

ASSOCIATION OF SOCIETIES FOR GROWING AUSTRALIAN PLANTS

VERTICORDIA STUDY GROUP

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MEMBERSHIP

The Study Group is very pleased to welcome new members **Martin Rigg** and **Diana Leggat**. They are developing an ambitious new garden project on 16 acres at Yackandandah, in north-eastern Victoria. At 350 meters above sea level, it has variable terrain of open grass pasture, rolling foothills, dams and swamp. Soil is gravelled loam, of Devonian granite parentage, with good drainage and good moisture retention. They included a mud-map of their proposed garden layout

We will certainly be looking forward to learning of the progress of this project.

The bushfire situation in late 2002 was disastrous. Hearing via the media of fires near Cessnock, I rang **Darren** and **Louise Allen** at Abernethy. Unfortunately they had been right in the thick of it, but although they were able to save their home and propagation house, their garden was completely burnt out. For people who had developed their garden with so much enthusiasm, we can appreciate the shock they must have suffered. We look forward to helping them restore their garden when 'and if?' this current drought finally ends.

STUDY GROUP SUBSCRIPTION

Will members please note that our annual subscription rate is to rise from \$3.00 to \$5.00. This will take effect from the start of the next subscription term at the end of June 2003. Overseas subscription rate, (should such people wish to join), will increase from \$10 annually to \$20.00.

In the past, members have, at times, contributed more than the nominal amount and this has been acknowledged as a donation. I am very grateful to them for this, which has been helpful in maintaining our subscription rate without increase, since the Group's inception in 1983.

THE VERTICORDIA BOOK.

I am very pleased to report that the long-awaited book by Elizabeth George is now available. I believe members will be delighted with the result of Elizabeth's gigantic effort, with the able assistance of Margaret Pieroni. I rang Elizabeth and ascertained from her that it was available from the Australian Museum Bookshop in Sydney for \$94.95 plus postage and handling.

The following report of the Book Launch is copied from the Newsletter, November, 2002, of The Wildflower Society of Western Australia :-

BOOK LAUNCH - VERTICORDIA : THE TURNER OF HEARTS

By Elizabeth A. (Berndt), George with watercolour paintings and illustrations by Margaret Pieroni

This book, published by the University of Western Australia Press, Crowley, and the Australian Biological Resources Study, Canberra, was launched at the Women's Suffrage Pavilion, King's Park and Botanical Garden on 27 September 2002 by Stephen D. Hopper, Chief Executive Officer of Botanic Gardens and Parks Authority, West Perth, Western Australia. Below is a transcript of Dr. Hopper's speech.

Firstly welcome to King's Park and Botanic Garden on this fine spring day, in the midst of our annual King's Park Wildflower Festival. Every day is a gift, and today is a very special occasion. I hope, after we celebrate the launch of this very important work, you all have time to enjoy the Wildflower Festival.

It is a privilege and an honour to have been asked to launch this wonderful book.

To an incorrigible natural history bibliophile like myself, this is indeed a wonderful volume - carefully researched, technically accurate, well written, beautifully illustrated and designed, and handsomely published

I found the book easy to read and navigate through. The systematic arrangement of taxa greatly assists identification compared with an alphabetical treatment. The maps and superb illustrations together with the text make identification accessible to all interested in these special wildflowers.

The book encapsulates the story of the discovery and classification of the Western Australian Flora as a whole.

It commences with the pioneering collections of Archibald Menzies and Robert Brown from the granite outcrops at Albany and Lucky Bay east of Esperance, then through the colonial collections of James Drummond and Ludwig Preiss, to the remarkable age of discovery we have seen over the past three decades, culminating last year in the description of *Verticordia mirabilis*.

It is interesting and important to note that 46 of the 101 species of *verticordia* have been named in the last 10 years - close to half the genus.

Such a significant increase eclipses that seen in recent revisions of many genera of tropical rainforest, and highlights that the south-west Australian region contains the cinderella of temperate floras. The true riches, diversity and beauty of this priceless heritage are literally only now becoming widely known through books such as this.

On top of this tremendous surge of taxonomic description of new species, there is a parallel global revolution in understanding of the evolution and classification of all living forms through the application of molecular DNA analysis.

