

GREVILLEA STUDY GROUP

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# Newsletter N° 39

## From the Leader

This is our final newsletter for 1994, a year which saw the culmination of over 10 years work in the publication of Volume 1 of the Grevillea Book. Boy, am I thankful for that! While the publication of this work marks a point in the ongoing study of this beautiful genus, it is by no means an end point. Much work remains to be done even on species in the Sydney area. In the Appendix to Volume 1 which is an introductory volume, some further results of our studies are published, resulting in the description of several new species and changes to the names of several others. Overall, we have accepted 343 taxa at specific rank (cf. 253 in Don McGillivray's work).

I was particularly interested in and grateful to receive Don McGillivray's article in Newsletter No. 38 (July 1994). I am also aware of the difficulties under which it was written. During 1994, Don suffered some health reversals due to Parkinson's Disease and the effort taken to write the article was at some personal cost. The disease is particularly tragic because Don in his youth was quite an athlete. He was chosen to carry the Olympic torch for a leg of the journey (I believe from Calga to Berowra) for the 1956 Melbourne Olympic Games.

In the next newsletter, I will outline the species concept we have adopted in our work and give some idea in what area further taxonomic studies are needed.

I would like to thank Heather Clarke for her organisation of the Study Group visit to the Hunter Region Botanic Garden. The Grevillea garden was putting on a fine floral display and includes many species not widely appreciated on the East coast but growing here as grafted plants. The event, which raised \$247.50 towards research for the Group, was well supported by the Newcastle members but more from the Sydney area could have been represented, I thought, especially as Merv Hodge and Dave Mason were there.

Next year, the Sydney members will meet regularly, every two months at first, beginning in March. The date and venue will be advised in the next newsletter. The meetings will be formally constructed around a topic for the day, hopefully with a speaker. Additional features will be cutting exchange, plant sales, tips on keying, plant of the day, plant stewarding, horticultural points, followed by a local visit. We hope to have several field trips during the year as well during which we will be studying the species of the New South Wales region. At least one of these is proposed for the Eden area. down the track a way, I hope to organise a field trip to Western Australia.

Best wishes for now, and may you all have a very happy Christmas!

The pattern for future newsletters will be  
March, July and November,  
as this is an even spread over the year.

Deadline for copy for the newsletter will be  
mid February, mid June and mid October.

All articles are always welcome.  
Even if the articles are not used straight  
away, they will be used as space permits.

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# CONSERVATION

## THE ROLE OF THE GREVILLEA STUDY GROUP IN PLANT CONSERVATION

Peter Olde

Leader, Grevillea Study Group Association of Societies for Growing Australian Plants (from Proceedings of Conference on Conservation of Rare or Threatened Plants in Australasia March 1991 167-170)

### METHOD OF OPERATION

The Grevillea Study Group operates on the basis of an annual subscription to a newsletter. This newsletter published three times a year, features articles by members, of which there are currently over 200, including several nurserymen, botanists and horticulture students. Any aspect of the genus *Grevillea* is acceptable for publication, especially information on techniques of propagation and cultivation which have been successfully employed by experimental and experienced growers. In addition, records are maintained of people able to supply cutting material from wild-source, garden-grown plants and plant lists are occasionally published in the newsletter affording the opportunity of obtaining plant material. A seed-bank is maintained from seed collected by members or purchased from commercial suppliers, repackaged and offered for sale.

### ACHIEVEMENTS

One of the major goals of this study group is the collection, propagation, introduction and maintenance of *Grevillea* species, including endangered species, in cultivation. This goal has two functions: the introduction of horticulturally desirable species to wider appreciation and the preservation of rare species with the hopeful aim of re-introduction to the wild. To this end, a collection of potted plants of many species, subspecies, varieties and forms is maintained on behalf of the study group in pots at the wholesale nursery of Mr Ray Brown of Bulli. Larger collections are maintained in the ground by Mr Neil Marriott of Victoria and Mr Merv Hodge of Logan Reserve near Brisbane. Several other major growers also make a significant contribution to the private grower network. The plant material for these collections has been built up over the last thirty years, obtained by enthusiastic horticulturalists, nurserymen, study group members and others, often travelling at their own expense and in their own time.

All but about 40 species or subspecies of *Grevillea* (sensu McGillivray) are or have been cultivated by members of the Study Group. In so saying, I do not wish to imply that those in cultivation are widely cultivated or that endangered species are therefore rendered safe. Quite the reverse; the maintenance of numerous species in cultivation is extremely tenuous. The majority of species are maintained only by a small number of people, motivated by the beauty of their charges but without adequate resources or recognition to support them. In recent years, the potted collection of plants at Bulli has declined markedly with the loss of numerous valuable plants due to lack of funds and time. Large potted collections are characterised by extremely high maintenance requirements and for a large genera like *Grevillea*, such a task is beyond the capacity of an individual. Plants have to be regularly repropagated, potted, watered, fed, weeded and sprayed - more than a full-time job.

The curator of the Grevillea Living Collection, Mr Ray Brown, has recently embarked on an incredible venture to establish the collection in the ground in the Grevillea Park at Bulli. Ray has expended an enormous amount of time and energy on this project and if determination and enthusiasm have anything to do with it, it will succeed.

In addition, the New South Wales Region of SGAP has recently approved funds for a collector to supply wild-source material of the genus *Grevillea* to the Royal Botanic Gardens, Mt Annan with the aim of sharing the propagated material between that institution and interested SGAP member growers.

### THE CURRENT POSITION

Depending on your botanical position, there are between 270-350 species in the genus *Grevillea*, the third largest of the Australian flora. Briggs and Leigh (1988) list 111 species as Rare or Threatened, almost half the known number (sensu McGillivray), a figure which does not include subspecies, geographically distinct forms or other variation. Briggs and Leigh list two extinct *Grevillea* species, *G. divaricata* R.Br. and *G. flexuosa* (Lindl.) Meisn. *Grevillea divaricata* R.Br. a form of *G. glabella* R.Br. A small population of *G. flexuosa* (Lindl.) Meisn. has recently been rediscovered in Western Australia. Only 17 of the rare flora listed in Briggs and Leigh are unknown in cultivation and several of these have only recently been described. Many occur in the remote north west of Australia and in fact may not be threatened at all, so poorly known is this region (24 species are designated as "poorly known").

