Association of Societies for Growing Australian Plants



Newsletter No. 72 – October 2005

GSG Victoria Chapter

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VIC/NSW Programme 2005

Grevillea Study Group Combined Vic/NSW Grevillea Crawl to SE South Australia 27 October – 1 November

Thursday, 27 October

Subject: Tea at Neil and Wendy's (BYOE) and

discussions on new Grevilleas etc after tea.

VENUE: meet at Neil and Wendy's in Black

Range, Stawell 693 Panrock Reservoir Rd for afternoon inspections of Grevillea Collection and then out to Steve Smarts grafting nursery (next to Stawell airport).

TIME: Midday

Friday, 28 October

Time: 8am – depart for Bordertown

11.30am (midday SA time), arrive at Bordertown (roadhouses RHS (North) of Highway at western end of town) and meet John Edmonds-Wilson (Ph: 08 85 711 075) and John Barrie, SA members and leaders of trip (and other SA members) –

Wirrega – *G. angustiloba* ssp *wirregaensis*, southern edge of Ngarkat Cons Park – *G. lavandulacea* and *G. angustifolia* plus Phebaliums galore etc.

Afternoon – Aberdour CP, large variety of leaf forms of G. ilicifolia, G. angustiloba, G. lavandulacea.

Mount Monster CP on the way up to Keith and then on to Coonalpyn.

Evening – Bayree, Coonalpyn – home of John Edmonds-Wilson for BBQ tea/slides/discussions/plant, cutting swap (BYO everything). Camp at John's.

('Bayree' is 4km east of Coonalpyn on Venning Rd which is just near the 80 km sign on the southern side of Coonalpyn. Bayree is on the left hand side of Venning Rd 200 metres before the end of the bitumen.)

Saturday, 29 October

AM – Spend morning looking at John's garden and into John and Julie Barrie's 'Daisy Patch' garden/nursery **PM** – afternoon will be spent looking at Coonalpyn area seeing *Boronia inornata*, *G. lavandulacea* and *ilicifolia* etc. Stay at Bayree again. Tea at Coonalpyn pub?

VIC/NSW Programme 2005 (continued)

Sunday, 30 October

AM – Head to Brenton Tucker's 'Carawatha' nursery/gardens via the back roads including excellent flora roads Kangaroo Flat Road and Crosby Road, 'Pangarinda Native Plant Arboretum' at Wellington before heading up the road to 'Carawatha'.

PM – From Carawatha head to Werner's block at Ponde near Mannum. Tour round Jenny and Werner's Grevillea collection. Evening campout on block, or caravan park, motels at Mannum. Tea at pub in Mannum or BBQ at block.

Monday, 31 October

AM – Werner to lead to Monarto Scrub to see G. lavandulacea, G. ilicifolia, G. huegelii etc.

PM – Travel back towards Victoria, stopping at top of Ngarkat CP – *G. pterosperma*, *G. lavandulacea* suckering and white-flowered forms, *G. ilicifolia* etc. Camp in bush.

Tuesday, 1 November

Further inspection of Ngarkat CP before heading back to Pinnaroo – *G. huegelii* and then depart for home.

GSG NSW Programme 2005

For more details contact Peter Olde 02 4659 6598

Sunday, 27 November

Subject: Christmas Party and Garden visit.

Venue: The Oldes, 140 Russell Lane Oakdale.

PHONE: 4659 6598

TIME: 9.30am for 10.00am start.

GSG QLD Programme 2005

Sunday, 30 October

VENUE: Home of John & Pat Morse,

10 Smiths Rd, Wights Mountain, 4520

PHONE: (07) 3289 1431

Subject: Survey of grevilleas still in members'

gardens in S.E. Qld.

Morning Tea at 9.30am – meetings commence at 10am.

For further information and directions contact Merv.

Hodge, PO Box 381, Waterford, Qld. 4133.

Phone/fax: (07) 5546 3322or

Email: mervhodge@quicknet.com.au

Greetings all. This is our last newsletter of the year. Thanks to those who contributed a suggestion for the name of the newsletter. I am looking for a name that conveys both Grevillea and the notion of a newsletter, such as Grevnews or some such. I love the name 'Buds and Bracts' but another group has this name and there is no hint that it could be a newsletter. Perhaps 'Epistil' has some merit. Names like 'Speciosa' and 'Caleyi' have a nice ring but are not quite what I seek. Thanks to those with suggestions. Keep em coming.

Recently Sydney-siders were shocked to learn that Ray Brown had closed the Illawarra Grevillea Park at Bulli. There were headlines in the local 'Mercury' about the closure and the loss of 18 years voluntary work by himself and other volunteers who worked at the Park every Monday. RTA had apparently planned a by-pass road directly through the park and Ray had come to learn of their plans by some serendipitous enquiry. The Grevillea Park is actually a piece of land leased from Wollongong Council by the Illawarra Grevillea Park Society. What a tragedy. Ray took legal advice and found he had no grounds for a fight. So he fronted the local head of the RTA and there was told that they had displayed their plans years ago and that the road would only affect approximately 10% of the park - the entire front section and one side on which the old church now stood. Ray decided that although this was a savage blow, he could live with the new arrangement if new land was made available. And so the Illawarra Grevillea Park re-opened as quickly as it closed. We hope that Ray can make the new park as attractive and stunning as the old.