Just nine years ago, in 1993, the first major review of the phylogenetics of all seed plants using DNA sequence data was published. It involved many authors from laboratories around the world, an unprecedented level of collaboration compared to previously mostly sole-authored attempts to address what Charles Darwin called the "abominable mystery" of the evolution of flowering plants

The findings of the molecular study were fascinating to some, shocking to others, many of whom remained incredulous or at least sceptical until subsequent research affirmed the repeatability and power of this approach.

I mention this only to signal that, within a few years, we are likely to have a much better understanding of where *Verticordia* sits in relation to allied genera in the Myrtaceae, as well as significant improvements of knowledge of relationships among species within *Verticordia*. Already, it is clear that many presently accepted genera in the Myrtaceae are poorly circumscribed. It may well be that next edition of this fine book will deal with such issues, particularly concerning relationships between *Verticordia* and *Chamaelaucium*.

We are lucky, in my view, to be alive at this period of major discovery in relation to the south-west flora

Such an unprecedented surge in knowledge of the genus *Verticordia* could not have happened without the extraordinary emergence of power and collaboration among people of diverse interests - botanists, artists, horticulturalists, wildflower enthusiasts, farmers, government officers, conservation biologists, publishers.

How things have changed since the days of Charles Gardner, Western Australia's Government Botanist in the four decades up to 1960. I am told that Gardner was of the view that the whole Western Australian flora was within the grasp of an individual botanist to know and document. However, he was to see his dream of producing a flora of Western Australia slip away as the real complexity and magnitude of the task became evident.

Today, exemplified by the book on *Verticordia*, we see that one of the world's greatest temperate floras is in our care, a heritage far richer than the prodigious Charles Gardner ever imagined. Few of us today believe that we could know and document in a lifetime the real diversity of this wonderland of wildflowers.

But this book superbly illustrates what is achievable, with dedication, collaboration, persistence, skill and craftsmanship.

Like many others, I have admired and enjoyed *Verticordias* encountered in the field, and even had the privilege of being the first to collect a species new to science, but I struggled to understand the genus, and despaired when trying to key out species other than the very distinctive *Verticordia grandis*.

This book has changed all that.

Every successful venture requires leadership, coordination and teamwork. For this inspirational project, over more than 20 years, Elizabeth George has been the mainstay, the driver. Her aim, stated in the preface, "was to learn about these fascinating wildflowers to help others gain a better understanding of them, and the need to preserve them in their natural habitats".

Simple elegant prose, with laudable motives. You will find that Elizabeth's authorship and clarity of purpose permeate the book.

There are rich pickings for those who love the botanical anecdote, horticultural stories, good science and well-written text.

I particularly enjoyed the stories of James Drummond's enthusiasm for *Verticordia grandis*, "so beautiful that the wagoner who drove him used to stop to turn his bullocks out of the road to avoid trampling down this plant"

There was Ferdinand von Mueller's experience "so entranced by the sight of a plant of *Verticordia oculata* on the northern sandplains that he was reluctant to 'tear himself away from such a beautiful floral display'" - a species he described as the princess of the Australian flora.

There was Basil and Mary Smith's search in a light airplane for suitable habitat for the long lost *Verticordia hughanii* in the Goomalling area, a venture rewarded by rediscovering the species in December 1983.

And there is the most recent and wonderful tale of the discovery of *Verticordia mirabilis* near Warburton in the Gibson Desert by Ian Lyon and Jan Rowley in September 1999. This species, discovered so far removed from previous known locations of the genus, highlights how much we still have to learn about our desert flora.

It is also a remarkable parallel to the recent discovery and naming of *Clivia mirabilis* in South Africa, found 400 km north of Cape Town in a lonely semi-arid canyon 800 km further west than all other members of this horticultural genus.

The stories in Elizabeth's work are endless and as enjoyable. You have set a high standard, Elizabeth, for those who follow - an admirable job well done.

Margaret Pieroni's artwork is of equal quality - a fine achievement that deserves rich commendation. These are challenging plants to paint and I believe all will be as impressed as I have been with Margaret's work.

