefly the reasons for their use in elucidating evolutionary pathways for fungi. Topics such as Conservation, Cytology, Edible fungi,

Ethnomycology, Food spoilage, Lichens, Medical and veterinary mycology are expanded as are their reference lists. The section on the Internet includes freely available websites relating to topics such as Biodiversity, Conservation and Scientific names of fungi and associated organisms.

The 10th edition documents the significant changes in fungal classification. The phyla *Ascomycota* and *Basidiomycota* are classified under the *Dikarya*, a new rank in the fungal hierarchical system. The order *Blastocladales* is separated from the *Chytridiomycota* and treated as a phylum *Blastocladiomycota*. A dramatic change is that the phylum *Zygomycota* is not accepted in the new classification, its taxa are distributed amongst the *Glomeromycota* and several subphyla. The *Microsporidia*, unicellular parasites of plants and animals, are now included as a phylum of the *Fungi*.

Numbers of described species and ranks within the hierarchical taxonomic system have increased dramatically. In the *Ascomata* there are now 64,163 described species (32,739 spp. in the 9th edition) distributed amongst 15 classes (7 in the 9th edition), 68 orders (56 in the 9th edition), 327 families (226 in the 9th edition) and 6,355 genera (3,409 in the 9th edition). The numbers of *Basidiomycota* have similarly sky-rocketed, especially at the higher ranks: 16 classes (4), 52 orders (33), 177 families (130), 1,589 genera (1,353) and 31,515 species (29,914).

Inevitably in a work of this magnitude and complexity there are flaws. Illustrations are always useful but there are fewer figures, 27 in the 10th edition, compared with 41 in the 9th edition. This smaller number is possibly accounted for by an extensively illustrated companion volume, “Fungal Families of the World”, edited by two of the authors of the Dictionary, Cannon and Kirk. Numbering of the figures in the 10th edition goes awry after Fig. 20: the next is Fig. 31, followed by Figs 25, 34, 23, 26 and 27 respectively. There is also a mismatch in references to figures, for example, under the entry *Basidiomycota* on page 78 ‘clamp connexions’ Fig. 9 should be Fig. 11, and the illustration of ‘dolipore septa’, supposedly illustrated by Fig. 13, is omitted. There are also a few typographical and formatting errors, e.g. *Tuber melansporum* (sic) instead of *Tuber*

melanosporum. However, in a work of this degree of scholarship, these are minor quibbles.

I find it amazing and humbling that so much information on a Kingdom, or indeed three Kingdoms, can be distilled in a single volume. The quantity and quality of work that is being carried out around the world by mycologists and those in allied disciplines is stupendous. The results

are gathered in this wonderful book. The editors suggest that this may be the last edition of the dictionary in book format. It is perhaps inevitable and probably desirable that future Dictionaries are freely available on the Web. However, I am delighted to have my 'in hand' copy to delve into and glean information during random forays. This is an indispensable work.

Miscellanea

Acacia: Southern African plant invaders

Robyn Barker

State Herbarium of South Australia

The July 2008 edition of the *Southern African Plant Invaders Atlas (SAPIA) News* (Web ref. 1) was focussed on those Australian species of *Acacia* that have invaded South Africa. *Acacia* is the largest genus of naturalised and casual alien species represented in the *SAPIA* database with 18 listed species. Most widespread species are *A. mearnsii*, *A. cyclops* and *A. saligna*. While *A. mearnsii* has invaded the widest number of vegetation types it is the latter two which have invaded the Fynbos. Biological control programmes are in place against all three of these species. *A. paradoxa*, *A. implexa* and *A. stricta* are listed as emerging weeds.

A key to all of the invading species is included and there is a comment on the taxonomy of *Acacia*.

The rest of the issues of the *SAPIA News* can be downloaded from the website (Web ref. 2) and it is quite remarkable, although scarcely surprising, just how many weeds we either share with South Africa or which we have donated to them.

References

Web ref. 1: www.dwaf.gov.za/wfw/Newsletters/SAPIA/SAPIANewsNo8Jul08.pdf

Web ref. 2: www.agis.agric.za/wip/

Botanicus update

Since last reported in the *Newsletter*, *Botanicus*, the freely available online digital library of the Missouri Botanical Garden Library, has grown to cover 630 titles (books/journals); 2,752 volumes; 1,161,527 pages and 190,495 links to protologues.