Numbers of several *Grevillea* species are perilously low. *Grevillea scapigera* A.S. George was thought to have become extinct in the wild in 1988, but a small population of five was recently re-discovered nearby. *Grevillea murex* McGillivray is known from a single population of about 50 plants. *Grevillea maxwellii* McGillivray has only been collected twice and is confined to two very small known populations. The only population of *Grevillea makinsonii* McGillivray occur in a disused gravel pit. The recently discovered *Grevillea* species from Cataby occurs in a badly degraded road verge. The only recent collection of *Grevillea phanerophlebia* Diels are from cultivated plants which thrive at Burrendong Arboretum, New South Wales.

### SOME RECOMMENDATIONS

Where does all this lead us? Government could do a lot worse than look at a system which recognises private growers and their contributions. Through a system of reward and recognition many private individuals could be induced to grow large numbers of endangered plants from all species, thus maintaining the genetic base of endangered species on a wide scale. Perhaps a system of recognition could be instituted, such as the issuance of certificates and medals or, dare I suggest it, a sum of money to help defray expenses for such Designated Growers. Study Group leaders could identify worthy large-scale growers to a Supervisory Conservation Council, who could, for example, require a list of cultivated rare species with wild source validation as part of the participation scheme. Such a system would have the further effect of encouraging others to participate, such that an inexpensive, Australia-wide network of private gardens would contain among their normal garden plants, a bank of endangered species, capable of supplementing the collections of public authorities.

Such Designated Growers could be supplemented by Designated Collectors, licenced and supervised by the issuing

authorities, but capable of remitting seed or wild-source cutting material where required. At this point, I should point out that properly done, the taking of cutting material from wild plants is frequently beneficial, not necessarily harmful to plants as is often suggested. Within reason, perhaps by some form of contractual agreement, Study Group leaders or their designated member could be entrusted in this manner, removing from the concern that their desire to introduce plants to wide appreciation through horticulture is somehow to be discouraged. How often have I stood on the roadside to witness the destruction of rare plants by public road-building or unnecessary road widening/verge clearance?

The view that endangered species need to be confined to conservation reserves or cultivated by public institutions also needs rebutting. The cultivation of all plants including rare and endangered species is a legitimate human aspiration but needs to be handled with the highest needs of the plants' survival in mind. The problem of accredited supply needs to be addressed in this respect. Clearly, we cannot allow everyone to collect wild material but, unless some system of supply is introduced, private collectors acting on their own initiative will illegally raid wild populations to supplement their collections and further their interests. A system of Accredited Propagator-suppliers responsible to a Supervisory Council could theoretically reduce such demands on the wild populations by ensuring that once collected and established in cultivation, all future material becomes available (using published availability listings) but from cultivated plants.

On this point, no single public authority, not even the Australian National Botanic Gardens, can be expected to house or even to become familiar with every member of every genus of Australian plant. However, private gardeners, specialising in select genera or families, can and do command extremely valuable specialist collections and, more importantly, valuable plant material of rare species.

### THE FUTURE

Study Groups and their leaders could clearly play an important part in such a system. However, it would be wrong of me to intimate that all Study Groups under the constitution of the Association of the Society for Growing Australian Plants would be capable of playing a responsible role in such a system. The first problem of a study group leader arises in coming to terms with the subject of the study. It is my fervent hope that having sorted out the problems of taxonomy, natural hybrids, natural variation, garden hybrids and incorrect nomenclature that the *Grevillea* Study Group can go forward positively in this respect. So often these problems can stall the original goal and drive the leader into a confused state of despair. The importance of professional botanical guidance cannot be over-emphasised at this point and I have been more than grateful for the assistance I received from A.S. George and from D.J. McGillivray who recently revised the genus *Grevillea*.

Study groups are plagued by many problems. Many leaders do not show sufficient leadership or willingness to advance their own knowledge on their subject of study. Study Group Leaders, like all amateurs, must resolve the competing demands of other interests, family, a job and other domestic distractions. Writing newsletters, answering correspondence and other duties such as banking interfere with real research time. Poor funding, especially for expeditionary expenses and other productive means of introducing new taxa to cultivation, is a major hindrance. Yet they have a legitimate role and their contribution is not necessarily amateurish. With support at a professional level, they could become an important bridging cog in the machinery set up for the conservation of rare plants.

Study groups could also bridge the gap between the amateur and the professional botanist, an historically close relationship which has virtually disappeared in recent times. Amateur study group members could be induced to make observations and collections on wild species. In *Grevillea*, the collection of seed, seedlings and specimens is still useful and members will hopefully undertake projects in this area. Only last month, specimens of *Grevillea* species with a known population of c. 15 plants were sent to me by an interested party from Western Australia. Amateurs can also make observations on pollinators, map distribution, make notes on plant variation as well as derive pleasure from the living beauty of plants grown in the garden. Professional botanists and ecologists need to spell out what needs to be done and make approaches to amateur bodies such as study groups to obtain maximum benefit from their contribution.

### APPENDIX

Endangered *Grevillea* species — 6 listed by Briggs & Leigh (1988), 2 not now in cultivation.

*G. eriobotrya* - very few populations with low numbers. Extremely difficult from cutting. Unknown in cultivation.

*G. iaspicula* - one large population discovered in recent years. Easily propagated. Fairly widely grown.

*G. makinsonii* - known from one population. Strikes readily, maintained in pots for many years. All plants now lost due to difficulty in establishing in gardens.

*G. phanerophlebia* - known only from cultivated plants. Strikes readily.

*G. pinifolia* - scattered populations in the wild with low numbers. Grown by a few members only.

*G. scapigera* - virtually extinct in the wild but may be a pioneer species. Grown only by one member till recently, propagules held at RBG-Sydney and Perth.

Additional Endangered Species listed by Hopper et al. (1990).

*G. calliantha* - cultivation first drew attention to this species, which was not previously represented in any herbarium.

