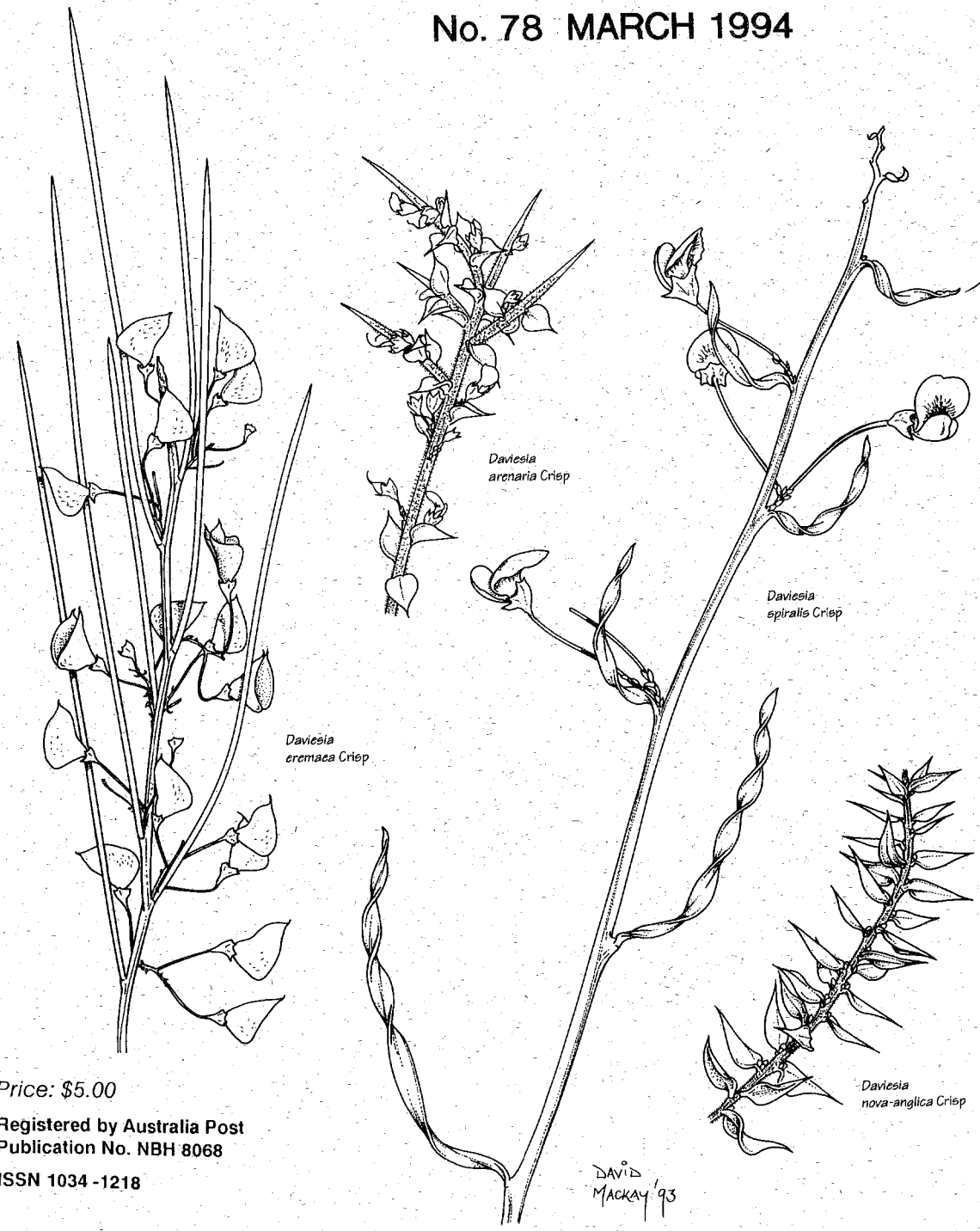
# Australian Systematic Botany Society NEWSLETTER

No. 78 MARCH 1994




Price: $5.00

Registered by Australia Post
Publication No. NBH 8068

ISSN 1034 -1218

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# TWENTIETH ANNIVERSARY

## Introduction

The idea for forming the Australian Systematic Botany Society (now Incorporated) was taken at a meeting of concerned plant systematists in Melbourne in early 1973. The first General Meeting of the Society was held in Perth in August of that year, and the first issue of the *Newsletter* appeared in March 1974.

To acknowledge the twentieth anniversary of the Society, we have compiled a few short comments from some of the people who have influenced the Society over the years, along with a perspective from our current president.

## On our 20th anniversary

Mike Crisp
President, ASBS Inc.

When the Australian Systematic Botany Society held its inaugural general meeting in August 1973, and when the first *Newsletter* was published 20 years ago this month, I was a postgraduate student. My field of study was ecology — I was crawling over plots in the stifling heat of the South Australian desert, imbedding *Sclerolaena* prickles in my hands and knees — but nevertheless, I was very much aware of the foundation of the Society, and I soon joined up. (I am very proud of my ownership of a full set of the newsletters, all acquired by subscription!)

This was an exciting period for systematic botany in Australia, and a time of great optimism, because in 1973 the biological survey of Australia and the *Flora of Australia* project were initiated through the Australian Biological Resources Study Interim Council. I remember that we students felt that this would be a fillip to systematic botany, through a long-term government commitment of resources to research and the production of a national *Flora*. We envisaged a resurgence in the discipline, a source of jobs for ourselves and our successors and, above all, the re-instatement of systematics as a "real" science: For too long our subject had been scorned as pseudoscience, only useful when one needed identifications. I suspect that this lack of "respectability" was one reason that I chose to study ecology rather than systematics, although I soon saw the error of my ways! (The other reason was that Bob Lange's group was doing some really exciting things in arid-zone ecology in the Botany Department of Adelaide University.)

The same sense of optimism infected the founders of ASBS. The first *Newsletter* was full of announcements of new initiatives:- the foundation of the Society itself, with chapters in four states; the ABRS interim council and *Flora of Australia* standing committee; the *Australian Plant Name Index*; and the decision of the Council of Heads of Australian Herbaria to prepare a report on the current state of taxonomic research in Australia. In the guest editorial, Selwyn Everist, then the Director of the Queensland Herbarium, hoped that the new *Newsletter* would not meet the melancholy fate of its predecessor, the *Australian Herbarium News*. He need not have worried! That editorial makes interesting reading today (it is also reproduced in the *Newsletter* **66**: 2–3, 1991). Selwyn outlined his personal view of the role of the Society and its *Newsletter*, and history has vindicated him.

Of course, all that optimism has been vindicated, as you well know. The *Flora of Australia* is well under way, the *Plant Name Index* is published, and a whole generation of systematists has found a new avenue of training and employment through the ABRS Participatory Programme and the *Flora*.

Systematics has achieved a new respectability that it never had when I was a student. Cladistics has given it a theoretical basis and turned it into a "hard" science, and now molecular data are bringing "gene jockeys" into the field. We have much to teach these people, and if we play our cards right we could reap even bigger dividends. Far from replacing the traditional morphological basis of evidence, the new data are complementing the old — and forcing us to examine it with new eyes. Barbara Briggs showed considerable foresight when organising the molecular symposium in 1989. Our Society has an obligation to ensure that our profession keeps up to date with such developments —

only thus can we continue to be a force in biological science.

Over the last 20 years ASBS itself has flourished. The first *Newsletter* announced that in August 1973 membership stood at 113. Numbers grew rapidly and, a few years ago, levelled off near 400. Our numbers are holding, against a background of declining funding for science. A very good sign is that our student membership appears to be increasing. We are holding annual symposia (as opposed to every 18 months to 2 years not too long ago), and most chapters are active.

One of the best signs for the Society is the steady improvement in the *Newsletter*. Of course, the new personal-computing technology has made production easier and a more glitzy style possible. However, the content has increased considerably too — see the comprehensive review by David Morrison in *Newsletter* **66**: 4–14 (1991). This indicates an active society — either that, or the editors have become more aggressive and entrepreneurial — or perhaps they are just writing more!

We have published several book volumes, mostly proceedings of our symposia. Some of these, such as the *Evolution of the Flora and fauna of Arid Australia*, edited by Bill Barker and John Greenslade, and the *Flora and Fauna of Alpine Australasia*, edited by Bryan Barlow, stand as classics in the field and a credit to their editors and the Society. Perhaps our outstanding achievement so far is the *Flora of Central Australia*, edited by John Jessop *et al.* And there is more to come:- the conifer book from last year's Hobart meeting, and the proceedings from the recent Perth meeting.

It is not easy sustaining a society with members thinly dispersed over a continent. Botanists are not the best-funded profession (as if this were news to you!), and many of us find it difficult to attend symposia on the other side of the country. And the bureaucrats want to make things harder by forcing us to adopt rigid new rules about our procedures. The new constitution was not our choice — it was enforced by legislation designed to catch crooked businesses. This is why communication is the essence of the Society — it is the vehicle for Australian plant systematists to keep in touch, swap ideas, keep up our standards, and generally keep the profession going. Thus, our main activities are holding meetings, publishing the proceedings, and producing the *Newsletter*. For the majority of our scientific papers and flora treatments, adequate vehicles exist elsewhere, and that is the way it should be.

I must not avoid mention of all of those people who have given their time to run the Society. None of our officers are paid, and for some the workload has been considerable. This applies especially to the *Newsletter* editors, for whom a time-consuming job recurs every three months. The contributors to the Society are too numerous to mention individually; I guess that most of you know who they are — if not, then browse through some back issues of the *Newsletter* (and there is a list of office-bearers a couple of pages further on in this issue of the *Newsletter*). Neither must I fail to give credit to all the heads of herbaria and departments who have allowed their staff to give their time and resources to the running of the Society, and who continue to do so. Without this hidden subsidy, ASBS could not exist.

Not everything is rosy in the garden of systematics. We are all aware of the attrition of science funding generally, and in our own institutions in particular. The most insidious effect of the cuts is the loss of expertise. As our senior members retire, many of them are not being replaced; and the losses are not falling evenly across the research field. Cryptogamic botanists, for example, are disappearing at an alarming rate. Many universities no longer teach cryptogamic botany, my own included. Yet these organisms are now appearing to be far more important than was previously thought — in ecology, and in the history of life on earth. Who is going to study them, if students don't even know that they exist? I don't know the answer to this one, but ABRS is going to have to face it very soon, if they want somebody to write the relevant volumes of the *Flora of Australia*.

As a result of the recent surge in phylogeny reconstruction, our view of the world of organisms is changing dramatically. The old four-kingdom classification seems laughable. There is far more diversity (and disparity) among micro-organisms than was imagined just a few years ago. Fungi, once claimed by botanists, now appear more closely related to metazoans (i.e. "animals"). These developments should force a serious rethink of the way in which we structure our profession. We are not plant systematists, we are biological systematists. We need a unified system of classifying and naming organisms, and in the not too distant future, we will need an Australian Systematic Biology Society.

# ASBS — then and now

Trevor Whiffin
First President, ASBS

I had two reactions to the request to contribute a short account to the twentieth anniversary issue of the *Newsletter*, apart, that is, from the initial reactions of "Is it really twenty years?", and "Do they really want my contribution *now*?"

My first major reaction concerned how things have changed over the last twenty years. The formation of the society was, in some ways, a "coming of age" for plant taxonomists in Australia. It was a movement away from purely local issues, and a recognition that taxonomists have much in common nationally, and even internationally. Since that time, the society has grown in numbers and in maturity, to become one of the most effective scientific societies in Australia.

The second major reaction concerned, in fact, how little things have changed. I remember some of the discussions early on, which still sound familiar today. There were extensive discussions about whether the name of the society should include taxonomy or systematics, and whether we should encompass only botanical systematics or try to include the zoologists within a more general systematic biology society. Of prime importance in the early life of the society were the issues of how best to promote the importance of taxonomy, and of taxonomists, and how best to facilitate communication between all members of the society.

Of course, the nature of the society is more important than its name, although names, like first impressions, can be important. There is, to me, a subtle difference between taxonomy and systematics that goes beyond the standard textbook definitions. Systematics is academic, it is modern, it is scientific. It is, in one way or another, accepted and occasionally even encouraged in our universities, especially in those that still retain a distinct botany department. Although its practitioners may not always call themselves systematists, let alone taxonomists, it is a discipline that is alive and well. With the current fashions of biodiversity, the environment, and things molecular, systematics can be seen as combining all three, and should be looking towards a bright future.