Underpinning and supporting the text have been taxonomic studies primarily by Alex. George. Alex's contributions in the field of monographic work, as well as his distinguished career as Executive Editor for the *Flora of Australia* are well known. I greatly admire his publications in what I consider to be the most rigorously refereed of all biological sciences. Everyone who uses a key or refers to a book such as this to identify a plant is testing the taxonomist's concepts of species. It's a demanding job to deal with such challenges, not to mention the need for years of careful historical library, herbarium, field and glasshouse work.

Such work of course relies on the institutional support and collections of herbaria. The *Verticordia* project would not have succeeded without such support from the Western Australian Herbarium and other herbaria around the world.

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The contributions of those who know and grow *Verticordia* is also very evident in the book. There has been outstanding work in this field, with the contribution of Norm and Pat Moyle deserving special mention.

The publishers, UWA Press and the Australian Biological Resources Study, have clearly played an important role in delivering such a handsome book to us today.

I'm sure that this book will achieve Elizabeth's objectives. It will inspire and encourage people to get to know these and other plants well. New knowledge will develop as a consequence. We still have much to learn, but this is an important historical moment - a summing up of existing knowledge to help pave the way for future research.

I congratulate all involved in this admirable production, and wish it every success. It is my great pleasure to formally launch *Verticordia - The turner of hearts*.

MEMBER REPORTS/COMMENT

Paul Niehoff, Blackburn, Victoria in a brief comment, (December 02), says;- "I only have a *V. densiflora* and two *V. monadelphas* growing, having just lost *V. plumosa* after it flowered profusely. The only positive news I have is that over 25 seedlings grew around the *V. densiflora* (to 150mm high), and all are doing well.

I have the feeling that *V. monadelpha* does not like having it's roots disturbed. It appears that if I damage it's roots during weeding, the corresponding part of the plant dies while the rest remains very healthy".

Merrilyn Rossington, Scone NSW makes a comment, (August 02), that may have particular significance in these times of severe drought;- "I am starting to think that conditions here must be very close to those of south-west W.A., as all of my species from there are thriving

Dick Mills, Banjup W.A., after receiving Newsletter No. 38. makes some very significant observations, (September 02);-

"First from Darren and Louise Allen. They appear to be very involved, with new ideas which should be good for the Study Group. Darren says that most of his losses are due to lack of water rather than the reverse.

I firmly believe that when planting out, and also indeed with potted plants, attention must be given to the size of the root system, in relation to the top growth. Pre-watering the hole before planting and ensuring that the roots and surrounding area never dry out is sound practice. Maybe you have a species which requires very little water or nutrient, but **it is impossible for a plant to survive without water and it can't grow without nutrients.**——— Smaller plants, either in the ground or in pots, require more frequent watering, because the smaller root systems can dry out quickly. Also plants with a lot of fresh growth will transpire more than dormant plants of similar size

I like to pot on into good potting mix, and usually delay planting out until roots are evident when the plant is knocked from the pot.. Keeping the rootball together assists with water retention in the ground, and I always water the hole well before planting. My potting mix is a commercial one with no fertiliser, to which I add Osmocote and about 10% coarse sand. Potting mixes with a high percentage of coarse sand will require more frequent watering.

My present cutting mix is 50/50 Cocopeat and Perlite. I agree that later potting up and using low fertiliser mixes helps with root development, but I find at times, the larger root systems are harder to handle. Mostly I pot up as soon as roots are evident and harden up afterwards. The smaller (younger) roots are more brittle but don't seem to get in the way as much. I also find that some species, eg. *Vert. grandis*, hate being over-rooted and require re-potting as soon as roots show in the bottom of the pot.

I think that planting out direct from cutting mix may induce shock, and would be liable to premature drying out, as it is formulated to be free draining in a humid atmosphere.

Mostly I prefer to propagate during the warmer months, (Oct-April), and plant out whenever the plants are ready, provided I can keep the water up until the winter rains start. Leaving the planting till autumn means you lose the warmth in the soil which helps the plant to get going.

Many *Verticordias* will grow in shade or part shade, as they enjoy growing as under-storey in nature.

Re water supplies; I use rain water for all my propagating, then transfer hardened plants on to bore water, using no scheme water at all. Jeff Mountstephen, an earlier W.A. member of our Study Group, lost virtually his entire collection of *Verticordias* due to an over zealous application of chlorine by the Water Board."