*G. cirsiifolia* - at least two leaf forms are grown but nowhere as well as at Burrendong Arboretum. Insufficient distribution to be considered well established in cultivation.

*G. dryandroides* - there are at least two forms. Both are in cultivation. Not widely grown to date.

*G. inconspicua* - very few plants made it into cultivation. Even less survived.

*G. infundibularis* - fairly widely cultivated. Grown in NSW and Victoria.

*G. involucrata* - one of the earliest successful Study Group efforts. Collected by members, plants successfully rooted by Rodger Elliot and grafted. My first attempt at grafting was with a cutting of this species, sent to me about 1980. The plant is still in my garden.

*G. prostrata* - grown by a number of members. Pioneer species with a fairly short life in nature. Establishes strongly in roadside verges or after clearing.

*G. saccata* - probably does not deserve this listing. Quite widely cultivated and appreciated by horticulturists.

Species which require listing as Endangered.

*G. sp. aff. synapheae* Cataby, *G. sp. aff. fistulosa* Mt Lindesay, *G. sp. aff. hookeriana* Darkan, *G. acrobotrya* subsp. *uniformis*, *G. bracteosa*, *G. christinae*, *G. flexuosa*, *G. fulgens*, *G. georgeana*, *G. kenneallyi*, *G. lissopleura*, *G. lullfitzii*, *G. manglesoides* subsp. *papillosa*, *G. marriottii*, *G. maxwellii*, *G. minutiflora*, *G. murex*, *G. pimeleoides*, *G. roycei*, *G. stenomera*, *G. tenuiloba*, *G. thelemanniana* subsp. *delta*, *G. thelemanniana* subsp. *fililoba*, *G. thelemanniana* subsp. *hirtella*, *G. thelemanniana* subsp. *thelemanniana*, *G. uncinulata* subsp. *florida*.

# ACTIVITY REPORT

## S.E. Queensland Group

**31 July 1994**

The July meeting was held in Graham Nosworthy's garden at Pullenvale. A good attendance of 39 Study Group members and visitors enjoyed the warm sunshine in spite of a cool sneaky breeze.

As there were at least 8 members with extensive grafting experience present, and others who have done some grafting, the topic for the meeting, the "Incompatibility of Grafted Plants", provoked much discussion.

Most grafters here use *Grevillea robusta* as root stock on most occasions, with some grafts being made on *G. banksii* or *G. "Royal Mantle"*. Species which have proved difficult to graft on to *G. robusta* include *G. quercifolia*, *G. thyrsoides*, *G. dryandroides*, *G. saccata*, *G. candelabroides* and *G. ilicifolia*. In the case of *G. quercifolia*, it was noted that although the graft sometimes took well, it often did not last long. *G. ilicifolia* may graft more successfully on to *G. banksii*. *G. eriostachya* has been successfully grafted on to *G. "Sandra Gordon"*.

It has been found that pH of the medium can be important and that most species wouldn't graft on to *G. robusta* at pH 7.5. One member considered we may be doing the wrong thing if we give the root stock too much fertiliser. If *G. robusta* is growing very vigorously there may be some difficulty with grafts taking, but if the rootstock is not looking so healthy the grafts may take quite well. It was suggested that if callus production takes place within the union too quickly, the scion may be pushed off. However everyone agreed that the rootstock must have a good root system to survive. *G. robusta* rootstocks grown from cuttings did not support grafts as successfully as those grown as seedlings. It has also been noted that grafts often take better on to plants growing in the ground than on to plants in pots.

The point was also made that the time of year can be most important, unless a heated bench is available. For example, for best results in this climate grafts of species from Albany district should be made in September and grafts of species from the Kimberleys in January or February.

Some grafters have had considerable experience with interstock grafts, and there was much discussion on this subject. Species which have proved suitable for use as interstocks are *G. "Royal Mantle"*, *G. "Bronze Rambler"* and *G. "Ruby Red"*. *G. thelemanniana* ssp. *fililoba* was also suggested as interstock. We may need to find suitable interstocks for particular species. One member tried grafting *G. olivacea* with 6 different interstocks but only one was successful. There is obviously considerable scope for more work on this method, which may provide the solution to the successful grafting of some of the more difficult species.

Peter Beal, Queensland Department of Primary Industries, advised the meeting that he and Daryl Joyce, CSIRO, St. Lucia, have received a grant for a 12 months project to study vase life of tropical *Grevillea* species and forms and determining vase life under controlled conditions. The substantial interspecific and intraspecific variation in tropical grevillea in particular suggests that types with superior vase life are likely to be identified from the available genotypes. Local Study Group members were asked to assist in this project by providing any information they have regarding the vase life of specific *Grevilleas*, and by making samples of flowering

stems available to the researchers. Copies of the results of previous investigations by Daryl Joyce on Vase Solutions for *Grevilleas* was distributed to those members interested in this information (see elsewhere in this newsletter).

The usual plant raffle was held before the end of the meeting, and then members enjoyed wandering through Graham's interesting garden and viewing his extensive range of plantings, including many *Grevilleas*.

**25 September 1994**

The September meeting was held at the property of Dave and Eva Mason near Coraki in Northern NSW. Although considerable travelling was involved for most of those attending, 24 members and visitors enjoyed the visit to this interesting *Grevillea* garden.

During a short business session, Merv Hodge reported on his visit to the Study Group Meeting held at the Hunter River Botanic Gardens near Newcastle at the end of August, and a leaflet promoting the new *Grevillea* books by Olde and Marriott was passed around. Peter Beal reported on preliminary results obtained in the project on the vase life of *Grevilleas*, as between 40 and 50 species, forms or hybrids have so far been examined. We look forward to hearing further results next year.

Dave Mason then provided information about the preparation and planting of his garden, before conducting everyone on a tour of inspection. The gardens have been established on an area of about 1.5 acres on a decomposed sandstone ridge, which was originally used for cattle grazing. Plantings began about 5 years ago, with some gardens just 2 years old. The area was ploughed twice before planting, then plants were put in, watered, and well-mulched but given little further attention, and no regular watering or fertilising once in the ground.