Taxonomy, on the other hand, is practical, it is not modern, and it may be partly an art. It is used by others, but rarely supported by them. It comprises the more mundane but more practical aspects of keys, descriptions, floras and monographs. Those of us who are interested in organisms, rather than methodology (whether it be cladistics or nomenclature), are essentially systematists when we wish to understand our plants, and are taxonomists when we wish to make our results available for general but practical use. The users here are all of those people who wish to identify or obtain information about plants; they include not only other taxonomists, but also ecologists, field botanists, land managers, and amateur naturalists. Taxonomy is then seen to provide a means to a practical end. That end, in modern terminology, is information storage and retrieval. The challenge for the future is to make monographs and floras that are scientific but also (again in the vernacular) more "user-friendly". For the student, our challenge is to put the science (and the excitement) into taxonomy.

The importance of promoting taxonomy, and taxonomists, is still one of the more important aims of the society. Personally, I detect both good and bad trends over the last twenty years. On the positive side, I am encouraged by the number of good young botanists who have come into taxonomy. I am further encouraged by the fact that, following retirements of university taxonomists over the last few years, most have been replaced, so that some at least of these young taxonomists have gained positions. However, I am conscious of the fact that many people have not been able to obtain positions as taxonomists, or they have only gained temporary positions, with no secure career path in front of them. I am also concerned with a trend for the older, more-experienced taxonomists to be called upon to spend vastly increasing amounts of their time in administration and other duties, effectively removing them from taxonomy. While it is important, even useful, to have administrators who are familiar with and sympathetic to taxonomy, their experience is sorely missed. This loss is exacerbated when, as is usually the case, their positions as taxonomists are not replaced.

At the inaugural meeting of the society, the importance of communication between members was realized. In fact, early support for a newsletter, and the first offer to produce one, came from one of the more far-flung areas (just joking, BRI!). Since that successful beginning, the *Newsletter* has grown in size and importance,

to become for many members possibly the most valuable component of their membership.

The society has grown in size, encompassing (as was the original intention) herbarium and university taxonomists, other botanists, and interested amateurs. The many activities of the society, locally and nationally, serve to hold this membership together. Among these activities, the *Newsletter* can stand proud, and I look forward to at least the next twenty years for it and the society together.

## Changes to the Newsletter

Trevor Clifford
Fourth President, ASBS

The present *Australian Systematic Botany Society Newsletter*, the first issue of which was published in March 1974, was the successor to the *Australasian Herbarium News* (1947–1954). This earlier newsletter served largely as a channel of communication between professional plant taxonomists, usually based in the various government herbaria. As the majority of the foundation members of ASBS were also attached to herbaria, the content and method of production of the early issues of the *Australian Systematic Botany Society Newsletter* resembled that of its forerunner. This document was duplicated, or produced in some similar fashion, on poor quality paper, suggesting that it was intended to be ephemeral, which meant that it was unattractive to libraries.

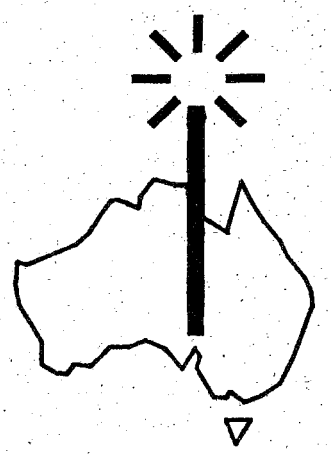
As the Society expanded during its first decade to include a broad spectrum of amateur and university taxonomists, the subject matter of the *Newsletter* diversified considerably, reflecting the changing role of the Society. However, the appointment of Gordon Guymer to its editorship, with the transfer of its place of publication to Brisbane in 1982, brought a new format and life to the *Newsletter*. This new format has been continued to the present day.

Any change is bound to be resisted, and the change of format of the *Newsletter* in 1982 was no exception. At the general meeting of the Society in Perth that year, it was proposed that the new format be adopted, and that there be an increase in the annual subscription to cover the increased costs of production. As was to be expected, the matter was fiercely debated, there being a division of opinion as to the relative roles of the Society as a professional body representing the interests of practising taxonomists, in contrast to being a group interested more widely in plant taxonomy.

The advent of a new editor and a new format came at an opportune time. The herbaria were entering an era of expansion, and both the state and commonwealth governments were showing an increasing interest in the production of Floras and Faunas. A succession of editors has continued to build up the standard of the *Newsletter*, so that it is presently a major journal of Australian plant taxonomy. It certainly stands favourable comparison with the newsletters published by our sister societies in other countries.

With the current winds of change sweeping through the taxonomic world, both nationally and internationally, it is difficult to keep up with the present let alone to predict the future. However, the future always depends on the present, and for some years past the *Newsletter* has kept its readership well informed about the present state of the taxonomic world through a well-balanced diet of news, reviews, and comments.

As such, the *Newsletter* continues the role initiated by the *Australasian Herbarium News*, but to a much wider audience. The reaction of this audience will determine the future content and format of the *Newsletter*. New technologies in information processing, storage, and retrieval are always impacting upon the practice of systematics, and so they are bound to affect the Society and its publications. However, no matter what may happen with future technologies, future editors will, as now, need the support and encouragement of the membership if the Society is to thrive.



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Council appointees (not necessarily serving for full council terms) – E: Editor; PO: Public Offcier.

# ARTICLES

## The spelling of the generic name and an overlooked species of Siloxerus Labill.

Philip Short
National Herbarium of Victoria
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### Siloxerus vs Styloncerus

In my revision of *Angianthus* Wendl. (Short 1983) I reinstated a number of genera that Bentham (1867) had relegated to synonymy. One such genus was *Siloxerus* Labill., Pl. Nov. Holl. 2:57 (1806). In recent years the spelling of generic names of some Australian Asteraceae, i.e. *Brachyscome* vs *Brachycome* and *Lagenophora* vs *Lagenifera*, has occasionally been the subject of much debate. The spelling of the name *Siloxerus* has also attracted attention, although not in recent years. Twenty years after Labillardière's publication, Sprengel decided to emend the spelling to *Styloncerus* Spreng., Syst. Veg. 3:356, 451(1826). Then Cassini opted for the spelling *Ogcerostylus* Cass., Dict. Sci. Nat. (1827), and Steudel (Nom. Bot. 2nd ed. 242, 1842) came up with *Oxerostylus*. The reason for the changes in spelling were elaborated upon by Kuntze (Rev. Gen. 367, 1891), and essentially relate to differences of opinion about the transcription of the base names from Greek to Latin and the omission of a letter in the etymology given by Labillardière.

### Re-Instatement of Siloxerus

Bentham (1867) in his treatment of *Angianthus* listed 16 generic names in synonymy, and noted that the name "*Siloxerus* of Labillardière has undoubtedly the right of priority, but it has by common consent been rejected as being at complete variance with the etymology given by the author. Cassini's emendation (rejected as barbarous) and Sprengel's generally adopted one are both more recent than Wendland's name, which typically represents the tribe, and has been applied to several of the species, whilst Labillardière's has only been given to a single one. The general rules of the science appear therefore to be best observed by applying the name of *Angianthus* to the whole genus."

Not surprisingly, some botanists didn't agree with Bentham's statement regarding priority, and Ostenfeld (1921) and Ising (1922) adopted the name (and the spelling) *Siloxerus*, and made a number of new combinations. Subsequently, the conservation of *Angianthus* against *Siloxerus* was approved (Special Committee for Phanerogamae and Pteridophyta, 1940). However, as I considered the latter to be taxonomically distinct from *Angianthus s. str.*, I reinstated it and adopted the original spelling. The adoption of the original spelling was in accordance with the action of relatively recent botanical practice, i.e. by Ostenfeld and Ising, and with ICBN recommendations, and has found its way into a number of recent works, e.g. Anderberg (1991) and Brummitt (1992).

### Siloxerus multiflorus re-instated

In my revision (Short 1983) I recognized three species of *Siloxerus*, all endemic to southwest Western Australia. All three are inbreeding species, characterized by having leaves in a basal rosette (or in branching specimens, opposite leaves near the base, alternate above), compound heads, a hairy general receptacle, distinctive, somewhat rigid, papery capitular bracts, a corolla in which the veins end below the apex of the lobes, cypselas with globose, myxogenic twin-hairs, and a pappus of variably jagged scales or a small jagged ring. I have no doubt that the genus is worthy of recognition, and it was recognized by Anderberg (1991) in his treatise on the tribe Gnaphalieae.

Some time after my revision, I found that I had not accounted for the name *Styloncerus*

*multiflorus* Nees in Lehm., Pl. Preiss. 2:244 (1845). At the time, I remember noting that it was the basionym for *Rutidosis multiflora* (Nees) B.L.Rob., an inbreeding species that is widespread in southern Australia, and I apparently went along with Bentham's notion that it is not "generically separable from *Rutidosis*" (Bentham 1867, p. 595). This was despite the fact that Laurie Haegi had noted that "apart from the papillose achene, with a pappus of scales, it differs in so many ways from *R. helichrysoides* that it should almost certainly be considered generically distinct" (Haegi, 1986, p. 1578).

During a visit to Stockholm in June 1992 I discussed various problems and projects with Arne Anderberg, and at the time he suggested a relationship between *Rutidosis multiflora* and *Siloxerus;* but I gave no serious thought to the matter until last October, when I was collecting at Cape Riche. There, growing on low sand-dunes, I observed *Siloxerus humifusus* and *S. filifolius*, and growing with them was *R. multiflora*. It was then that I realized, as Arne had, that Nees was probably correct in referring the latter species to *Siloxerus*, or as he chose to spell it, *Styloncerus*. Subsequent investigations have shown that, with the exception of the lack of a compound head and a well-defined general receptacle, the vegetative and floral features are in good agreement with those briefly outlined above for the other three species. Although a compound head is lacking in *S. multiflorus*, the capitula are in more or less sessile clusters subtended by leaves, and the long, septate somewhat tortuous hairs on the branches and at the base of the capitula are of the same type as in the other species. The most distinctive feature that separates *S. multiflorus* from the others is the cypsela, which is attached obliquely to the corolla and only has the globose hairs (most prominent in this species) on the abaxial surface, not distributed over the entire surface.

The oblique attachment of the fruit is a feature also found in *Rutidosis helichrysoides*, and it is perhaps this feature as much as the pappus of scales that really influenced Bentham to include *S. multiflorus* in *Rutidosis*. I am of the opinion that obliquely-attached fruit have independently arisen on several occasions in the Australian Gnaphalieae. As well as the two species already mentioned, this feature occurs in *Pleuropappus phyllocalymmeus* F.Muell. In the case of this monotypic genus I used the presence of an obliquely-attached fruit to help justify its re-instatement, although in retrospect I am of the opinion that *Pleuropappus* should again be reduced to synonymy under *Angianthus*.

Despite the difference in the fruit, I have concluded that the name *Siloxerus multiflorus* should be re-instated for the species commonly referred to as *Rutidosis multiflora*.

**Siloxerus multiflorus** Nees in Lehm., Pl. Preiss. 2:244 (1845) ("*Styloncerus*"). — *Rutidosis multiflora* (Nees) B.L.Rob., Proc. Amer. Acad. Arts Sci. 47:206 (1911). For a fuller synonymy see Bentham (1867, p.595).

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The laughter of the lesser lynx
Is often insincere:
It pays to be polite, he thinks,
If royalty is near.

So when the lion steals his food
Or kicks him from behind,
He smiles, of course — but, oh, the rude
Remarks that cross his mind!

# COMMENTARY

## Unwritten minutes of the Council of Heads of Australian Herbaria

I arrived back in Canberra on 18 August 1973, after being the Australian Botanical Liaison Officer at Kew for the 1972–73 period. Some of our official and personal luggage was delayed, some was lost, and some furniture and effects were not easily regained from storage. Other people will have been in similar situations.

Several days after being back at work, I was invited by Nancy Burbidge to take part in the meeting that she had arranged of representatives from all of the government herbaria in Australia. I was, at this time, in charge of the herbarium of the Forest Research Institute, Forestry and Timber Bureau, in Yarralumla, ACT. I agreed.

On 17 September, I discussed with my wife, Thelma, the possibility of having the visiting botanists over to our place for dinner on the first day of the conference; but I believed that Nancy had arranged a dinner venue, so this was just a fall-back possibility.