Re grafting- Dick noted Darren's comments on rootstocks but suggests different ones should be trialled against a tested 'control' species, in order to correctly assess results. He also added;- "I have found I had no success and wasted a lot of time until I started using 'Parafilm 10' laboratory film. It is just so much better for those small grafts"

Dick also commented on Merrylin Rossington's notes;- "Sounds like she goes to the extra trouble that will ensure success. I like her idea of getting all the hormones involved. If one doesn't work for a particular species, one of the others may"

Graham Eastwood, Bateman's Bay, NSW reported (November 02);-"Because of the severe and continuing drought, and because of the water supply situation here, I have gone ahead and pruned all plants of from 2/3 to 3/4 of their foliage. I have not watered artificially and no specimens have been lost.

V. grandis is doing very well, continuing to put on new growth and produce a succession of flowers.

Another doing particularly well is *V. monadelpha* var. *monadelpha*. Although pruned to about 200mm x 200mm diameter, and with half of it's flower buds removed to ease stress on it, it was glorious in flower with a complete covering, and has since been putting on new growth.

An old plant of *V. helichrysantha* which died back severely after the winter, was pruned back to a few centimetres. It is now putting on new growth.

I am waiting to see if *V. densiflora* var. *cespitosa* is going to flower.

A number of seedlings of *V. staminosa* subsp. *cylindracea* var. *erecta* and *V. chrysanthella* have also come through the drought.

V. monadelpha var. *callitricha* (in a pot) has never been vigorous but about three months ago it put on a few new twigs.

Other species which remain healthy are *V. plumosa*, *minutiflora* and *fragrans*

VERTICORDIA STUDY GROUP - OVERVIEW - 15 YEARS ON

When I first set up residence at Mount Kuring-gai, before the days of SGAP, my wife commented that she would like to have in our garden, four Australian bush plants; a Waratah, a Christmas Bush, A Bottle Brush and a Boronia

In 1957, I was persuaded by a fellow resident to go along with him to a meeting. It turned out to be a meeting of what later became SGAP and I am afraid I became hooked from that time.

A businessman from California, who maintained some interest there in a four acre arboretum of Australian native plants, made annual visits to Australia and spent much time based with a friend of mine at St. Ives, from where he made many tours around our country viewing our wildflowers.. After a trip to Western Australia in spring he came back tremendously impressed and commented that of all the Australian wildflowers he had seen his major wish would be to be able to grow species of *Verticordia*, 'if only a satisfactory way could be found to do this'.

In 1966 my wife and I made an extended spring trip to W.A. and after witnessing first hand the extensive sand plain flora in that part of Australia, I realised the true significance of the above comments Unfortunately however there was a general feeling in our young society, particularly in Eastern Australia. that *Verticordias* were for the 'too hard basket'.

I think it was in the early 70's that I attended a Society conference in Canberra and the idea of forming study groups to solve such problems was first mooted. I recall the comments supporting same by John Wrigley, who had pioneered a magnificent wildflower garden at Gordon in Sydney's northern suburbs. John did not have an academic background in horticulture, but will be remembered particularly for the many years he spent, after being appointed as curator of the developing Australian National Botanic Gardens at Canberra.

By 1983 a number of Study Groups had been operating in our Society for **Growing** Australian Plants, but no one had accepted the challenge to solve the dreaded problems of *Verticordias* so I decided it was time to give it a go. Some of you will remember Professor Julius Sumner Miller, the American so called 'Crazy Scientist', who made regular televised lecture tours in Australia, and always posed a final question to his student audience:- "Why is it so?"

I have often thought of this when, in friendly discussions with some of our Eastern Australian Nurserymen, I had been irked by the comment;- 'So and so' is a drop dead plant. Surely this was leaving the matter in mid stream. There had to be reasons. We should appreciate however that Nurserymen, like everybody else, have to earn a living. Economic considerations demand that they concentrate their energies on producing species which can be more reliably grown on by the general public, rather than by enthusiasts, or as some would say, cranks, who are prepared to give that extra thought and effort to grow a particular Australian 'prize'