It is just 4 years since Dave was taught grafting by Merv Hodge. Since then Dave has made an extensive collection of *Grevilleas*, grafting most on to *G. robusta* rootstock, so that he is now growing 238 separate species, 63 additional forms and subspecies, and about 80 hybrids, giving a total of about 380 *Grevillea* plants. In addition, at least 30 different *Banksia* species are growing well on their own roots.

The most impressive aspect of the gardens was the very healthy condition of all plants, which Dave attributes mainly to the heavy mulching with sawdust from the local sawmill. There is no evidence of any detrimental effect on the plants from breakdown of the sawdust when it is left as a surface layer and not mixed into the soil. To mention just a few of the other more notable features - some *Grevillea* species growing more robustly on their own roots than as grafted plants, for example *G. aurea* and *G. thelemanniana* ssp. *fililoba*, *G. dryandroides* plants which were larger and much healthier than those seen growing naturally in W.A., and one garden containing about 25 *Grevilleas* which Dave has collected himself within a radius of 160 km of Coraki. Dave Mason deserves congratulations for the large amount of effort put into setting up this collection of well-grown *Grevilleas*, including a large proportion of the recognised species, as well as for the work he has done in seeking out the species growing naturally in his area.

Several growers provided a large number of grafted *Grevilleas* for the usual plant raffle, and these members are sincerely thanked for their generous contributions.

# ACTIVITY REPORT

## Report on Hunter Region Botanic Garden Visit and Plant Sale

by Christine Guthrie

The visit to Hunter Region Botanic Garden was well attended, with some members travelling from as far afield as Queensland and Wollongong. Dave Mason and Phil Keane had an excellent range of grafted Grevilleas for sale, and the Gardens had an extensive range of Grevilleas for sale that they had propagated.

With many Grevillea "experts" in attendance, the tour around the Grevillea garden, led by Heather Clarke, was full of excellent tips for growing Grevilleas, and up-to-date information on new species.

The Grevillea garden was looking stunning, with many plants in full flower, despite the extremely dry weather conditions. Most of the garden beds are mounded, with the latest bed being formed from road base, to try to provide conditions for those plants preferring rocky gravel and clay, rather than acidic, sandy soil which occurs naturally at the Gardens.

Some of the older hybrid Grevilleas are being removed to make way for some of the newer and more unusual species. Some of the plants are grafted, but Heather has found that some species do better on their own roots.

Some of the "experts" tips and pearls of wisdom gleaned on the day are as follows:

- G. banyabba* provides good habitat for birds;
- G. infundibularis* grows better in the shade;
- G. beadleana* and *G. steiglitziana* grow better on *G. banksii* rootstock rather than on *G. robusta*;
- G. flexuosa* was growing well on its own roots, some propagators are even using seedlings of this plant as a rootstock - this species was in cultivation in Europe for 20-30 years before it was discovered by the botanists;
- G. rosmarinifolia*, from Burrendong Arboretum, from an original collection by George Althofer near the upper reaches of Lachlan River - this form is completely different to the others, with pale pink flowers, it makes a beautiful, hardy

rockery plant and may be extinct in the wild; *G. batrachioides* has been propagated from 10 plants in the wild - Merv Hodge grafted material in October and the plants were flowering by the following February - there are now more plants in cultivation than there are in the wild;

*G. maxwellii* was grafted in October 1986 and the plants were flowering the following March - it has proved hardy in cultivation, doing well on its own roots in southern latitudes, and grafts better on to *G. "Superb"* or *G. "Robyn Gordon"* than *G. robusta*.

*G. hilliana* (and other rainforest Grevilleas) develop simple foliage before they flower; *G. shiresii* provides good habitat for green tree snakes.

Merv Hodge's tips for growing and fertilising: Poor soil needs supplementary feeding when growing any Grevilleas grafted on to *G. robusta*. Shirley's "Tropic" has a low phosphorus level (<4) - throw a handful around the plant and water straight away; don't leave on the foliage overnight as the dew will burn the foliage. For chlorotic problems, to give colour to the foliage, Merv mixes a level dessertspoon of sulphate of ammonia and a teaspoon of iron chelates in a bucket of water, using half a bucket per plant after first watering the plant well. Merv uses half this strength for plants growing on their own roots, and err on the side of caution unless the plant is on its last legs and this is the last resort!

After the tour of the garden we had afternoon tea and were addressed by Don McNair who talked about the flora of Port Stephens and Peter Olde who talked about new Grevillea species, the new Grevillea Books and life after the Grevillea Books!

I would like to thank Heather for organising this event and helping to raise money for Grevillea research. As well as money raised from plant sales, a raffle was also organised with the Garden generously donating plants as prizes.

## NEWS FROM MEMBERS

Neil Swinton from Noosa Heads, Qld recently did a 5 day trip to Camooweal and Cask to see if he could locate a *Grevillea* he saw last year (which may have been *Grevillea albiflora*). Without positively identifying it, Neil sent cuttings back to Merv Hodge and Edgar Burt to be grafted. The season was apparently very early up there this year and nothing was in flower except *G. wickhamii* ssp. *aprica*. Cuttings were brought back of a very good form of this *Grevillea* as well as *G. juncifolia* (upright) which has flowered in Neil's garden from material sent back last year. Neil will make another trip to locate the elusive *Grevillea* he saw last year.

\* \* \* \* \*

Russell Wait from Piangil, Victoria has over 50 species of *Grevillea* growing in the ground or in pots. The soil in his garden varies from a sand clay loam to sand of various depths with a pH from 7 to 8.5. Russell tries to grow most of his plants without any additional water as it wasn't readily available up till now (it used to come by open channel but now comes by pipe pumped from the Murray River).

Russell has had success growing *G. insignis* and *G. pilulifera* from seed, and limited success with cuttings in a box with bottom heat and automatic mist. The only successful graft has been *G. platypoda* on *G. robusta*, but Russell feels that *G. robusta* will not be a good stock as he would still like to grow his plants without additional watering.

\* \* \* \* \*

In the Journal of Canberra Region SGAP (Vol. 10 No.1, March 1994), Barbara Daly reports on a trip that group made to Goobarragandra, 22km from Tumut, in November 1993. Regular trips are made to this area to protect and propagate the endangered *Grevillea wilkinsonii*, named after the discoverer, Tom Wilkinson, a Tumut naturalist.