The next day, Tuesday 18 September, the first meeting of what was decided to be called the Council of Heads of Australian Herbaria (CHAH) was held in a conference room at the CSIRO building in Campbell, ACT. This was an historic occasion, for only at ANZAAS meetings would there have been meetings where botanists may have met, but not before for the express purpose of making arrangements for co-operation between the various state and commonwealth herbaria. With annual meetings now having been held for over 20 years, during which time I attended the first ten, there have been many discussions of benefit for systematic botany in Australia.

During the morning tea break on this first conference day, Nancy Burbidge was busy talking to people, but she told me that she hoped to ring a restaurant soon to arrange for the dinner. I then suggested that we could have it at our place, and Nancy thoughtfully suggested that it may be difficult for my wife. Confidently, I said that I would ring home. I did so, and heard how we were still existing at home on some mixed china and cutlery, and that our own items were still delayed in storage. However, Thelma said that she would ring back later, and I added that there would be about 14 people including ourselves; she may have added that this was impossible! Thelma did ring back, and said that she had borrowed plates and cutlery, and a recipe, from a kind and helpful neighbour, and that all was well for dinner.

The people who came to dinner that evening were:- Nancy Burbidge, Bob Royce, Hansjörg and Marlies Eichler, Lawrie Johnson, Barbara Briggs, Selwyn Everist, David Symon, David Churchill, John Maconochie, and John Womersley, plus ourselves and our youngest daughter, Joy, who was seven years old at that time. For me, a highlight of the evening was when Selwyn, a true "character", asked Joy about being at Kew. She told him that I took her into work one day and showed her the beautiful spiral staircase leading to my working spot in Wing B. Selwyn then asked her if she could describe a spiral staircase — without using her hands. Joy passed Selwyn's test by replying that: "... it goes round and round and upwards".

From memory, most of the dinners held for CHAH delegates were held at homes, with more opportunity for talking informally between people, rather than in restaurants where movement may be somewhat restricted. But, overall, Nancy's initiative in arranging this first meeting was a most important step for systematic botany in Australia.

George Chippendale
Lyons, ACT

## Single plant disjuncts

Many disjunct population are known in the Australian flora. The origin of their separation can rarely be decided with certainty. Division of a once more widespread population due to climatic change is a common and likely explanation. However, fortuitous long-distance distribution of seed that becomes established is another. New populations of such origin must have a first plant, and those that are gradually dying out due to climatic change must have a

last plant. Three single-plant disjuncts are now known in South Australia:-

*Eucalyptus sideroxylon* — a single large old tree has been found north-east of Yunta, in the Olary Ranges;

*Acacia genistifolia* — a single plant has been found near Mintaro;

*Psilotum nudum* — a single clump has been found south of Adelaide.

The nearest known occurrence of neighbours is, in all cases, hundreds of kilometres away. Of course, more plants may be found; but these finds have resulted in further searches, so far without success.

The *Eucalyptus* and the *Psilotum* may be the last survivors of outlying populations. The *Acacia* might be a remnant, or even a late germinant, of a once-larger population in an area savagely degraded by copper mining and then over-grazing.

The Hallett–Clare–Black Springs–Burra area of colder uplands forms a much-degraded botanical province with several links with Victoria, now including *Eucalyptus macrorhyncha*, *Eucalyptus bicostata*, *Acacia glandulicarpa*, *Eriostemon verrucosum*, and *Rhodanthe anthemoides*; but these at least have populations of some size.

Are other single-plant disjunctions well known?

David Symon
State Herbarium
Botanic Gardens, Adelaide

# A.S.B.S. Inc. BUSINESS

## Sixteenth General Meeting

The 16th General Meeting of the Australian Systematic Botany Society Incorporated will be held on 4th July 1994 at the Kuranda Rainforest Resort, Kuranda, in conjunction with the "Origin and Evolution of the Flora of the Monsoon Tropics" symposium (4–6th July 1994).

Any members wishing to place an item (or items) on the agenda should notify the Secretary (Dr Christopher F. Puttock) in writing by 13 June 1994.

## Council Elections

In accordance with the Society's Constitution, nominations are called for all positions on the Council for the 1994–1995 term of office:- President, Vice-President, Secretary, Treasurer, and two Councillors.

As none of the retiring office bearers have served in their current positions for four consecutive years, all of them are eligible for re-election.

Each nomination must be proposed by two members, and the nominee's acceptance of the nomination must accompany the nomination itself. Nominations must be made on the form enclosed in this *Newsletter* or a facsimile of same. All nominations must be in the hands of the returning officer (Dr Christopher F. Puttock) by monday 9 May 1994.

Christopher Puttock
Secretary, ASBS Inc.

## A.S.B.S. Member Profiles

### Christopher Puttock
### A.S.B.S. Secretary

I was born in Royal Tunbridge Wells to parents who had had enough of the wet and cold English weather. We emigrated by sea, arriving in Australia on Christmas eve 1964, and within a month of hostel food found ourselves in the 108°F heat of Narrabri. By then we had started to thaw from the English winter; but, as if that was not enough, within six months we had settled down in Cobar, which enjoys 350 frost-

free days and rains but five times a leap-year (leap is what locals do when it rains).

It was at Cobar that I first became aware of botany — the mesocarp of the elusive quangdong makes a great filling for a pie, and the endocarp a small but reasonable substitute for conkers. Although most high school graduates leave country towns for the "big smoke" (as Sydney is probably still known in the country), very few of them go on to university. I started with my sights set firmly on entomology, and there they remained for some 18 months, until plants became the centre of the natural world. Fern forays flourished in my honours year.

My escape from university was short-lived, and within six months I was holding part-time positions at the existing three Sydney universities, concurrently. Then, in 1980, I took the plunge: tenure at the University of New South Wales, and there I became herbarium understudy for John T. Waterhouse (and later Chris Quinn, and still later for families phycological with Robert King). It was during this time that I undertook doctoral research on the pinnacle of plants, the Gardenieae. Lesson 1: Never undertake a part-time thesis — it could seem neverending. After night-time years of thesis, I was told by my graduation ceremony orator (she will remain nameless) "it's who you know (and how you've treated them) that matters if you want to get a job": Lesson 2.

Now substantially free from my thesis, I have discovered annually-renewed employment working for the Australian Biological Resources Study as a visiting research scientist at The Centre for Plant Biodiversity Research, Australian National Herbarium, Canberra, and the daisies. Funny, daisies were one of three groups to which I had deliberately turned a botanical blind eye. Surely no-one ever volunteers to work on daisies! Perhaps daisy taxonomy reflects the preponderance of research scientists, a highly-evolved ingroup with its internal hierarchy defined by very few synapomorphies. Fascinating though daisies may be, they are not a patch on Rubiaceae, the fourth-largest family of angiosperms, which has barely enough researchers to fill a small room. However, today I find myself still pondering the seemingly unanswerable: what constitutes generic limits in the Asteraceae?

By the way, my parents now live in Normanton, where frosts are unknown and rainfall is regimented to several days, mostly within January.

## John Clarkson
## A.S.B.S. Councillor

When I was born in Dunfermline, that ancient Scottish "toon" where the King sat "drinking the bluid-red wine", it seemed inevitable that I would follow my dad into the coal mines, just as he had followed his dad underground. Nearly every boy who grew up in our home village of Kelty, just seven miles from Dunfermline, ended up in the pits. However, as I grew up I had no enthusiasm for a working life spent burrowing around in the bowels of the earth, and I decided that a career in veterinary or agricultural science was much more attractive. I doubt then if I even knew what a botanist was. Before I could put this resolve to the test, the Scottish Coal Board stepped in and announced that many of the mines in the Kelty district would close. Faced with unemployment, the Clarkson family did what so many patriotic Scots have done — they left Scotland. The family migrated to Australia, and settled in Brisbane; and here I completed my secondary education, still determined to find employment somewhere outdoors.

On leaving school, I secured a cadetship with the Queensland Department of Primary Industries. I was sent to Parada Research Station, near Mareeba, to assist the tobacco plant breeder there. I had never heard of Mareeba, and had no idea that tobacco was grown in Queensland. I set off for the north in the Sunlander, knowing only that I should get off at the end of the line, Cairns, and that someone would meet me. Although I did not know it then, this was the start of my interest in plant taxonomy. The Australian species of *Nicotiana* provided the majority of the genetic stock for blue-mould resistance in the breeding program. At one time or another I grew most of the species known at the time, including a rather odd plant we could never identify with any certainty. Twenty-five years later, David Symon and I described this as a new species, *N. wuttkei*.

These were the good days of tobacco growing in Queensland. It was the State's third most important crop after sugar and wheat in terms of gross returns, a fact not widely appreciated in these days of the anti-smoking lobby. The industry prospered, and with it Mareeba and its district prospered. After two years in Mareeba, I was transferred to a research facility at Beerwah, to replace a cadet there who had just

left to complete a university degree with full financial assistance from the tobacco industry. Little did I know then that Mareeba was to figure so prominently in my life some years later.

Now living in south-east Queensland, close to the University of Queensland, it was possible to take on evening study towards a degree. Agricultural Science was not available part-time, so the next best thing seemed to be a science degree majoring in botany. I still doubt that I knew what a botanist was. Everything went well for three years, until the management, although it was not called that in those days, decided that another transfer could further improve my career prospects. One of the downsides to having lots of money to fund research is that there is also money to pay transfer expenses for moving officers around the State. Not wanting to forfeit three years of study, I approached the Queensland Government Botanist, Selwyn Everist, to see if there might be a chance of a transfer from the Agriculture Branch to the Botany Branch, even though I still did not know what a botanist was.

By chance, Botany Branch was finalizing studies of brigalow communities. Bob Johnson, who had been based at Brigalow Research Station, near Theodore, had just gone off to the United States to undertake postgraduate studies, and his technician, Paul Back, wanted to remain in the woody-weeds field. Here was the perfect opportunity for a bit of horse trading (actually technician trading). I was to be swapped for Paul, and would work in the ecology section of the Branch assisting vegetation mapping work in coastal areas of the State. It all sounded pretty exciting. I fronted up for my first day of work at the herbarium to be told that a new position had been created, and that I would be technician to the plant taxonomy group. Paul would be traded later in a swap for another Agriculture Branch officer.

Here, the ground work for my later work in far-north Queensland was laid down. I saw the enthusiasm that some of the taxonomists brought to their work, learned the importance of correct plant names, and the value of a well prepared and presented herbarium specimen. I also learned how to search through rumen contents for identifiable plant fragments, which nearly but not quite put me off tripe for life. At last I think I was finding out what a botanist did, and I thought I would like it.

As my part-time studies neared completion, Bob Johnson returned from America, Selwyn retired, and Bob took over as Branch Director. A few months before I graduated, Bob called me into his office and started a conversation about far-north Queensland, asking how I had enjoyed my time in Mareeba. The DPI was in the process of building a major research facility in Mareeba, he explained, and the Branch had taken the opportunity to establish a base there, from which a botanist could work on the flora of the far north. Would I be willing to move north as soon as my studies were completed? What an opportunity, but quite a challenge:- learn the flora of a totally new area, on your own, far removed from the support of the herbarium; while doing this, map the vegetation of Cape York Peninsula, and prepare an inventory of the flora.

It was, and still is, exciting work. The flora of Cape York Peninsula was at that time quite poorly known. With what I thought was a disproportionate amount of attention being focussed on closed-forest communities, and with the QRS herbarium 25 minutes up the road at Atherton concentrating mainly on rainforest taxa, I made a deliberate decision to direct my efforts primarily to non-rainforest communities. This has been repaid with some interesting finds, and I hope some contribution towards knowledge of tropical plants. I think I have finally found out what a botanist does, and I love it.

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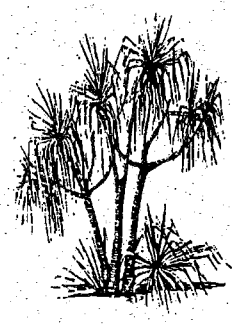


## Origin and Evolution of the Flora of the Monsoon Tropics

**July 4–6 1994, Kuranda Rainforest Resort**

The organization of this conference is well under way, and the closing date for registration has passed. However, late registrations will be considered, subject to payment of a late fee. The same leniency will probably not be extended to

those people who are proposing to submit oral presentations or posters.

Some of you may have noticed that the venue for the symposium has been transferred from the Tinaroo Recreation Camp to the Kuranda Rainforest Resort. This decision was taken when replies to the first circular indicated that most people preferred the comfort and privacy of a motel to the dormitory-style accommodation.

Delegates are reminded that free transport will be provided from Cairns for those people who are staying at the Kuranda Rainforest Lodge. Please ensure that the form sent out with your receipt is returned once your travel arrangements are finalized.