Our ASGAP study groups have many and varying agendas but when I formed our group in 1983, my prime objective was to find answers to Julius Miller's question; 'why is it so?' It seemed apparent that climatic variation must be of major significance, but why then had people, even in *Verticordia* home-ground in W.A., had such limited success. After some fifteen years my *modus operandi* remains the same. As Elizabeth George points out however in her magnificent publication; much has been achieved to date, but we are still on that learning curve

My first action, when moving from Mount Kuring-gai to Cherrybrook in 1985 was to elevate all of my garden beds, as even at that time a general feeling existed that provision of better drainage was an obvious answer to many horticultural problems. Then there was the matter of soil type. The soil here is a very rich and heavy clay loam of quite deep profile. This type is far removed from any I had seen in the heath areas of W.A. but surely it would be interesting to find out how *Verticordias* responded to it. To diversify test conditions however, I introduced areas of lighter soil and subsequently have continued to experiment with other soil variations..

Although I had brought a number of potted *Verticordia* specimens with me from my earlier address. I should mention particularly the tremendous assistance I received by way of cutting material of many other species, per Pat and Norm Moyle and Elizabeth George. Without such assistance I would not have been able to test-grow and record observations on many species. My first line of action was to test grow specimens under a variety of conditions and when losses occurred, to make an examination of the root systems to attempt to assess the reason for the demise. Consideration of the nature of the developed root structure also seemed of significance in giving a lead to likely desirable drainage profiles. Notes have been kept of these assessments, as also, of all significant treatments given, from first planting to final loss.

My early thoughts were to try to counter the influence of summer/wet conditions on species which naturally enter either partial or complete dormancy at that time. Member Graham Eastwood once remarked, 'all plants need to have a rest period'. It became obvious however that some species could handle these Eastern Australian conditions in late summer, better than others.

From examinations of lost plants, observations have been made as to whether, for instance, a particular species needed better precautionary treatment to obviate rotting of the feeder roots, or destruction of the cambium at or near ground level. Such observations have led to measures being tried to achieve improved results. One factor that has emerged is that up to flowering time, which varies according to species, most *Verticordias* readily accept or even welcome, added water, whether from rain or by artificial means. This would seem to confirm that many of our problems here in long-term maintenance significantly relate to a plant's natural dormancy period.

Many other factors affecting growth performance have, and are still being noted. Foliar fungal attack under certain conditions can be a problem with particular species. I recently countered this on a young specimen of *V. plumosa* var. *ananeotes* by two applications of Pest Oil?. Wind rock of some species can have serious later consequences and precautionary staking would seem to be desirable for them. Then there have been examples of species drying out excessively, where root systems were particularly fine and light top stratum provided.

In 1996 it became necessary for me to undergo a hip replacement and also an ankle operation, and my *Verticordia* project suffered a little with an inability to maintain some species. Things in this regard have been aggravated further in subsequent years by a succession of difficult, or unusual seasonal weather patterns, with also at times, rather poor propagating results. The culmination has been the drought conditions through 2002; the most severe in more than 100 years.

As I have noted my garden had been designed originally to provide better drainage, hopefully to cope with soil problems in our traditionally-wet late-summer situation. With a general less rigorous summer than in W.A., I had found that a no-watering policy after initial establishment, had worked reasonably well, although it could be argued that better plant development might sometimes have been achieved with a little more artificial encouragement.

Ted Newman and Pat at Dural, had followed along very similar lines but with different basic soil type. In certain cases their early plant development was superior to mine, which seemed to indicate a more appropriate type for those species.

Graham Eastwood at Bateman's Bay, whose growing procedures I have covered in detail in earlier Newsletters, had also adopted, with considerable success, a no-watering policy, after plant establishment

With the severe drought however, we have all been obliged to reconsider our gardening procedures, but all is not lost. You would have heard the story about the girl who, when confronted by the wolf at her door, ended up with a fir coat. In other words we have been forced to attempt to devise procedures which might better cope with minimal watering in such hazardous times while, at the same time, maintaining protection from the problems we have tried to overcome under our more usual weather patterns. If we succeed the answers should represent a positive advancement in our understanding, which may benefit the growing of *Verticordias* Australia wide.