One of the aims of this particular trip was to check on *Grevillea* plantings done in three areas in May 1993. These plantings were grown from cuttings taken a year earlier, struck by "SGAP-PERS" present at the time. The group were extremely pleased to find that almost 100% of these plants were surviving, despite flood and travelling stock.



# IN THE WILD



## A Taxonomic Revision of *Grevillea arenaria* and *Grevillea obtusiflora*

(Proteaceae: Grevilleoideae) by Peter M. Olde & Neil R. Marriott, *Telopea* Vol 5(4): 1994, 711-733.

Summary by Neil Marriott

The broad species concept employed by McGillivray (1986, 1993) resulted in the reduction of *Grevillea montana* to a subspecies of *G. arenaria*, and *G. arenaria* var. *canescens* was placed in synonymy under *G. arenaria* subsp. *arenaria*.

Makinson maintained *G. montana* as a species in the NSW Flora (1991) and we support this status following our further research.

*Grevillea arenaria* subsp. *canescens* (R Br.) P. Olde & N. Marriott

Our field studies showed that this taxon is readily distinguished from other populations of *G. arenaria* by the velvety indumentum of its leaf undersurface. It also usually has broader, more rounded oblong leaves and often brighter green, yellow or red flowers. It normally occurs in drier regions including a number of sites on the western slopes of the Divide in NSW.

Further studies of *G. arenaria* resulted in the following new species:

### 1. *Grevillea banyabba* P. Olde & N. Marriott

This lovely *Grevillea* was first brought to our attention by Dave Mason who collected it in the Banyabba Nature Reserve area on the north coast of NSW. It forms an open shrub 1-1.5m high with showy terminal racemes of red, green and yellow flowers. It can be readily separated from *G. arenaria* by the parallel alignment of its buds (when young) with the floral rachis, its longer peduncles and several other features.

*G. banyabba* is confined to a small area around the Banyabba Nature Reserve - totally burnt out in the recent devastating bushfires. Hopefully it will regenerate successfully, however it must be rated as endangered. Fortunately plants have been introduced into cultivation where it is proving to be a most hardy and free-flowering species.

### 2. *Grevillea masonii* P. Olde & N. Marriott

Named in honour of one of the Study Groups most conscientious and active members, Dave Mason of Coraki, who hunted down this rare and endangered species for us. Dave obviously gained his love of Australia's flora from his father Reg, who has been an enthusiastic collector particularly of *Eremophilus* for many years.

*Grevillea masonii* is a free-flowering, lignotuberous small shrub 30-50cm high with a markedly saccate perianth and numerous other features that readily separate it from *G. arenaria*.

Confined to degraded roadsides and grazed private property in several small areas near Grafton in northern NSW, *G. masonii* is rated as Endangered. However cuttings strike readily and plants have been introduced into cultivation through the *Grevillea* Study Group. In the garden it makes a delightful small plant which flowers virtually non-stop year round with masses of red and green flowers.

### 3. *Grevillea quadricauda* P. Olde & N. Marriott

Coming from the Helidon Hills - Murphy's Creek area of S.E. Qld and from near Whiporie in northern NSW, this dense shrub to 2m has slender weeping branchlets and bright purple-pink new growth. It differs from *G. arenaria* in its leaves that have a markedly open indumentum on the lower surface, its fruits that are oblique to horizontal to the pedicel with persistent style strongly inflected, and a number of other features. It differs from the closely related *G. masonii* in its larger non-lignotuberous habit and its non-saccate perianth as well as several other features.

*G. quadricauda* gains its name from the four tail-like appendages on the perianth limb. It usually grows along creeks in Eucalypt woodland and as a result will probably require a well-drained but moist site in the garden. Cuttings strike readily and the species is being introduced into cultivation through the Study Group.

### 4. *Grevillea rhizomatosa* P. Olde & N. Marriott

This low bushy shrub 0.3-1m high has attractive obovate leaves and erect, few-flowered racemes of green and dull pink flowers. Plants do not set seed, reproducing apparently entirely by root-suckers, hence the species name (bearing a rhizome).

The species is confined to several areas e.g. Mulligans Hut, Waratah trig etc. in Gibraltar Range N.P. in northern NSW. It is readily distinguished by its root-suckering habit and its almost rounded leaves.

Dave Mason has established several small plants in cultivation, and these will progressively become available through the Study Group. Material should not be collected from the wild as it too appears to be a rather localised species, although fortunately occurring within the National Park.

### 5. *Grevillea obtusiflora* R.Br.

McGillivray recognised two new subspecies in this species (ssp. *kedumbensis* and ssp. *granulifera*). However our studies showed that these two taxa are morphologically distinct from each other and occur in several geographically disjunct, self-reproducing populations. We have also found that they are just as closely related to other similar species such as *G. mucronulata* as they are to *G. obtusiflora*. As a result we believe they are more appropriately treated as species.

*G. obtusiflora* is a dwarf, root-suckering shrub, 0.2-0.3m high, confined to several small areas in the Clandulla State Forest near Kandos, NSW.

### 6. *Grevillea kedumbensis* (McGillivray) P. Olde & N. Marriott

This lignotuberous shrub to 1m is confined to an area between the Kedumba Valley and Scotts Main Range in the Central Tablelands, NSW.

It differs markedly from *G. obtusiflora* in its lignotuberous habit and its ability to set seed. It also has more flowers per inflorescence, a smaller perianth and numerous other characters.