These include a growing number of volumes on the Australian Flora and a number of rare and obscure publications from their holdings.

<http://www.botanicus.org/>

DARWIN 200: Evolution and Biodiversity

**The Combined Australian Entomological Society's 40th AGM & Scientific Conference / Society of Australian Systematic Biologists / 9th Invertebrate Biodiversity & Conservation Conference
25 – 28 September 2009, Darwin, Northern Territory, Australia**

On behalf of the organising committee, we extend a warm invitation to you to attend our special meeting in Darwin. Read more about the proposed program and symposia by visiting the website:

www.evolutionbiodiversity2009.org

CALL FOR ABSTRACTS

Deadline for submission is 25 JULY 2009

The year 2009 marks the 200th anniversary of the birth of Charles Darwin and the 150th anniversary of his work *The Origin of Species*. We have included a link to the CHARLES DARWIN SYMPOSIUM which is being held immediately prior to the joint Conference. This Symposium will provide an opportunity to appreciate, debate, and even challenge Darwin's findings, and will bring together an exciting range of speakers from around the globe.

Sally Brown, Conference Secretariat
PO Box 108, Kenmore, QLD 4069, Australia
Sally.brown@uq.net.au

Book notices

Western Wildflowers

Wildflowers of Southern Western Australia.
Margaret G. Corrick and Bruce A.
Fuhrer. Rosenberg Publishing, 2009.
Paperback, 224 pp. 800 colour plates.
ISBN 9781877058844. AU \$39.95.

Saltmarsh Ecology

Australian Saltmarsh Ecology. Edited by
Neil Saintilan. CSIRO Publishing, 2009.
Paperback, 248 pp. ISBN. 9780643093713.
AU \$99.95.

More Wattles

Wattles of the Pilbara. By Bruce Maslin
and Stephen van Leeuwen. Department
of Environment and Conservation, WA,
Bush Books Series. AU \$6.50.

A new offering in DEC's popular Bush Books series which provides an excellent introduction to Pilbara Wattles in advance of an interactive key in preparation by the same authors.

Fabulous Fruit

Fruit: Edible, Inedible, Incredible. By
Wolfgang Stuppy and Rob Kessler.
Papadakis Publishers, 2008 in association
with the Royal Botanic Gardens, Kew.
264 pp. 305 x 280 mm. HB. ISBN
9781901092745. £35.00.

<http://www.papadakis.net/>

Barkly Plants

*A Field Guide to Plants of the Barkly
Region Northern Territory.* By Jenny
Purdie, Chris Materne and Andrew
Bubb. Barkly Landcare and Conservation
Association. AU \$35 (inc GST) plus
postage and handling.

“Developed to assist both pastoralists and visitors to the Barkly region, A Field Guide to Plants of the Barkly Region Northern Territory brings together the knowledge of field experts with many years' experience working within the region in a simple-to-use field guide to over 370 plants. With plain English descriptions of the plants, and

their habitat, distribution maps and additional information such as palatability to stock, this publication aims to enrich the experience of all who work in and visit the Barkly region through greater understanding of the plants that exist in this unique environment.”

from <http://www.barklylandcare.org.au/5-Publications.html>

Medicinal Plants report

*Medicinal plants in conservation
and development: case studies and lessons
learnt.* By A.C. Hamilton (ed.) (2008).

Plantlife International, Salisbury, UK.

Free PDF available from <http://www.plantlife.org.uk/portal/assets/News%20Sue%20Nottingham/Medicinal%20plants%20report%20Jan%202009.pdf>

Horticultural Flora discounted

*Horticultural Flora of South-East
Australia.* By R.D. Spencer (ed.)
5 vols published 1995–2005. Sets
now available for \$150.00 or \$30.00
per volume (formerly \$100+ per
volume) from FLORILEGIUM, PO Box
1137 Glebe NSW 2037 Australia. Phone:
(02) 9571 8222 Fax: (02) 9571 8333
florilegium@tpg.com.au
<http://users.tpg.com.au/florileg/>

The *Horticultural Flora of South-East Australia* is available at a greatly reduced price from the bookseller Florilegium.