Students presenting a talk or poster are eligible to apply for financial assistance. Application forms are available on request. These must be sent, together with a copy of your abstract, to the ASBS Secretary, Chris Puttock, by 31 May 1994.

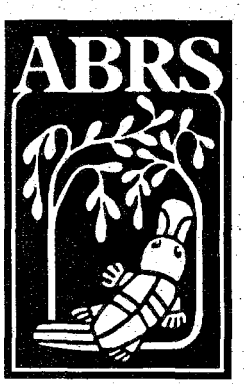
A special welcoming function will be held on sunday 3 July. At this function, a botanical art display will be run in conjunction with the symposium launch.

For further information on the symposium or the workshop contact:-

John Clarkson (Symposium)
Queensland Herbarium
PO Box 1054
MAREEBA. QLD. 4880
Tel: (070) 921555
Fax: (070) 923593
or
Elizabeth Brown (Bryophyte Workshop)
National Herbarium of NSW
Mrs Macquaries Road
SYDNEY. NSW. 2000
Tel: (02) 2318144
Fax: (02) 2517231

John Clarkson
Queensland Herbarium

# REPORTS




**Australian Biological Resources Study**

The Flora Section of ABRS was pleased to welcome Patrick McCarthy to its ranks on 7 February. Patrick has joined us as a Scientific Editor, and he has already been dropped in at the deep end. Contributors to the Proteaceae volume will shortly be hearing from him.

Barbara Barnsley has also rejoined ABRS in a temporary capacity, to assist with final editing of *Volume 49*. During her 3-month appointment she will also be beginning the editing of *Volume 2*.

As this is being written, in late February, the Section is devoting most of its resources to completion of *Volume 49, Oceanic Islands 1*. This volume, which describes the floras of Norfolk and Lord Howe Islands, is scheduled for publication in early May. Like its companion, *Volume 50*, it will be considerably larger than the average, treating over 700 species. It will also contain the largest contribution to date by a single author — Peter Green has written virtually the entire text, with contributions on *Senecio* by Robert Belcher, *Parsonsia* by John Williams, and *Phymatosorus* by Mary Tindale.

As foreshadowed in the last *Newsletter*, Bryan Womersley's book *The Marine Benthic Flora of Southern Australia. Rhodophyta Part IIIA* was published on 14 January 1994. This is the first in our new *Flora of Australia Supplementary Series*, and is already attracting a lot of attention and favourable comment. Running to 508 pages, and in the same format as its predecessors on the green and brown marine algae, it is available for just $50 (including postage) by mail order from ABRS. It can also be bought over the counter from the botanical bookshops at The Botanic Gardens, Adelaide, and the Australian National Botanic Gardens, Canberra.

The Publication Research Priorities under the ABRS Participatory Program Scheme were advertised on 5 February in *The Australian* newspaper, and by direct mailings to universities and herbaria, who also hold copies of application forms. Applications close on 10 April 1994. The research subjects in botany are as foreshadowed in the last *Newsletter*, and cover vascular plants, lichens, fungi and algae. The numbers of initial enquiries received suggest that competition for grants this year will be even fiercer than last time, and applications will need to be tightly-focussed and cost-effective to be successful.

Looking ahead, the next volumes of the *Flora of Australia* to be completed will be *Volume 55* (Lichens 2) which we expect to publish in the second half of 1994, and *Volume 59* (Fungi, Introduction) early in 1995.

Tony Orchard
Flora of Australia

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## Australian Botanical Liaison Officer

In January, I was asked to organize a celebration to mark the twentieth anniversary of the establishment of the Interim Council of the Australian Biological Resources Study. This took the form of a presentation ceremony to Professor William Stearn, in recognition of his important role in providing the impetus for work to begin on a new *Flora of Australia*. During the James Cook Bicentenary in 1970, William Stearn was invited to address the Australian Academy of Science. At that meeting he referred rather pointedly to the conspicuous absence of a modern *Australian Flora*. This stimulated discussion amongst key figures in the botanical community at the time, and helped to speed up events leading to the commencement of the *Australian Plant Name Index* project, the establishment of ABRS, and ultimately the new *Flora of Australia*.

At the ceremony held in the Kew Guild Room on the 28 January, Peter Bridgewater spoke on the background to the reasons for the celebration, and presented William Stearn with a copy of the most recently published volume of the *Flora of Australia, Volume 50*. William Stearn then entertained us with his recollection of the events back in 1970. Approximately 40 people attended the function.

During a recent visit to Edinburgh, I was interested to see quite a lot of specimens that are on permanent loan to E from the University of Glasgow. These are easily recognized by a large GL stamped on the top right corner of the sheet. I was advised that these should be cited E–GL. Included in the families I examined were Charles Fraser collections that were evidently sent to Hooker while he was Professor of Botany at Glasgow. There was also some material collected from Melville Island (N.T.) with Fraser's name and numbers on it; but as Fraser did not go to Melville Island this and other material attributed to Fraser was most likely collected by the convict botanical collector John Richardson, who was sent to Melville Island in February 1826 to be in charge of the garden for the new settlement to be made at nearby Port Essington (Barker & Barker 1990).

I was also pleased to find that Edinburgh holds a fair amount of Otto Warburg's collections ex Berlin, although I had hoped to find more of his Australian collections.

As part of current improvements at Kew, the building in Ferry Lane near the herbarium carpark that was formerly occupied by the Commonwealth Mycological Institute has been refurbished, and now houses the mycological herbarium, library, laboratories and offices.

I hope to visit Berlin in the last week in March, and later on Paris, Florence, Leiden (for a second visit), and probably Geneva and others if possible.

### References

Barker, R. M. & Barker, W. R. (1990). In: *History of Systematic Botany in Australasia* (ed. P.S. Short). Australian Systematic Botany Society Inc.

Laurie Jessup
ABLO

# Workshop on Taxonomic Descriptive Databases

## Perth, October 1993

A two-day workshop on taxonomic descriptive databases was held on 3–4 October 1993 in Perth, in association with the ASBS / ANZAAS symposium "Systematics, Evolution and Conservation of the Western Australian Biota". This followed on from an encouraging preliminary planning meeting held in Hobart in February 1993 (in association with the "Southern Temperate Ecosystems" conference) to test the level of interest, produce agenda suggestions, and recruit additional organizers.

Approximately 40 people participated, representing all states and comprising staff of herbaria, museums, universities, botanic gardens, and other organizations including ABRS and ERIN. A range of plant, animal, and microbe specialties were represented. In addition to the meeting sessions, computer displays of databases were available:- Watson & Dallwitz's *Families of Flowering Plants* using DELTA format data and INTKEY; the Western Australian Herbarium's *Rare and Endangered Plants of W.A.* (prototype), using DELTA / INTKEY; and Hyland & Whiffin's recently-published *Australian Tropical Rain Forest Trees*, using a proprietary data format and program, for DOS and Macintosh.

Eight sessions were conducted, commencing with a presentation of the results of a recent survey of existing taxonomic data sets in Australia by Helen Hewson, ABRS; a description by Leslie Watson, ANU, of angiosperm families, grass genera, and other databases developed by Watson and associates at ANU; followed by an information exchange among participants. A session on characters, which was led by brief presentations from Greg Leach, Northern Territory Herbarium, and Terry Macfarlane, Western Australian Herbarium, generated lively discussion on the pros and cons of trying to define core characters for use across different databases. There was a feeling that this concept was most appropriate to project-based work, and that rather than formal character definitions being standardized, more work on character and state definitions would be useful.

A third session, entitled "What do we need to build?", was introduced by Alex Chapman, W.A. Herbarium, and dealt with the idea of co-operating nationally to build a database of descriptive information for all taxa. Such a scheme would require a national co-ordinating body. Discussion was supportive, and extended to concepts for managing large distributed databases with numerous contributors. The following session was addressed by Nicholas Lander, W.A. Herbarium, and was devoted to the question of which form the proposed national co-ordination might take, the principle having already been accepted by the meeting and Helen Hewson having earlier expressed a strong interest by ABRS to host or constitute the co-ordinating body. The meeting agreed that ABRS was an appropriate organisation to support co-operative and co-ordinated databasing, through providing a secretariat and through the research funding process, but that additional funding would be required. A group was nominated to prepare a resolution document for use as the basis of a funding approach to government.

The fifth session commenced the second day, and a review of custodianship issues by Arthur Chapman, ERIN, provided the basis for discussion. The minefield of legal uncertainties and commercial interests involved in copyright and intellectual property rights helped participants to focus on the mutually-beneficial effects of co-operation and sharing. Questions of custodianship, its meaning and its implementation, need to be grappled with, however, and formal definitions that are being developed will need to be considered. From ownership and rights, it followed naturally to the topic of the sixth session, "Where will the live data be?", which included an introduction to AARNET (and Internet) and the use of Gopher queries by Mike Dallwitz, CSIRO, who spoke again about the Common Directory concept for maintaining references to the locations of distributed databases.

"Vision of the Future" was the title of session seven, and consisted of three addresses, two of them including demonstrations of databases. Adrian Gibbs, ANU, described the achievements and special problems of the plant virus DELTA database projects, which he has led and which have involved up to 250 contributors. Extensions of the project to include other types of viruses are planned. Some aspects of the database were demonstrated. Helen Hewson spoke on the recently-conducted review of databasing in ABRS, and discussed the possibilities of multimedia versions of the *Flora of Australia*, and other alternative publication approaches, includ-

ing accompanying the books with disks for INTKEY database versions. The likelihood of incorporating database requirements into research grants was also mentioned. Ebbe Nielsen, CSIRO, spoke on the future of databasing in entomology, reporting on co-operative moves towards species lists and descriptive databasing (using DELTA) by an international grouping of directors of entomological collections and research institutions. In general, he felt that the software development was ahead of the usage by taxonomists.

For the final session, a document calling for co-ordination and support for taxonomic descriptive databasing, produced by the nominated working group, was presented and discussed. After refinement (see below for the text), it was then adopted by the meeting for presentation to meetings of institutional heads and ultimately for use in funding approaches to government.

Subsequent to this meeting the recommendations in the document have been endorsed by CHAFC (Council of Heads of Australian Fauna Collections), CAMD (Council of Australian Museum Directors) and CHAH (Council of Heads of Australian Herbaria).

## Co-ordination of Australian taxonomic descriptive databases

**Mission**

To co-ordinate, support and recommend standards for collating taxonomic descriptive databases of the entire Australian biota (including viruses, bacteria, protists, fungi, plants and animals).

**Preamble**

Australia is leading the world in the application of information technology to the development of taxonomic descriptive databases. This has been achieved by state and commonwealth institutions with support from ABRS (Australian Biological Resources Study).

Recognizing this, a meeting of biosystematists from state and commonwealth institutions unanimously endorsed the development of a national taxonomic descriptive database network. The meeting also endorsed that ABRS be asked to provide executive and financial support to the network.

**Structure**

ABRS will host an executive office. The activities of the executive office will be guided by a Descriptive Database Advisory Committee (DDAC). The DDAC of five members will comprise representatives recommended by CHAH (Council of Heads of Australian Herbaria), CHAFC (Council of Heads of Australian Fauna Collections), CAMD (Council of Australian Museum Directors), and other appropriate organizations, ensuring representation from a range of systematic disciplines. Representatives will be appointed for a period of three years, with the possibility of re-appointment for one further period. The executive office will co-ordinate the establishment of appropriate ad hoc working parties as required. All activities will be endorsed by the ABRS Advisory Committee.

**Role of the Executive and DDAC**

- co-ordinate, enhance, and promote the development of the DELTA descriptive database format and software;
- co-ordinate the development, dissemination, maintenance, and custodianship of descriptive databases;
- co-ordinate and promote compatibility of datasets through the development of core character lists and glossaries;
- maintain and provide information about descriptive databases;
- promote training in and teaching of descriptive database methodology.

**Resources**

In order to allow ABRS to effectively contribute to this expanded role, additional dedicated resources are essential. It is estimated that $100,000 is required in the first year to establish the proposed structure. An estimated $500,000 per annum is needed on a recurrent basis to achieve the stated mission.

## Acknowledgements

Paul Hattersley, then of ABRS, helped plan the preliminary meeting in Hobart, and ABRS and CALM funded the organizers' travel. We also thank the people who attended that meeting for their extremely useful contributions to debate. Valuable input for the Perth workshop was received from Ebbe Nielsen, Division of Entomology, CSIRO, and from ABRS. The Department of Conservation and Land Management, Western Australia, including the W.A. Herbarium, provided support, encouragement, and meeting facilities, and we particularly thank

Neville Marchant, Acting Director, W.A. Herbarium, for support.