## (Taxonomic review of *G. arenaria* & *G. obtusiflora* (cont))

### 7. *Grevillea granulifera* (McGillivray) P.Olde & N.Marriott

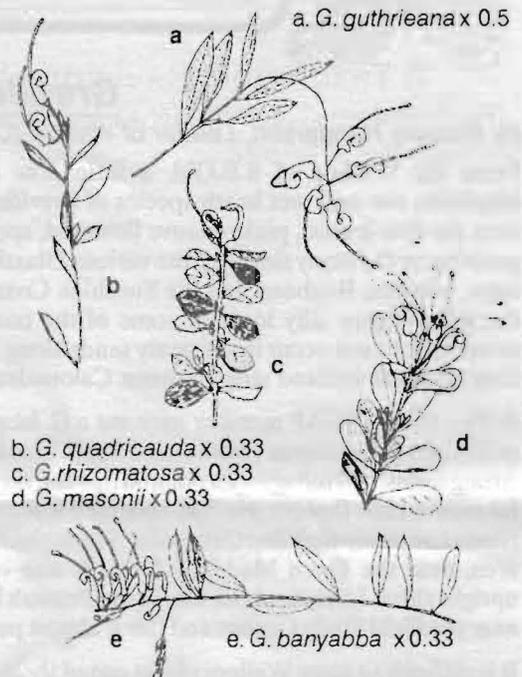
This variable shrub grows from 1-4.5m high and is restricted to small isolated populations on ridge tops and hillsides in open forest on the North Coast and Northern Tablelands of NSW. There are at least 2 distinct forms which require further study.

*G. granulifera* can be separated from *G. obtusiflora* by its robust habit, its finely granular upper leaf surface, its decurved to deflexed confluences which have up to 12-16 flowers and numerous other characters.

### 8. *Grevillea guthrieana* P.Olde & N.Marriott

Named in honour of our tireless Secretary-Treasurer and Editor of our Study Group Newsletter, Christine Guthrie. Christine has held the Study Group together for many years while Peter and I have been preoccupied with the *Grevillea* Book.

It is a spreading shrub normally growing 1.5-2m high with pendulous branchlets. It can be separated from its closest relative *G. granulifera* by its villous branchlets and leaf undersurface, its coarsely granular leaf upper surface, and numerous other floral characters. It grows along creek lines in moist Eucalypt forest and is at present only known from 2 locations (near Booral and W. edge of Carrai Plateau) on the north coast of NSW. As a result it is an Endangered species, and is being introduced into cultivation by the Study Group.



## COMMERCIAL APPLICATIONS

### Vase Solutions for Grevilleas

by Daryl Joyce

CSIRO Division of Horticulture, 306 Carmody Rd., St. Lucia Queensland 4067.

The question as to what is the best vase solution for grevilleas has not been clearly resolved.

Some of the earliest published work was by Sandra Lacey (1983). She found that a solution of citric acid (320 ppm) and germicide, Physan-20 (an ammonium-based disinfectant: 200 ppm), roughly doubled the vase life of *Grevillea* "*Sandra Gordon*" harvested at each of 3 stages of inflorescence development (viz. approximately 50% of perianths split, approximately 25% of styles looped, and approximately 50% of the styles reflexed). Addition of sugar (2 to 4% w/v) to the base citric acid plus Physan solution enhanced the floret development (e.g. reflexing of the style).

John Faragher (1989) reported personal communications with Sandra Lacey and Greg Lamont, saying that the vase solution recorded above benefits *G. "Robyn Gordon"* and *G. banksii*. This vase solution did not, however, benefit *G. "Misty Pink"* or *G. "Coochin Hills"*.

More recently, Surachat Vuthapanich (1992) undertook an extensive study on the postharvest characteristics of *G. "Majestic"*. He concluded that chlorine-based germicides used singly had no beneficial effect on vase life, and were phytotoxic at concentrations above 50 ppm (DICA, stabilised pool chlorine) to 100 ppm (sodium hypochlorite) available chlorine. Similarly, citric acid used alone at concentrations up to 840 ppm had no beneficial effect on the vase life of *G. "Majestic"*. Vase life was somewhat improved by sugar, in the presence of 50 ppm available chlorine, at concentrations up to 4% w/v. However, 3% w/v was recommended for use because of unsightly nectar secretion at 4% w/v.

From the information published on grevilleas to date it is possible to predict a vase solution of common constituents which should be generally beneficial. Such a solution could contain a chlorine-based germicide (say 25 to 50 ppm available chlorine, which is available as household bleach) and a carbohydrate supply (say 2 to 3% w/v sucrose, which is available as white refined cane sugar). Such a solution is probably useful for most native Australian flowers, although for some the lower chlorine concentration (25 ppm available chlorine) should be used and sugar concentrations should be further reduced to 0.5 to 1.0% w/v to help avoid phytotoxicity (osmotic injury).

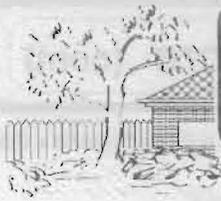
Apart from use of a convenient vase solution, thoroughly cleaning (disinfecting) vases before use, recutting (ca. 2 cm) flower stems under water before they are placed into the vase, keeping the vase in a cool place and away from ripening fruit and cigarette smoke, and regularly replacing the vase solution and recutting the stems at these times will help maximise the life of your floral display.

#### References:

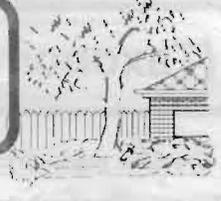
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Lacey, S.A. (1983) Vase life of *Grevillea "Sandra Gordon"*, pp. 111-3. In: *Production and Marketing of Australian Wildflowers for Export, and Production and Marketing of Wildflowers*, Proceedings. Univ. Western Australia and W.A. Dept. Agric. Perth.

Vuthapanich, S. (1992) Characteristics of harvested *Grevillea* cv. *Majestic* inflorescences and responses to postharvest treatments. Masters thesis. Department of Agriculture, The University of Queensland.



# IN THE GARDEN



## *Grevillea leiophylla* in the Wallum

By Barbara Henderson, Leader of Wallum (Coastal Heathland) Study Group, Samsonvale, Q.

From the Wallum of S.E. Qld, a little note on *Grevillea leiophylla*, our only wet heath species of *Grevillea*. I had only seen the fine-leaved, pinky-mauve flowered, sprawling form, growing on the stony slopes of the various Glasshouse Mountains, between Brisbane and the Sunshine Coast and also in the yellowy-grey silty loam of some of the coastal Wallum areas. It does not occur in the peaty sands along the Sunshine Coast coastal wetland strip between Caloundra and Noosa.