I have referred in previous Newsletters to measures such as planting on small individual gravel mulched mounds. Their surface is allowed to weather, without further disturbance, with the object of achieving a better degree of sterility in the vulnerable plant stem regions. They also provide a degree of plant rigidity. In a more recently planted section of Ted's garden he adopted a variation by creating shallow depressions, or 'moats' during heavy rain, around the small mounds. The intention was to train excess water into the soil away from plant stems, and furthermore, to obviate any scouring of the mounds in heavy downpours. Rather than maintain watering during the recent hot and dry spring he mulched his garden heavily with leaf litter taking care to keep it free of the mounds. In time this has tended to cover the 'moats', so that they are not readily apparent. Recently however, many of his plants were showing drought effect making it apparent that the continued lack of rain was affecting the moisture content in the subsoil

In my own garden I had started to apply similar mulch earlier in the year, and particularly during winter, had maintained some general watering as had seemed appropriate, in order to help the garden along a bit. In early spring I commenced a new planting programme with a little trepidation, because of the continued dry conditions, but after apparent early successes, this has been continued to the present time, even during some very hot periods. Early protection has been provided by the use of two-litre flagons as bell jars, as described in the last Newsletter and gravelled mounds and 'moats' adopted, as used by Ted. Newman. Many of my specimens had been potted on into pure gravel, but contrary to what I had advised to Darren Allen, as noted in the last N/L, the gravel, on these occasions, had collapsed away at planting, bare rooting the specimens. Many also had developed coiling at the base which had to be removed. The only losses were two *V. fragrans*, two *V. staminosa* subspecies *.cylindracea* var. *erecta* and a *V. cooloomia*, all of which were planted in early spring and failed after making no new growth. I feel that this could have been due to being planted at a time unfavourable for the particular species. Two more *V. fragrans* were planted nearer Xmas time and are progressing satisfactorily. Species which have survived and have done exceptionally well are *V.s chrysanthella*, *pennigera*, *fastigiata*, *drummondii*, *galeata*, *minutiflora* and *densiflora* var. *cespitosa*, growth rates exceeding most of my previous efforts,

Watering throughout has been minimal and by watering can. Apart from the early establishment period, after which new growth started, watering frequency has been progressively reduced, so that by mid summer, even under some very hot and dry conditions, weekly applications or less have been adequate..

Another factor in the above results however may, I believe, have had significant influence. In all cases, either through light or heavier soil sections, planting was done using a 200 mm diameter post hole digger. Holes were taken down about 450mm or sometimes a little more, but not into strata which might conceivably retain excess water in wetter periods. The holes were backfilled with a slightly predampened mixture of fine textured loam and gravel, care being taken not to overwet it, so as to obviate slumping. In the case of two *V. galeata*, a greater proportion of gravel to loam was used, as the initial root development of these at propagation was quickly and predominantly vertical, which suggested to me that more rapid drainage may be desirable. Growth rates of these have far exceeded my previous efforts.

Only time and a range of seasonal weather conditions, especially in late summer, will give the answer, but I am very hopeful at the moment of this planting and maintenance procedure. Quite a few considerations come to mind which would seem to support same in combating hazards induced by both extremes of weather, particularly in our eastern Australian climatic zone. At the moment however, perhaps we should wait and evaluate results of the current exercise, at least over the short to intermediate term. Perhaps however it might be appropriate to add that if you think it worthwhile to try to grow a particular 'special' Australian, the extra hour or so taken to plant it, pales into insignificance, compared to all the later attention you would willingly give during it's life.

I am currently trying to build up a battery of stock plants in larger pots, of special species, having been impressed by the quality of cutting material sent me last year, particularly by Merylyn Rossington of Scone, NSW. and Dick Mills of Banjup W.A. I am hopeful that this will provide me with better availability of propagating material than I have been able to obtain from my garden plants in recent years.

I have been influenced, particularly by comments from Dick Mills, to attempt to graft some species, and am currently propagating host plants of *Chamaelaucium uncinatum*. Hopefully then I will be ready when scion material becomes available

DONATIONS

The following donations to our Study Group are gratefully acknowledged:-

Gordon Curtis-----	\$2.00
Merylyn Rossington-----	7.00
Paul Niehoff-----	4.00
Graham Eastwood-----	2.00
S.G.A.P. Victoria-----	7.00
S.G.A.P. NSW-----	16.00

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