### Key to abbreviations

ABRS — Australian Biological Resources Survey
ANU — Australian National University
ANZAAS — Australian and New Zealand Association for the Advancement of Science
ASBS — Australian Systematic Botany Society Inc.
CALM — Western Australian Department of Conservation and Land Management
CSIRO — CSIRO Australia (a government research organization)
ERIN — Environmental Resources Information Network

Alex Chapman, Nicholas Lander and Terry Macfarlane

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## Queensland Herbarium

All seminars will be held in the Entomology Conference Room, Agricultural Research Laboratories, Meiers Road, Indooroopilly (unless otherwise noted) on wednesdays at 1.00 pm.

**Seminar Programme, February–June 1994**

*Wednesday, February 2*
Sue McIntyre
CSIRO
"Causes of species rarity in grassy vegetation of the New England tableland"

*Friday, February 18*
John Neldner
Queensland Herbarium
"Uses of geographic information systems and predictive modelling techniques for vegetation survey and plant distribution studies"

*Wednesday, March 9*
Barry Evans
Botany Dept, University of Queensland
"In search of the ultimate nut: *Canarium* in Melanesia"

*Wednesday, March 23*
Sue O'Brien
CSIRO
"Pollination ecology of *Leptospermum*"

*Wednesday, April 13*
David Walter
Entomology Dept, University of Queensland
"Mites and leaf domatia: mutualism or malarky?"

*Wednesday, April 27*
Jennifer Marohasy
Queensland Dept of Lands
"Exploits of a weed scientist in Madagascar"

*Wednesday, May 11*
Alison Shapcott
Botany Dept, University of Queensland
"The sex life of Huon Pine"

*Wednesday, May 25*
Julia Playford
Botany Dept, University of Queensland
"Conservation genetics of *Austromyrtus gonoclada*"

*Wednesday, June 8*
Bruce Wilson
Queensland Dept of Environment & Heritage
"Vegetation monitoring and management in Mulga Lands Conservation Reserves"

Enquiries: Paul Forster on (07) 877-9328 or Ailsa Holland on (07) 877-9316.

Paul Forster

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## New broom for FASTS

The new president of the Federation of Australian Scientific and Technological Societies (FASTS), Graham Johnston, is planning a shift in emphasis from a largely reactive to a predominantly proactive organization. The change is significant, as FASTS emerges from a year of mixed success in its lobbying in Canberra following a public spat with the former Minister for Science, Ross Free.

Johnston succeeds Ditta Bartels, a science policy expert at the University of New South Wales, on completion of her 2-year term. A professor of pharmacology at the University of Sydney with an extensive record of achievement in brain chemistry, Johnston recently handed

over the presidency of the Royal Australian Chemical Institute. His mission for Australian science is "to help make it part of the real world and to establish a broader base for the science an technology agenda".

In his first interview since attaining the presidency of FASTS, Johnston said that he has been actively seeking experience beyond the confines of the research laboratory, and is now keen to apply the lessons from his contacts with business and government to his work as leader of one of the most influential bodies in Australian science. Johnston's two main "extracurricular" activities are the Administrative Appeals Tribunal, where he serves as a specialist member, and the research-and-development syndicate Synrad Pharmaceuticals, which is commercializing viral research techniques developed by CSIRO with AMRDA Corporation Ltd and Macquarie Bank.

Prominent on Johnston's agenda are:-

• Making FASTS "a more responsible, apolitical body, generating its own policies and not just criticizing government";

• Focusing political attention on "big picture items". The chemical and pharmaceutical industries should be targets for major growth in exports, for instance;

• Promoting the Science ministry to cabinet level, as in the UK, USA, and France. "The prime minister is a bright and intelligent man, but he is not yet knowledgeable about science and technology. We should like to help him learn";

• Supporting FASTS' existing lobbying activities with the federal government, and forming strategic alliances with state governments and major representative bodies such as the ACTU, the National Farmers Federation, the Business Council of Australia, and the Australian Conservation Foundation. Johnston said that FASTS already has good links with some of these bodies;

• Challenging the 70 member societies comprising FASTS (total individual membership about 70,000) to nominate issues in their discipline areas that, if supported, would have a high likelihood of producing export income for the nation. Chemistry, physics, and the geosciences have all been reviewed nationally, and "a wealth of detailed proposals show how these disciplines can contribute to national prosperity";

• Getting more practising scientists on to science policy and advisory bodies like ASTEC and the Prime Minister's Science and Engineering Council;

• Improving public and political understanding of science and technology. FASTS supports increased efforts, especially with the media and schools;

• Simplifying the government rules that industry has to contend with in becoming more innovative. Johnston cites the recent revelation that the high cost of patenting is not accepted as a legitimate tax-deductible expenditure in research-and-development;

• Focusing scientists' minds on the social and economic impact of their work, by requiring them to answer questions on these points in applications to research funding bodies. In their applications, applied scientists should also be asked to specify their dependence on basic research.

Johnston believes that, by themselves, "market forces and good management are insufficient bases for economic and social development. A strong research-and-development effort is essential to the development of innovative technologies and export growth, and scientists have to play a stronger role, with a louder voice, in social and economic matters". He says that his own interactions with Macquarie Bank in the development of Synrad have shown how a constructive interaction between science and banking can play a vital role in expanding research-and-development in Australian industry. "To be internationally competitive, Australia must invest in research and development as much as our competitors — 2.5%. At the moment, we are investing less than half that amount, due largely to the poor research-and-development effort of the private sector — 0.4% of the gross domestic product".

Johnston comes into prominence in national science affairs at the end of the tumultuous first year of senator Chris Schacht in the Science portfolio. He is clearly keen to support Schacht in his attempts to re-build relationships with the scientific community, which were put on edge in 1992. "FASTS values a good interaction with senator Schacht. He shows a lot of promise as a minister. While he made a major mistake in not consulting the scientific community over his restructuring plans last year, he did galvanize scientists like never before, and he reacted well to criticism. The minister did the scientific community a favour by bringing other, senior ministers into the discussion of science policy".

Peter Pockley

# REVIEWS

**MacClade. Analysis of Phylogeny and Character Evolution. Version 3**

By Wayne P. Maddison and David R. Maddison. Sinauer Associates Inc., Sunderland MA. 1992. 398 pp. + computer disk. ISBN 0-87893-490-1. $US70 + shipping.

It may be risky to say it, since there may be many people who will disagree with me, but there seems to be a consensus among modern taxonomists that the subjective data analysis methods of the past are no longer acceptable as the sole means of studying systematic data. If science is all about the conscious testing of explicitly-stated hypotheses, then subjective methods may be a useful heuristic tool but they cannot form the focus of a rigourous scientific methodology. Taxonomy, then, has undergone a number of significant changes in the past three decades, as it attempts to come to grips with exactly what hypotheses we are testing and how best to go about testing them.

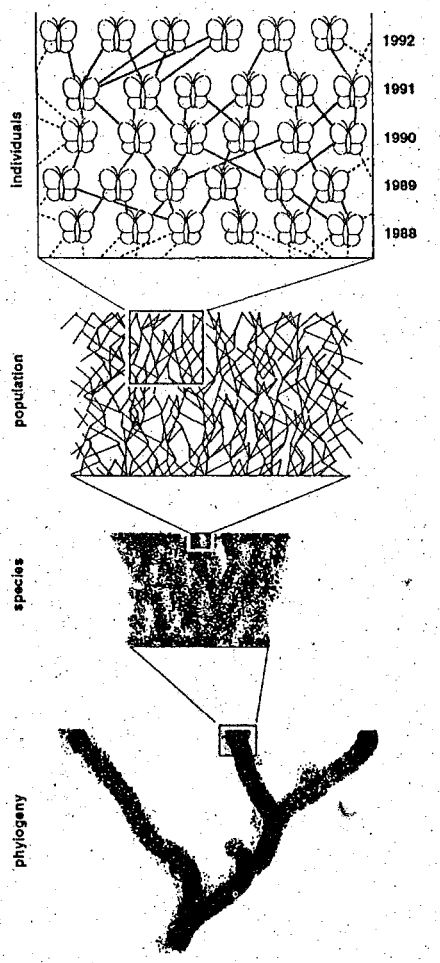
For those of us who believe that an arrangement of taxa is most suitable if it is based on the evolutionary history of the organisms concerned, then there is a need to reconstruct the hypothesized phylogeny of the organisms. That is, our initial hypotheses are about the phylogenetic patterns among the organisms concerned. Once a hypothesis of the phylogeny has been reconstructed, by whatever means, then it can be used as a basis for:- a classification of the taxa; or a study of hypotheses about evolutionary processes; or a study of hypotheses concerning biogeography, co-speciation, or co-evolutionary relationships.

The construction and evaluation of hypotheses concerning phylogenetic relationships is thus of primary concern to most modern taxonomists. Given the modern development of computers as an aid for data analysis, then it is not surprising that there are now a number of quite sophisticated computer programs available to help with the construction of trees that represent the hypothesized phylogenetic relationships. These programs include Steve Farris's HENNIG86, Joe Felsenstein's PHYLIP, and Dave Swofford's PAUP; and all serious evolutionary biologists should be familiar with at least one of these packages.

However, in the field of *evaluating* these trees as hypotheses there is less scope. Each of the above-named computer packages provides at least some means of evaluating the information content of a phylogenetic tree, whether this is by some form of consistency index, bootstrapping, or consensus tree. Nevertheless, this is not really enough for anyone who takes themselves seriously as a scientist. Each of these techniques is an automatic procedure that distances the user from their data — the user feeds the data into the black box and a number comes out, which the user interprets (or not, as the case may be). What is needed is a more detailed means of evaluating the character evolution implied by the phylogenetic tree (or trees, as is usually the case) produced by one of the tree-construction packages.

This need for a means of evaluating phylogenetic trees is often under-estimated by that brigade of people who like black-box data analysis. The number of times I've seen people feed their data into a data-analysis program, get a large number of alternative (e.g. equally-parsimonious) trees out, then construct a consensus tree from these, and then call it quits, always amazes me. How could this uncritical approach to phylogenetic analysis be any better than the subjective evaluations of the past? We're supposed to be scientists, so shouldn't there be some *thinking* in this process somewhere? In particular, consensus trees have lost much of the information that went into them, so reconstructing character evolution on such a tree is essentially meaningless.

Let's look at a simple example of what I mean. Most people recognize that multiple phylogenetic trees are a likely end-product of any data analysis with more than a handful of taxa. This is the inevitable result of contradictory evidence within the data matrix, i.e. characters that do not agree with each other about the most likely phylogenetic history of the taxa. However, how many people also recognize that there can be many trees that are only slightly less optimal than the suite of optimal trees, and that these should probably be investigated as well? Furthermore, many people do not deal with the fact that there can be more than one possible reconstruction of character evolution on a single tree, i.e. any one tree often has




Levels of detail in genetic history:
From individuals to the phylogenetic tree

The explicitly phylogenetic viewpoint of the world adopted by MacClade

several ways in which the characters can be considered to have changed on the branches. Finally, it is often not recognized that reconstruction of character evolution will differ if polytomies on the tree are considered to represent multiple speciation events or to represent uncertain resolution of a series of dichotomies.

Clearly, rigourous *interactive* evaluation of phylogenetic trees is required if these issues are to be investigated, not just a black-box approach. What we need is some means of examining the *implications* of the trees; after all, most of us are far more interested in what the tree has to tell us about evolution than in the mechanics of how to construct them. Not unexpectedly, this is the subject of this review. The only comprehensive computer program designed solely for the purposes of evaluating phylogenetic trees is MacClade.

Version 1.0 of the MacClade computer program was released in 1986, and I still possess a copy of it (it was basically free, unlike the current version). It was essentially a simple tree-drawing device, which took advantage of the Apple Macintosh computer's graphical abilities to allow the user to interactively examine in some detail how the characters changed (evolved) on the branches of a specified tree. The branches of the tree could be re-arranged to see what effect this had, and the basic shape of the tree could be printed out. This meant that trees no longer had to be drawn by hand on a piece of paper, nor did they have to be endlessly re-drawn every time something was changed or you wanted to see the effect of an alternative data interpretation. More to the point, you didn't have to spend half of your time worrying about whether you were making mistakes by missing something vital in the data.