A Pine Rivers SGAP member gave me a *G. leiophylla* he had grafted on to *G. robusta* (what a contrast!). This form had very strong stems, stiff foliage with pointed tips and the usual beautiful mauve claw flowers. He had collected it from an area between Landsborough and Caloundra. I have since seen it in this area, near the Ewen Maddock Dam. It also occurs in this upright shrub form, to about 1m, in the Beewah Forestry area near the Field Study Centre, and this is almost peaty-sand.

It is difficult to grow Wallum plants out of their usual coastal peaty-sand wetlands. Failures could be due to a number of

reasons: wrong habitat and growing conditions (peaty low-nutrient soils with a high water table), fungal and other diseases, insufficient length of daytime sun, or water quantity and quality. We have a long way to go to get successful cultivation of Wallum (both wet and dry) plants.

My own garden has been modified with the addition of sand, gravel and some sawdust. A lot of the original shaley loam was removed, to about 30cm depth. Creek gravel was used as a base, with sawdust (untreated hardwood) used to simulate a peat layer, then more light gravel with sand. The plants, in a clod about 20cm square, were then placed in the depression, the top of the clod being level with the surrounding soil. Plants were kept close to one another - they grow that way naturally - and filled around with more gravel and sand, then watered in. This method has been most successful.

As well as our experiments and investigations, we are enjoying our Wallum "work", as it is a beautiful plant community, unfortunately not well enough appreciated, and very much at risk.

## Some Help Needed

by Norma Duff, Lower Barrington, Tasmania

I'm hoping someone in the *Grevillea* Study Group may be able to help us with a problem.

Some of our *Grevilleas* are dying, or looking like death warmed over. Only the finer leaved forms are affected and not all of them. They appear to lose their green colour and go a gradual brown before dying. There does not appear to be any insects on the foliage. The bushes are in different parts of the garden and have come from different sources.

Two rather large shrubs at the back of the house are quite badly affected, but have not died. We would really like to be able to save them, as they are in a wind break. They would be 10 years old. Another one is really healthy. The affected ones do not flower now.

*Grevillea confertifolia* (prostrate) is in a new side garden and is looking really sick. In another bed *G. lanigera* is looking sick also. I think *G. 'Crosbie Morrison'* was one I removed a few months ago, and *G. 'Poorinda Queen'* will have to go as soon as we get a few fine days to get into the garden, as it looks terrible (9 years old).

We haven't had any other types of plants with this problem; only *Grevillea*.

We have fairly heavy frosts, about 8 each winter (-2°C), and an average of 44.5 inches of rain per year. We are on a north easterly slope with a fair amount of south westerly wind. The land has fairly rich chocolate soil and was farmland that hadn't been cropped for perhaps 30 years before we moved here 12 years ago and started to garden. We had sheep till 2 years ago on some of it. Only a very small amount of "Dynamic Lifter" would have been used to keep the plants going over the years.

We have 4 acres of land which is in the process of all being planted, so the plants are not all crowded together closely. We still have some room for more *Grevilleas* in our plantings, especially some smaller ones, but hesitate to buy more before we overcome this problem in case it decides to spread to more types.

We have a 7 year old *G. johnsonii* 'tree' which is beautiful! I have struck cuttings (although they took 8 months) and grown some from seed. How long do they take to flower from seed?

I do hope someone can throw some light on the dying matter.

**Editor's Note:** You could perhaps try "Foli-R-Phos" mentioned in Neil Marriott's article elsewhere in a previous newsletter. Some *grevilleas* are well and truly past their prime at 10 years, and it may be that it is time to replace them with some new plants.

## NEWS FROM MEMBERS (continued)

**Merv Holland** from Lyttelton, New Zealand reports that winter there was so wet and soggy you would not expect *Grevilleas* to cope. Frosts that were record breakers damaged many plants but once again *Grevilleas* came through untouched.

Merv would also like more information about using "Oasis" for cuttings as he has never heard of using it that way. If anyone can help, please send information to the editor.

**Peter Harradence** from Churchill, Victoria is trialling several tropical hybrids in the cold, wet, clay soils of the Latrobe Valley. Already *Grevillea* "Pink Surprise", *G. banksii* "Prostrate Red" and *G. "Moonlight"* have survived frost and even light snow. Several more small plants have yet to be planted out.

\* \* \* \* \*

## IN THE GARDEN (continued)

### Grevillea Honey

by Judith Thamm, Two Wells, S.A.

We have been working on a project here for some years, making our property honey productive so that my husband, Ian has to move his 150+ hives as little as possible. To achieve this, we have been planting Grevilleas madly and now have dense plantations in our experimental area.

We did apply for a grant to show the value of honey production from Grevilleas. However, the Honey Board was not interested in us. All grants went to places that are either Government Departments or Government funded. The main reason they gave us for rejection was that the Grevilleas would have to be planted by hand ...

Despite that, Leabrook Farm like our Grevillea Honey and will take what we produce. The flavour is a little like Banksia Honey, but not as strong. The colour is quite dark.

We are having weird weather (what's new?), 3 days fine, 3 days wet and not quite long enough fine to extract any honey. Bees need 2 days house cleaning after rain, and if the 3rd day is wind-free, extracting can begin, otherwise a start is made on the 4th day. This system does not place stress on the bees, only on the bee-keeper.

We keep around 100 hives here all the time now with 1.5 to 2 acres in trees and grevilleas. We have a definite system with the bees. I don't touch Ian's bees and he doesn't touch my computer.

(Ian originally got bees to help pollinate the Grevilleas as he is a keen hybridist. We have a number of tested Grevilleas ready for release. We like to test plants for 7 years before rushing them into the market. The plants are variations of colour and varieties that will also help in honey production. Other forms etc are bonuses.

Of course Grevilleas alone are not all that is needed for honey production. We have to have a selection of gums to give nectar year round, plus plants for pollen and (despised) pines for propolis.

We've cured the fence hoppers who thought our place a perfect toilet stop. A few hives of bees encourage them to go elsewhere. Before that I had to go out blithely and ask if they needed any help...?

### Fosject 200

by Norm McCarthy, Toowoomba, Q.