It's a bit disappointing to see it marked down as this seems to show that it has not reached many users. On the other hand, it had been overpriced by Uni NSW Press, which ensured that it did not reach those users.

The *Horticultural Flora* is the only Australian work to fill the gap between conventional floras and “gardening books”. It did not aim to be an exhaustive listing of all cultivated species and cultivars, but it did cover all the plants likely to be found in gardens across temperate Australia. Although the descriptions are necessarily short, it was written with as much taxonomic rigour as the *Flora of Australia*.

David Cooke

General notices

Molecular Systematics of Australian Marine Macroalgae

Fred Gurgel's Lab at the University of Adelaide is seeking Honours and PhD students who are interested to work on the molecular systematics, ecology and biogeography of Australian macroalgae.

Broad research directions currently funded include: 1) the DNA barcode of SA macroalgae; 2) DNA sequencing of type and historical material; 3) phylogeography and population structure of macroalgal populations; 4) biodiversity, taxonomy and biogeography of temperate and tropical seaweeds.

One PhD scholarship is available for eminent start (PhD 1), another will be available on the second semester (PhD 2):

PhD 1: Phylogenetics and Phylogeography of Marine Benthic Algae of the Great Australian Bight: Biodiversity and the Relict Species Concept.

Description: This study will use a range of molecular tools to: 1) provide a comprehensive and taxonomical updated survey of the marine flora of the head of the GAB and vicinity (the taxonomy + phylogenetic component); 2) test the hypothesis that the Bunda Cliffs act as a barrier to gene flow between western and eastern GAB populations (population genetics component); and 3) test whether macroalgal species considered 'relicts' do indeed belong to ancient populations or whether they arrived recently hence should be defined as "long range dispersals" instead (phylogeography component). This study will involve offshore expeditions and extensive remote field work jointly with GAB Marine Park and the Alinytjara Wilurara National Resource Management staff.

PhD 2: Phylogenetics and Phylogeography of Co-distributed Marine Macroalgae Across Australia.

Description: Perform a multi-marker, multi-species comparative phylogeographic study targeting macroalgal species with continuous and

quasi-continuous distribution across the entire Australian continent (i.e. Great Barrier Reef, Ningaloo Reef, Great Australian Bight, Darwin, Perth, Adelaide, Melbourne and Sydney). A partnership between CReefs (www.creefs.org), DEH and the University of Adelaide.

Both PhD fellowships above are open to Australian and NZ citizens and permanent residents only. Essential skills include: manual driving, snorkelling, SCUBA diving certification (open water minimum) and good field work spirit. Desirable skills: molecular biology, 4WD.

For further information please contact Dr Fred Gurgel (fred.gurgel@adelaide.edu.au). Applicants should send a brief letter of introduction, unofficial transcripts and contact information from 1–2 references. Please indicate in your email/letter: (i) degree sought, (ii) previous relevant experience(s), (iii) why you are interested in pursuing such a degree, and (iv) your interest in marine plants.

Invasive Species E-bulletin

The Invasive Species Council has just issued its first e-bulletin on the interactions of climate change and invasive species. It can be found at <http://invasives.org.au/doubletrouble/doubletrouble1.html>.

Anyone can subscribe to the bulletin (free) by emailing doubletrouble@invasives.org.au with subscribe in the subject.

The first issue provides an introduction and two of the stories featured. There is also a story about weed risks of fodder, the topic of recent discussion on enviroweeds.

We invite researchers to advise us of relevant research suitable for future bulletins, which will come out about every 2 months.

Carol Booth

For Budding Book Authors

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ASBS Publications

History of Systematic Botany in Australia

Edited by P.S. Short. A4, case bound, 326 pp. 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.Newslett. 53, edited by Helen Hewson. 1987. \$5 + \$1.75 postage.

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

Australian Systematic Botany Society Newsletter

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

Evolution of the Flora and Fauna of Arid Australia

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

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

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

Ecology of the Southern Conifers (Now out of print)

Edited by Neal Enright and Robert Hill.

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

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

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AUSTRALIAN SYSTEMATIC BOTANY SOCIETY INCORPORATED

The Society

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

Membership

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

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

The Newsletter

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

Contributions

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

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

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

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

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

Advertising

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

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

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

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