Version 2.1 appeared in 1987, which incorporated a data editor and expanded the user interface. Version 3 (1992) is now a fully-blown system for evaluating the information content of phylogenetic trees, and its presentation is the equal of that of any professional computer package that I have encountered. For this fact alone, the Maddison twins are to be congratulated (and, indeed, awed by those of us who have written programs ourselves).

The package now consists of a computer disk and a lengthy book (technically, you buy the book from the publisher, and the disk comes with it). The program only runs on Apple Macintosh computers (don't wait for a PC version — the whole program would have to be completely re-written from the beginning), and it should work on all models produced since 1987 (including the Plus, Classics, SEs, LCs, IIs, Powerbooks, and Quadras). You don't actually need a hard disk, but the program is severely hampered without one, and it is preferable to have at least 2 M of memory (but 4 M is better). It will run under System 4.2 or later.

Installation of the package on a computer is trivial. The package comes as two compressed files, which are easily uncompressed by double-clicking on them. The uncompressed files

occupy about 1.8 M of disk space, although nearly half of this comprises the example data files (which are not essential).

The program is basically an interactive one, and it has four sections to it:- the Data Editor, in which the taxa are named and their states for various characters entered; the Tree Window, where the phylogenetic trees are modified and their relationship to the character data explored; the Character Status Window, which lists the characters and allows modification of the various evolutionary assumptions associated with them; and the Chart Window, which shows various summary statistics about the characters and their evolution on the tree. These windows can all be re-sized or overlap each other, although the Data Editor and the Tree Window cannot be displayed at the same time. There is also an extensive on-line help facility.

Data can be entered using the data editor, which is a pretty amazing spreadsheet specialized for systematics. All of the data-modification procedures that are a real pain in the neck when you're using a word processor or general spreadsheet program are automated in the MacClade editor, so that they require little more than the press of a button. There are even specialized data types specifically designed for making DNA/RNA and protein data easy to deal with. Data can be specified as unordered, ordered, irreversible, dollo, stratigraphic, or continuous, and they can have up to 26 states. All of the usual Macintosh editing facilities are available, along with many specialist features for taxonomic data. Taxa and characters can be included/excluded for various analyses; taxa can be merged; and characters can be recoded.

MacClade does not itself construct phylogenetic trees (other than randomly-arranged trees). The simplest way to produce a suitable tree (or trees) is to use the PAUP computer program, as it reads the same data and tree files as does MacClade, and then to save the tree(s). However, MacClade can also import files from the PHYLIP and HENNIG86 programs, and can read NBRF format data files as well as data in simple spreadsheet and word processor files. Data can also be exported from the program in all of these formats.

MacClade can deal with multiple trees in a file, and many of its analyses are specifically designed to summarize these multiple trees. Any one phylogenetic tree can be interactively manipulated in several different ways, and there are twenty different tools provided for these manipulations. The trees can contain polytomies, but the way they are interpreted is different for uncertain resolution versus multiple speciation (see above).

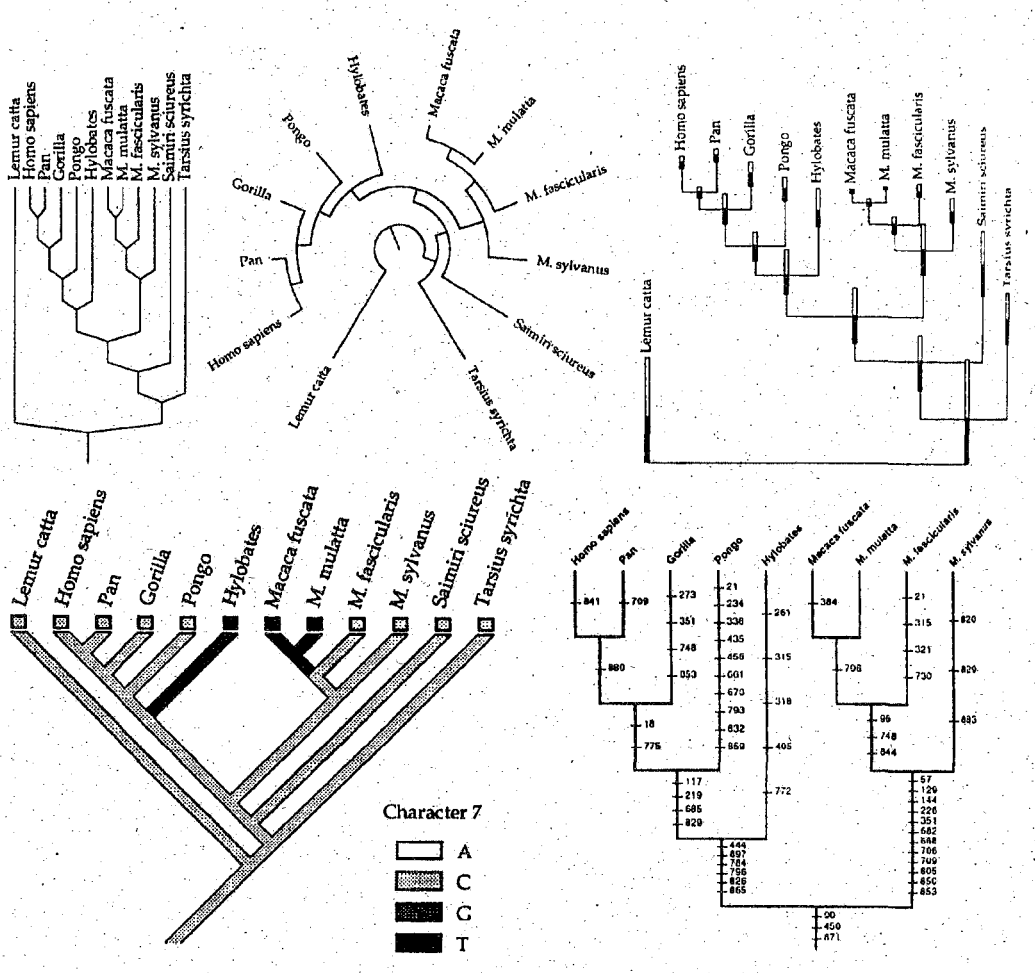
The original rationale for the development of MacClade was the reconstruction of the history of character change on a phylogenetic tree. A particular phylogenetic tree is presumed, along with the character states of the taxa concerned. The objective is to reconstruct the history of the character changes along the branches of the phylogeny. There are a number of ways in which this information can be displayed. One of the most useful is called Equivocal Cycling, where multiple most-parsimonious reconstructions of character evolution are displayed sequentially, thus avoiding having to redraw the tree by hand each time.

The charting features were developed to allow the examination of multiple trees and multiple character reconstructions, and to summarize and present the results in an easily-interpretable fashion. These charts include bar charts and bubble charts, as well as tables. Furthermore, MacClade can calculate basic character and tree statistics, such as treelength, minimum and maximum possible steps/changes (these are not the same thing), as well as consistency and retention indices.

The interactive nature of the program means that results are constantly being produced and changed, which in turn means that there is no permanent record of the process of your analyses unless you explicitly ask for one. However, most of the details of the analyses are easy to specify, and they can be saved to a file for later editing and printing.

MacClade will print trees in several different formats (including circular), and with various amounts of information displayed on them. Unfortunately, not all of these formats are available for non-Postscript printers. The trees and graphs can also be transported to a graphics program for editing. Furthermore, there is no facility to print all aspects of a data file with a single command; for the data file itself, it is necessary to use a word processor if you want to print all of the file exactly as it is stored.

All of the features appear to work as they should, and no other program comes within cooee of this one in terms of the ability to interactively investigate phylogeny. The authors suggest as their grand purpose: "to help biologists explore the relationships between data and hypotheses in phylogenetic biology". They




Some of the tree formats produced by MacClade

therefore see MacClade as an aid to helping biologists understand the implications that phylogeny has for their studies, whether these are studies of molecules, development, function, adaptation, ecology, speciation, or biogeography. None of the available tree-construction programs allows you to evaluate and understand the nature of your phylogenetic trees in quite the way that this program can. Certainly, you cannot adopt a black-box approach to phylogeny when using this program.

Perhaps my biggest reservation about the program is that it has now developed considerable complexity — in fact, it may be *too* complex for its own good. Like many of the commercial computer applications packages (the major word processing programs come to mind), this package is trying to be all things to all people. Consequently, it quite literally has hundreds of options (as the authors freely admit), and it is therefore rather daunting for casual users. The authors appear to have acceded to everybody's requests for new features to be incorporated, and there are a number of features that look like they are left over from interesting ideas explored by the authors, so that most people will probably not bother to find out all of the current possibilities for using the program. In fact, there are many features in the program that I cannot realistically seeing more than a handful of people ever using.

Reading the manual is certainly a major undertaking (as I now know from personal experience), and it is unlikely that too many

people will actually bother with more than small parts of it. At best, this means that some people will be using the program inefficiently; and at worst, they may be misinterpreting the output. Using this program to draw a cladogram is a bit like using Microsoft Word to write a one-line memo — 98% of the time you're only using 2% of the capabilities of the program. It is now twenty years since Alvin Toffler warned us about the consequences of "future shock", but no-one in the computer business seems to have paid much attention — too many options means that most people will simply ignore most of them, because it is not possible to assimilate them all. The danger, then, is that the program will be misused.

The book itself consists of three parts:- Introducing MacClade (two chapters), Phylogenetic Theory (four chapters), and Using MacClade (fourteen chapters); plus two appendices and an index. The presentation is very good, although the book is fairly large for a paperback and the cover of my copy is therefore now banana-shaped at each end. There are a number of typographical errors, and there is a four-page supplement listing some of these along with several changes to the program since the book was produced. Only two of the errors are notable, one on page 135 and one on page 269, and both of these are listed in the supplement.

The book is both a manual for the computer program, describing its features and uses, as well as a description of a phylogenetic approach to studying diversity and evolution. Therefore, perhaps the most interesting part of the book is Part II, on phylogenetic theory. The topics covered include:- A Phylogenetic Perspective (16 pages), Introduction to Phylogenetic Inference (33 pages), and Reconstructing Character Evolution Using Parsimony (50 pages). There is also a brief (6 pages) introduction to stratigraphic parsimony (useful for palaeontologists), by Daniel Fisher.

This Part of the book is not just an explanation of the methods used by the MacClade program (although it is certainly that), but is more a treatise on phylogenetic methodology and thinking. It argues for the primacy (or at least the usefulness) of an explicitly phylogenetic perspective on *all* of biology when explaining patterns via processes, or even when recognizing biological patterns themselves. It also spends a lot of space discussing the pitfalls and limitations of phylogenetic analysis (many of which applied to earlier versions of MacClade), particularly as related to the use of parsimony as a methodological tool. In many ways, this is the best discussion of the pros and cons of phylogenetic methodology (as opposed to the details of the mathematics) that I have encountered so far. You could do a lot worse than read this section of the book if you want to put phylogenetic analysis into a broader biological perspective.

The only draw-back to Part II is that parts of it can get pretty tedious. For example, much of chapter 5 gives you the details of the computer algorithms, which will be incomprehensible to most people. This means that useful points can be missed, because they are sometimes tucked away in a mass of pedestrian detail. Perseverance pays off, however.

All in all, this package should really form a standard part of any phylogenetic data analysis. Without it, phylogenetic analysis can deteriorate to being nothing more that an uncritical black-box analysis, in spite of the best intentions of the authors of the tree-construction programs. An analysis is only as good as the programs and the user make it. The programs are continually being updated based on improvements in techniques, but it is solely up to the user as to how effective their use of these programs is. So, there must be some conscious input from the user that evaluates the meaning and usefulness of the trees, and this package provides it.

The book (plus program disk) can be obtained direct from Sinauer Associates, Sunderland, Massachusetts 01375-0407 USA. Their fax number to confirm the price is +(413)665-7292.

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**A Key to Australian Grasses. Second edition**

By Bryan K. Simon. Queensland Department of Primary Industries, Brisbane. 1993. 206 pp. ISBN 0-7242-5381-5. $35.

The identification of grasses is often perceived as being difficult, and it is consequently ignored, poorly treated, or left to the specialists. There is a real need among workers in a wide range of disciplines, including agriculture and ecology, for a reliable, fast and efficient means

of identification. The publication of several state Floras in recent years, with botanical keys, descriptions and illustrations, has made identifying grasses simpler outside of herbaria. Although consisting of keys only, the first edition of *A Key to Australian Grasses* by Bryan Simon, published in 1989, was the first such treatment on an Australia-wide basis since Bentham's *Flora Australiensis* in 1878. This second edition provides an expanded and updated version, with improved keys and user-friendly additions, including a glossary and relevant diagrams.