This fungicide is apparently the equivalent of "FOLI-O-PHOS" as mentioned in Newsletter No. 36 by Neil Marriott of Victoria, where he suggests it as a control for root rot (including Cinnamon Fungus). The manufacturer claims that "Fosject 200" has curative and protectant properties, and is not poisonous as it has a biological action. It is recommended that "Fosject 200" be applied at a rate of 5 mls per litre, at 4-6 weekly intervals when conditions favour disease development.

The cost of "Fosject 200" in Queensland (from Growforce in Toowoomba) is: \$26.26 for 5 litres, or \$75.36 for 25 litres. It

would obviously be more economical to buy in 25 litre quantities and share.

Compare this with Victorian prices where "FOLI-O-PHOS" can be purchased at \$55 for 25 litres. Perhaps this is a good argument for establishing a link with a Victorian distributor.

The use and recommendation by Neil Marriott of this apparent "magic elixir" makes the control of fungal problems in ailing Grevilleas a reality and as such would appear to be a desirable garden aid.

## NEWS FROM MEMBERS (continued)

### Grevillea Sorbet

Dick Dietsch of Sans Souci, N.S.W. sent in an interesting recipe using *Grevillea pteridifolia* found in "Stephanie's Australia, Travelling and Tasting" published by Allen and Unwin, 1991.

#### Stephanie's Grevillea pteridifolia Sorbet

Gather 20 blossoms early in the morning when the flower bracts are full of nectar and the entire flower smells sweetly and is sticky. (The best month is August.) Remove the pistils (the coloured part of the flower) and tie them loosely in a muslin bag. Place the stalk with the flower bracts and the muslin parcel in a large glass or ceramic bowl and pour 1 litre boiling water over, ensuring the flower stalks and the muslin bag are covered.

After 2 hours remove the bag, pressing firmly to extract as much liquid as possible. Leave to cool. Strain and taste. If you have a saccharometer the liquid may measure around

14-16° Beaume. If so, add a few drops of lemon juice to highlight the flavour and proceed to churn the sorbet. If the reading is too low (below 13°) dissolve a little sugar or a spoonful of honey in a few drops of water, and add to the mixture and then re-test. If too high (over 16°) add more cold water and re-test. Start with 1/4 cup.

If you have no saccharometer you will have to rely on taste. Remember lemon juice enhances the flavour, but should be used very sparingly. If the sorbet is too sweet, it will be quite soft. If it is not sweet enough it will set like ice.

# PROPAGATION

## The Seed Bank

by Judy Smith

I have had a tremendous response for free seed as well as seed for sale. There are only a few donated seeds left, so I would like to put out a plea to members for more donations of Grevillea seed.

Free seed is available from the seed bank by sending a stamped, self-addressed envelope to Judy Smith, 15 Cromdale Street, Mortdale 2223. Seed for sale is \$1.50 per packet plus a self-addressed envelope with a 70 cent stamp sent to the above address.

### FREE SEED LIST

<i>G. banksii alba</i>	<i>G. banksii red</i>
<i>G. banksii (tree form)</i>	<i>G. barklyana</i>
<i>G. dryandri (red &amp; pink)</i>	<i>G. endlicherana</i>
<i>G. juniperana red</i>	<i>G. longistyla</i>
<i>G. pteridifolia</i>	
<i>G. scortechinii ssp sarmentosa</i>	<i>G. speciosa</i>
<i>G. venusta</i>	<i>G. victoriae</i>

### Hybrid Seed

<i>G. "Caloundra Gem"</i>	<i>G. "Copper Rocket"</i>
<i>G. "Majestic"</i>	<i>G. "Moonlight"</i>
<i>G. "Orange Marmalade"</i>	<i>G. "Splendour"</i>

### SEED FOR SALE

<i>G. agrifolia</i>	<i>G. candelabroides</i>
<i>G. decora</i>	<i>G. didymobotrya</i>
<i>G. drummondii</i>	<i>G. dryandri</i>
<i>G. eriobotrya</i>	<i>G. eriostachya</i>
<i>G. formosa (Mt Brockman)</i>	<i>G. glauca</i>
<i>G. huegelii</i>	<i>G. integrifolia</i>
<i>G. juncifolia</i>	<i>G. leucoptera</i>
<i>G. monticola</i>	<i>G. paradoxa</i>
<i>G. polybotrya</i>	<i>G. pritzelii</i>
<i>G. pulchella</i>	<i>G. pyramidalis</i>
<i>G. refracta</i>	<i>G. stenobotrya</i>
<i>G. stricta</i>	<i>G. teretifolia</i>
<i>G. wilsonii</i>	

## Grevilleas in Canberra

by Christine Guthrie

On a recent trip to Parliament House in Canberra, I was pleasantly surprised by their choice of plants for landscaping. After stepping out of the doors on the roof top, I was greeted with a familiar sickly sweet smell which filled the air. Further investigation revealed an extensive neatly trimmed hedge of *Grevillea curviloba* ssp. *incurva* in full flower. It looked superb!

I was also interested to see that the rare plant, *G. wilsonii* has been planted quite widely throughout the Australian National Botanic Gardens. Most plants looked healthy and were in full flower, with the delicate mauve toothbrush flowers looking very attractive. It was good to see this plant being so actively conserved through cultivation.

## FINANCIAL REPORT

### NOVEMBER 1994

Income		Expenditure	
Subscriptions	\$355.00	Newsletter Expenses	200.00
Seeds	34.00	Postage	113.15
Donations	25.00	Envelopes	14.95
Plants	197.50	Labels	29.75
Raffle & Proceeds of BBQ	50.00	Research Expenses	100.00
Interest	2.05	Bank Costs	0.33
	<u>\$663.55</u>		<u>\$458.18</u>
		Balance on Hand 21.11.94	<u>\$828.47</u>

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**Cuttings Exchange:** Dave Mason, Box 94, Coraki, 2471. (066) 83 2583

\* \* \* \* \* 1994

If a cross appears in the box, your subscription of \$5.00 is due.  
Please send to the Treasurer, Christine Guthrie, 32 Blanche Street, Oatley 2223.  
Please make all cheques payable to the Grevillea Study Group.