The author's commitment to presenting up-to-date information, facilitated by the development of a computerized grass database, greatly increases the value of the publication. A brief check of taxa against the recently-published grass treatment in the *Flora of New South Wales (Volume 4)*, reveals very few omissions. The introduced species *Ischaemum afrum*, *Leptocloa dubia*, and *Diplachne uninervia* are not included, but this is understandable as they are localized and recent records. Useful information, including the distribution of species by states, whether native or naturalized, and earlier names or synonyms, are provided.

The introduction includes limited information about the classification of grasses, construction of keys, and hints on identification. In comparison with a lengthy discussion of the artificial grouping of species in keys, the coverage of how to actually use the keys is surprisingly brief. There is no indication of the type of specimen needed for identification, i.e. a complete plant including the base, leaves and flowering material. Although the keys rely chiefly on floral characteristics, there are also many references to ligules, blade characteristics, and growth form, i.e. annual or perennial. This could be initially frustrating for the user. Of particular concern is the impression given that reliable identifications can be made by independent methods, such as comparisons with photographs and illustrations (page 5). The construction of the relevant sentence presents each method as an alternative. In practice, reliable identification depends on a combination of methods, i.e. the use of keys followed by checking of descriptions and comparison with herbarium specimens. It is important that people using the book are aware of the limitations of using only one of these methods.

The practical value of such a publication must be determined by the ease of use and the success of the keys. The keys are well-presented, in couplet form. There are two separate keys to genera:- a traditional key, and a computer-generated key prepared by Watson & Dallwitz using the DELTA system.

Inclusion of this second key is of interest, and it can provide alternative characters, but I found it considerably slower and more difficult to use than the traditional key. The greater number of characters used is beneficial, but many of these, e.g. type of carbon-fixation pathway, minute details of the ovary, and the presence of microhairs, would be exceedingly difficult for most users to observe, comprehend and assess. From a practical viewpoint, therefore, the computer-generated key in its present form appears to have minimal value in such a publication. The integration of the two keys, with some simplification of the terms used, however, would be potentially useful. Of greater value would be a pictorial key to the genera, as found in *Grasses of New South Wales* (Wheeler, Jacobs & Norton, 1990).

The keys to genera and species constructed by the author are clear and succinct, but a major criticism must be the extensive use of single characters in the couplets. In my experience, particularly with grasses, reliance on one character can result in many errors, and it allows identification of only "perfect" specimens. Although a particular character may conclusively distinguish two taxa under certain circumstances, if the spikelets are not mature (particularly with inflorescence and spikelet measurements) or the specimen does not include the relevant character, then identification may not be possible. When keying out a specimen of *Danthonia racemosa* var. *obtusata*, I had difficulty because the lemma quite clearly had lateral lobes shorter than the body, yet it only keyed out under the opposing lead; the lateral lobes of this species are variable, and will depend largely on the stage of development. Additionally, many of the characters used are subjective, e.g. whether a leaf blade is sparsely or densely hairy, or a plant is annual or perennial. Occasionally, the only characters given relate to habit and habitat or locality, which is unfortunate if you are not in the field at the time or the collection details are poor.

To find reliable characters when dealing with species that may exhibit considerable variation between states will often be difficult, and this provides a strong argument for including at least two or three characters. When keying out a

specimen of *Panicum effusum* var. *effusum*, I went past this species in the key because specimens (at least from N.S.W.) are not always distinctly hairy on the internodes and at the base of the culms (page 136). Despite these shortcomings, however, several other specimens put through the keys worked well.

In conclusion, this is a useful book, providing an up-to-date census of the grasses of Australia, and much-needed botanical keys. The keys will be of more use to botanists with access to additional resources than to the more-practical potential users, such as environmental consultants, ecologists, farmers, bush regenerators, and the general public, who are targeted in the advertising campaign. The practical usefulness of the key appears to have been sacrificed, to some degree, in efforts to keep the treatment short and concise. Nevertheless, the book has many positive qualities, and it will provide a valuable framework for future treatments, including the *Flora of Australia.*

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**A Bright and Savage Land**

By Ann Moyal. Penguin Books, Ringwood. 1993. 240 pp. ISBN 0-14-017806-6. $16.95.

According to the author in the Preface, this book was first published in 1986 as an illustrated book on scientists in colonial Australia. For this edition it has been revamped, with black and white plates in the centre, to reach a "different audience". This different audience, I assume, implying scientists and naturalists who are interested in the development of science in Australia in the 18th and 19th centuries.

The book is largely anecdotal, and in essence can be divided into two parts. The earlier chapters mainly concern themselves with the naturalists who formed part of the exploring parties to this country. Initially, the naturalists' forays were confined to the coast, and relied heavily on where the captain of the various exploring fleets decided to land. Later, after white settlement, trained naturalists were part of the expeditions that chartered the unknown interior. The later chapters deal more with specific topics:- geology, astronomy, and the input that women had to the advance of science, to name a few.

Botany features throughout the book, although it has more prominence in the earlier chapters. Moyal puts this down to the fact that dried plant specimens take up less space and are easier to process than animal specimens are. This is all-important when one considers that a voyage could last up to four years, and space was at a premium.

Banks, Brown, and the Hooker family are, of course, very much present. It was also nice to see the lesser-known botanists who made such an impact being recognized. These include Gunn (Tasmania), Molloy and Drummond (Western Australia), and Dietrich (Queensland), just to mention a few. Mueller, however, I felt was very much neglected, occurring essentially in only one chapter. This I found surprising, considering the contribution that he made to Australian botany. In contrast, Rev. W.B. Clarke (someone I had not heard of before, but whom the eminent Clarke Medal of the Royal Society of N.S.W. is named after), who was a naturalist who dabbled in geology, meteorology and palaeontology, constantly makes an appearance throughout the book.

I felt that there is a bias in the discussion of some of the arguments that occurred between British and Australian scientists. The two prominent conflicts that are mentioned in the book are between Mueller and the Kew botanists, i.e. the Hookers and Bentham, and between the zoologists at the Australian Museum and Richard Owen at the British Museum. I am not familiar with the zoological controversy, so I won't comment on it. However, the botanical dispute was over Mueller publishing descriptions of Australian species and over who was should write the *Flora Australiensis*. The British botanists are portrayed as the villains in both disputes. Maybe this is indicative of future Australian thinking of Britons, if Australia becomes a republic. Having made many visits to the Melbourne herbarium and listened to the discussions instigated by members of the Mueller Project at the tea-room table, Mueller is far from being considered an angel. If he was, then why was he deposed as director of the Botanic Gardens? This, however, was a minor distraction when considering the book as a whole.

The style is light and very easy to read. The index is mainly set out by personality, which could be useful to those who wish to supplement their lectures with anecdotes from the book. The

Select Bibliography uses the chapter headings to classify the list. It is quite extensive and wide-ranging. A number of books from this list have found their way onto my reading list.

In conclusion, I thoroughly enjoyed the book, and recommend it to anyone who is interested in reading about the history of science in this country in the last two centuries.

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**Management of Endangered Plants**

By Simon Cropper. CSIRO, East Melbourne. 1993. 200 pp. ISBN 0-643-05533-9. $49.95.

This book aims to provide the "how to" of protecting threatened plants. The author believes that the information provided will fill the gap caused by a lack of appropriate knowledge about the monitoring and managing of rare and threatened species, and so will enable people such as rangers, planners, scientific officers, botanists, and interested naturalists to improve the survival of Australia's endangered flora.

Whilst the topics covered are comprehensive in outline, they are often deficient in detail, and the reader, especially if he or she is a relative newcomer to this topic, may mistakenly believe that the techniques recommended are the best or only ones available. Other monitoring methods not mentioned have proved both useful and accurate; these include permanent metre-square pantograph charts, low- and high-level stereo-photos, and permanent line-point quadrants.

Furthermore, whilst a number of threats have been listed, and are in part also discussed in the ten case studies, others that are very important are not included. Three examples not mentioned are:- firstly, the selective grazing of palatable forbs growing as minor constituents amongst relatively unpalatable native grass herbage; secondly, grazing after fire, especially in cases where relatively small areas are burnt within a much larger unburnt area — in these small pockets the regrowth is highly palatable relative to the surrounding mature unpalatable unburnt foliage; thirdly, the spread and damage caused by *Phytophthora cinnamomi* in Western Australia, even within some national parks — at this stage, no effective control measures against this pathogen are available.

Regrettably, despite the book's recent publication date, many of the statistics given in the preface are already out-dated; and using a figure of 6.2% of vascular plants being threatened to estimate that 1,741 non-vascular plants are also threatened is a totally unacceptable extrapolation. I am not sure when the text of Simon Cropper's book went to the publisher, but it is a pity that he did not have the benefit of the overviews presented in *Threatened Australian Plants* and *Conservation of Rare or Threatened Plants in Australia*, both published by the Australian National Parks & Wildlife Service in early 1992.

Readers may find the book somewhat parochial, as most of the examples and case studies (eight out of the ten) are drawn from Victoria. However, the case studies with which the author has been personally involved are interesting and well-written. I was not able to determine on what basis these case studies were chosen; and I doubt that the Victorian experiences will be useful to others in the arid zone, subtropics, or tropics.

Relating to the book's production, many of the colour illustrations are of poor quality, and the proof-reading could have been improved. Finally, what appears to have been a late decision to change the title of the book to *Management of Endangered Plants* was, in my opinion, a pity, since much of the content deals with Rare or Vulnerable species and not with Endangered species. The misuse of the term Endangered, possibly to attract attention to the book, is regrettable, as it may render some readers offside and also reduce the credibility of this book.

At a recommended retail price of $50 (less 5¢), this paperback is not cheap. Whilst the concept of the book is good, and the author has acknowledged many prominent and respected researchers in this field, I seriously wonder how well the final manuscript was reviewed, or the manuscript modified in the light of the reviewers' comments, because of its many deficiencies that could/should have been overcome.

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## Recent Publications

**Fijian Medicinal Plants.**
By R.C. Cambie and J. Ash. CSIRO, East Melbourne. 1993. 376 pp. ISBN 0-643-05404-9. $95.

**The Families of Flowering Plants.**
By Les Watson and Mike Dallwitz. CSIRO, East Melbourne. 1993. CD-ROM disk plus manual. ISBN 0-643-05507-X. $180

**Pollen Grains of New Zealand Dicotyledonous Plants.**
By N.T. Moar. Manaaki Whenua Press, P.O. Box 40, Lincoln 8152 New Zealand. 1993. ISBN 0-478-04500-X. $US60.

# NOTICES

## Smithsonian Institution's Natural History Gopher Server

The National Museum of Natural History, Smithsonian Institution, staff and other associated researchers have created or compiled many large databases and documents that are of value internationally. In addition, the staff edit newsletters and prepare reports for professional societies in their disciplines. Traditional methods of publishing this type of information are being supplanted by electronic methods, several of which are becoming fairly common.

Notable among these new methods of data exchange is a computer network service known as the Internet Gopher. Gopher gives users access to a series of menus that provide lists of the available information resources, and then makes the connection to a remote computer so that the data can be searched and records retrieved. Gopher Clients search an information system, and Gopher Servers store and index data and make them available to the Client software.

The Department of Botany of the National Museum of Natural History is therefore pleased to announce the inauguration of a Gopher Server that will provide network access to the databases and documents that our staff have created or now manage. The resources now available are listed below. We wish to call your attention in particular to the Type Specimen Register of the U.S. National Herbarium, which is the world's largest electronic database of plant types. Also, note that the Index to Historical Collections is the most comprehensive account of the collectors represented in the U.S. National Herbarium. Neither of these databases were available electronically or in printed form before.

The Internet Gopher is reached through Gopher Client software. Contact your local Internet provider for detailed information about access to this service; for most scientists in Australia, connection to the U.S. Internet network is provided through AARNET.

We would also appreciate expressions of support for our efforts to make this information available. A strong and favourable response from the botanical community will enable us to make more databases and documents available in the future.

**Type Specimen Register of the U.S. National Herbarium**

This register provides label and bibliographic data for more than 88,000 type specimens that are included in the 4.5-million-specimen collection. Type specimens are among the most frequently consulted specimens in herbaria, since their interpretation helps fix the application of scientific names. Our register includes not only label data, but also indicates whether or not bibliographical information associated with a type specimen was verified by our staff.

**Historical Collections in the U.S. National Herbarium**

The Index to Historical Collections, with more than 1,600 records, is a list of the major collections acquired by the U.S. National Herbarium through to 1965. When known, information is provided on the size of the collection and its place of origin. The information can be searched by the name of the collector or a geographical locality. It is a valuable reference for systematists seeking to locate specimens, and for

historians documenting botanical collecting expeditions.

**Plants of the Guianas**

The Checklist of the Plants of the Guianas (Guyana, Surinam, French Guiana), produced by the Smithsonian's Biological Diversity of the Guianas Program in collaboration with ORSTOM, Cayenne, French Guiana, accounts for all of the vascular plants, bryophytes, and Characeae (algae) known to occur in these three countries of north-eastern South America. Accepted names, distribution by country, limited synonymy, and references are among the information included.

**Mammal Species of the World**

The Checklist of the Mammal Species of the World, compiled under the auspices of the American Society of Mammalogists, is intended for use as an authority file for the collection management activities of museums. The checklist contains the names of 4,629 currently-recognized species of mammals in a taxonomic hierarchy.

**ASPT Newsletter**

The *American Society of Plant Taxonomists Newsletter* is published quarterly, and is currently being edited at the National Museum of Natural History. It focuses on matters of interest to the plant taxonomy community, including:- news items and information on awards and funding; job opportunities; internships and fellowships; symposia and meetings; flora projects; and new books, serials, and newsletters. Recent issues of the *Newsletter* (1987–present) may be browsed, or searched by key words. A search will return relevant sections from all of the issues posted on the Gopher Server. The *Newsletter* will become an important electronic archive of contemporary activity in the field of botany.

**Biological Conservation Newsletter and Bibliography**

The *Biological Conservation Newsletter* (1981–present), a monthly publication of the Department of Botany, serves the biodiversity research and conservation communities. It has articles on conservation research, and news items. It also provides an important compilation of new publications, fellowship and grant opportunities, job announcements, educational materials, and meetings. An extensive bibliography of relevant current literature is a useful service provided in each issue. Recent issues of the *Newsletter* will be available, along with the cumulative bibliography of more than 6,400 references.

**Phylogenetic Analysis**

The Laboratory of Molecular Systematics, National Museum of Natural History, is using the Gopher menu to provide access to an Internet file transfer service. This will be used to support the distribution and maintenance of the PAUP program and related software employed in phylogenetic analysis.

Warren L. Wagner
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**Editorial Note:**

For those of you who do not know much about computer networks, Internet is the global academic computer network that links the various national computer networks. Australia's national academic computer network is AARNET, which links all of our universities, CSIRO, and various other government bodies; it is also possible for commercial organizations to pay for access. AARNET is connected to Internet via a gateway at the University of Melbourne. In order to connect your own computer to another computer on Internet (either in Australia or overseas), you need to know the other computer's address, and to have suitable software on both of the computers (following the TCP/IP computer protocols).

The Gopher software was developed at the University of Minnesota as a user-friendly means by which computers could interact with each other over computer networks (it was originally developed as a fast, simple, campus-wide information search and retrieval system). If your local computer network has the Gopher software installed, then you can easily navigate through the full Internet network without knowing the addresses of any of the computers involved, provided that a Gopher server is available at the destination that you are seeking.

Each Gopher server computer has an introductory menu that will be displayed on your computer screen, and this menu gives you access to other menus, and so on, until you find

the information that you are seeking. So, the Gopher software makes all of the necessary inter-computer connections for you, communicating with you via menus, so that the relevant data can be searched and information retrieved. Virtually any popular computer can be used (e.g. PC, Macintosh, Unix machine), as the Gopher Client software has been developed for them all and is available free of charge. There are currently about 22 Australian universities providing Gopher servers (although some of these are still in the experimental stage), as well as at least five government facilities.

## Humour in the biological sciences

For the past few years I have been compiling a collection of the deliberately-humorous articles that have been published in the biological literature. So far, I have about 75 of these articles (some of which have been reproduced in this *Newsletter*), and I intend publishing them as a book when the collection is as complete as I can reasonably make it.

The biggest problem when compiling such a collection is actually finding the articles in the first place. Many of them have been published in fairly obscure places (including one-off articles in otherwise serious journals), or they have appeared in the newsletters or bulletins of the various biological societies around the world (which makes them somewhat ephemeral); and therefore these articles are now known to only a small handful of people. This makes it very difficult for the compiler (me) to get a hold of a copy of the articles, even if he does realize that they exist (and where they were first published).

So, if anyone knows of (or has copies of) humorous articles about biological topics, wherever they might have appeared, then could they please contact me.

I would especially like to hear from anyone who has copies of the sporadically-appearing humorous journals such as the *Journal of Aberrant Botany*, the *Auklet*, *Brighter Biochemistry*, *Dopeia*, or the *Tea Phytologist*; or who has copies of the following books: Augustus C. Fotheringham (1926) *Eoörnis pterovelox gobiensis* (Buighleigh Press, London), or Milton Hildebrand (1979) *Laugh and Love* (Exposition Press, Hicksville).

David Morrison
Department of Applied Biology
University of Technology, Sydney
PO Box 123
Broadway. NSW. 2007.

## Newsletter editor

As announced in the last issue of the *Newsletter*, we will be retiring as the *Newsletter* editors after the next (June) issue.

Nicholas Lander, of the Western Australian Herbarium, has agreed to take on the job of editor as from the September 1994 issue.

David Morrison
Barbara Wiecek

# PERSONAL NEWS

## Byron Lamont

Dr Byron Lamont, Associate Professor in Plant Biology at Curtin University, Perth, has been awarded the degree of Doctor of Science at the University of Western Australia. His thesis is entitled *Nutrient/water Relations, Reproductive Biology and Population Dynamics of the South-western Australian Flora, with Particular Reference to the Proteaceae*. The 1,050 page thesis is based on 75 research papers and reviews, which resulted from his research over the last 18 years at Curtin. He has been a member of ASBS for 20 years, and he is the first graduate in botany from U.W.A. to receive the D.Sc. for 34 years.

# MISCELLANEA

Noah and his family must have witnessed some heroic deeds and amazing achievements.

Consider, for example, the little Aussie sleepy lizard. Capable of speeds of just over 500 m per day, these apparently dull creatures must have realized that they needed to leave 60 years or so early to get to the ark in time. Now, sleepies don't live for that long, so they would have had to breed on the way. I also suspect that several hundred left together, because they had to allow for a lot of deaths and injuries along the trip.

You can imagine the intrepid battalion of sleepies plunging into the Timor Sea — possibly clutching little snorkels fashioned from hollow reeds. How their stubby little arms churned as they swam the 500 km to Timor. The on and on, from island to island, into the Malaysian jungle, through Burma, over the mountains and across the rivers.

The Himalayas may have been something of a challenge, but have you noticed how the sleepies' little claws are rather like crampons — can't you picture squads of sleepies scrabbling up the icy slopes? Once over the Himalayas, the rest of the journey over hills, deserts and rivers would have been relatively easy, and taken only 20 years and two generations to complete.

You can picture the surviving lizards approaching the Ark, with the other 30 million or so animal species. No doubt they overtook slower creatures, who had to leave even earlier — some say that the three-toed sloths had to set off within hours of being created!

The actual boat trip lasted only a few months, and then the brave little beasts had to head back home (another 60 years or so). I suspect that the sloths are still moving slowly to their real homes.

Reprinted from the *Adelaide Advertiser* 23 November 1991.

Robert Sharrad

*Eucalyptus botryoides*

Lost lawns costing quite a sum,
House footings seeming rather rum,
You don't want branches crushing mum,
Oh please eschew mahogany gum!

*Eucalyptus crenulata*

Silver gum makes buds feel at home
As many as would fill some tome.
Don't waste this space in your garden loam
But Hi Ho! Silver with the plastic gnome.

*Eucalyptus globulus*

A tree to murder gardens new,
To dig up drives and pathways too,
Perhaps to wreck the outside loo,
By all means plant a Tassie blue!

*Grevillea*

Most grevilleas come from the West,
A family with many children blessed.
While most are good, a few a pest,
Make careful choice your garden quest.

*Hakea tenuifolia*

Silky hakea has vicious spikes
Which save it from unwanted tykes,
And kids who want to lean their bikes,
Yet still it's a shrub as some likes.

*Melaleuca armillaris*

There's quite some good in honey myrtle,
Catches cars as off roads they hurtle,
Hides things — even your pet turtle,
And grows in soil that ain't quite fertile.

Graham Calcutt
Who Planted That Damned Thing?

---

The firefly's flame
Is something for which science has no name.
I can think of nothing eerier
Than flying around with an unidentified red glow on one's posterior.

Ogden Nash

# AUSTRALIAN SYSTEMATIC BOTANY SOCIETY

### History of Systematic Botany in Australasia

Edited by P.S. Short. A4, case bound, 326pp. A.S.B.S., 1990.
Members $30; non-members $50. Postage $10.

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

### Systematic Status of Large Flowering Plant Genera

A.S.B.S. Newsletter Number 53, edited by Helen Hewson. 1987. $5 + $1.10 postage.

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

### Flora and Fauna of Alpine Australasia: Ages and Origins

Edited by B.A. Barlow. A.S.B.S. & C.S.I.R.O., 1986. $21 + $5 postage.

The alpine environments of Australia, New Guinea, and New Zealand differ from each other in terms of topography, genesis, climate, and biota. They also contrast strongly with alpine habitats in the northern hemisphere. Palaeoclimatology, palaeobotany, biogeography, ecology, and plant and animal systematics have been used here to give an understanding of the biohistorical relationships of these isolated islands of alpine terrain in the southern hemisphere.

### Evolution of the Flora and Fauna of Arid Australia

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

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

### Australian Systematic Botany Society Newsletter

Back issues of the *Newsletter* are available from Number 27 (May 1981) onwards, excluding Numbers 29 and 31. 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.

Also available are sweaters ($25), t-shirts ($15), mugs ($8 each, or $42 for a six-pack), and scarfs ($20).

**Send orders and remittances (payable to "ASBS Inc.") to:**

Katy Mallett
A.S.B.S. Sales
Flora section, ABRS
G.P.O. Box 636
CANBERRA. A.C.T. 2601.

# A.S.B.S. Inc. MEMBERSHIP APPLICATION

**AUSTRALIAN SYSTEMATIC BOTANY SOCIETY INCORPORATED**
(incorporated under the Associations Incorporation Act 1991)

**APPLICATION FOR MEMBERSHIP**

I, .....

of .....

.....
(address)

.....
(occupation)

hereby apply to become a member of the abovenamed incorporated association. In the event of my admission as a member, I agree to be bound by the rules of the Society for the time being in force.

..... .....
(signature of applicant) (date)

I, .....
(full name)

a member of the Society, nominate the applicant for membership of the Society.

..... .....
(signature of proposer) (date)

I, .....
(full name)

a member of the Society, second the nomination of the applicant for membership of the Society.

..... .....
(signature of seconder) (date)

Return this form, with the appropriate subscription, to the honorary treasurer:-
Dr P.G. Wilson
National Herbarium of New South Wales
Mrs Macquaries Road
SYDNEY. NSW. 2000.

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International dialling sequence from outside Australia:-
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| | |
|---|---|
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This list will be kept up to date, and will be published in each issue.
Please inform us of any changes or additions.

## 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 an "Application for Membership" form and forwarding it, with the appropriate subscription, to the treasurer. Subscriptions become due on January 1 each year.

## The Newsletter

The *Newsletter* appears quarterly, keeps members informed of Society events and news, and provides a vehicle for debate and discussion. In addition, original articles, notes and letters (not exceeding ten published pages in length) will be considered.

Contributions should be sent to one of the editors at the address given below. They should preferably be submitted as:- an unformatted word-processor or ASCII file on an MS-DOS or Macintosh diskette, accompanied by a printed copy; as an unformatted word-processor or ASCII email file, accompanied by a fax message reporting the sending of the file; or as two typed copies with double-spacing.

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

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

## Notes

ASBS annual membership is $30 (Aust); full-time students $15. Please make cheques out to ASBS Inc., and remit to the treasurer. All changes of address should be sent directly to the treasurer, as well.

Advertising space is available for products or services of interest to ASBS members. Current rate is $100 per full page, $50 per half-page or less. Contact one of the *Newsletter* editors for further information.

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David Mackay

Austral. Syst. Bot. Soc. Newsletter 78 (March 1994)

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