The New South Wales Chapter has fallen on hard times. Less than 10 members came to our meeting arranged at Alex and Dorothy Robinson. They had gone to a great deal of trouble to host the meeting and I was greatly embarrassed at the lack of support. Accordingly I have decided that monthly meetings are not an option any more and that a new format will be arranged for the future. I especially commend the loyal support of the few regular attendees but it is apparent that people do not have the time or inclination these days to attend this kind of event regularly.

The next newsletter 73 will be edited by the Victorian Chapter and the following issue Newsletter 74 will be the responsibility of the Queensland Chapter. I am very grateful for their support.

Stocks of Volume 1 of the Grevillea Book have now run out at the warehouse. If you are considering a purchase of a set of books, do not delay. Current stocks are all that will be available at reduced prices. There has been a big buy-up (100 copies) by a Victorian re-seller who plans to return this book to its original RRP of \$65 each. Almost 6000 sets of the book have been sold, representing almost 18000 books. Incidentally a new book on Hakeas has just been released by Ivan Holliday. All species are treated and the book retails for less than \$30. The photos are excellent and the book will be a useful addition to your library. Unfortunately I cannot review it as my copy, which I purchased at the Royal Botanic Gardens Bookshop, was stolen the very same day from my car. While working at night at the Mitchell Library, where I am currently researching the botanical collector, George Maxwell, some low-life gained entry to the vehicle, ratted through the ash-try and glove box, rejecting my portable CD player in the process but stealing a bag of three new books. I guess they had some cash value at second-hand bookshops.

During the last quarter, the Grevillea Study Group made a donation of The Waratah Book, Ed. 2, by Paul Nixon to the Royal Botanic Gardens Library at a cost to the Study Group of \$10 which was paid direct to the author. This excellent book has much to recommend it over the first edition and if you want a copy please contact me and I will arrange.

Neil and I are preparing a new volume on the Grevillea Hybrids. If you can assist with some of the missing hybrids listed elsewhere in this newsletter, we would greatly appreciate it. Please contact us by email or snail mail, or simply phone 02 4659 6598 and leave a message on 101.

Contact details on the back page.

New species in the *Grevillea linearifolia* complex.

Twelve new taxa have been recognised and described by Bob Makinson from the *Grevillea linearifolia* complex sensu McGillivray in the Flora of Australia, published in 2000.

History: This complex was not resolved by Don McGillivray in his 1993 revision though a large number of informal elements were delimited. Olde Marriott (1994-1995),conflorescence, floral and leaf characters, some provided by Don McGillivray in his informal treatment, continued recognition of some previously rejected taxa including G alpivaga Gand., G. halmaturina Tate, G. leiophylla F. Muell. ex Benth. G. micrantha Meisner, G. neurophylla Gand., G. parviflora R. Br. and G. patulifolia Gand., all of which had been sunk in synonymy or overlooked in the McGillivray treatment. Our treatment also gave some informal recognition to a number of taxa that were treated as having an affinity to their closest relative. G. linearifolia remained an unresolved complex.

Most of these formal and informal elements were taken up in the Flora of Australia and treated as new species or subspecies. Altogether, 20 taxa are now accepted from what was, briefly at any rate, a single taxon, Grevillea linearifolia. In addition, a number of elements remain unresolved, some of which may receive formal recognition one day. The complex is very difficult and many of the species recognised are very narrowly defined and somewhat plastic. The geographic distributions are also somewhat unexpected for some of the species described.

The new taxa recognised and described in the Flora are *Grevillea gariwerdensis*, *G. humilis* (with three subspecies, subsp. humilis, subsp. lucens, subsp. maritima) *G. imberbis*, *G. reptans*, *G. virgata*, *G. viridiflava*, *G. wiradjuri*; new subspecies are recognised in the following previously accepted species: *G. halmaturina* (subsp. laevis), *G. neurophylla* (subsp. fluviatilis), *G. parviflora* (subsp. supplicans).

Species with regular conflorescences

1. Grevillea gariwerdensis Makinson.

A low-growing (0.3-1m), suckering plant from Victoria that is distributed mostly in the Grampians (now Gariwerd National Park). This species has pale pink delicate flowers and makes a beautiful rockery plant. It is distinguished by its leaves 1-3mm wide with a mostly smooth upper surface (though usually faintly granular on the intramarginal veins), pedunculate umbelloid conflorescences and has flowers with a scanty short beard on the inner perianth surface. Pistil length is 7-8.5mm long; ovarian stipe 0.4-0.8mm long. Makinson (2000) states (P. 240) that 'G. gariwerdensis is narrowly distinct from G. micrantha, which has the upper leaf surface often densely granulose and lacks a beard on the inner surface of the perianth or at most has a few hairs surmounting a cushion-like pulvinus opposite the ovary. Grevillea gariwerdensis usually has a more conspicuous (albeit still scanty and shorthaired) beard; it also has coarser, broader leaves and a tendency to pedunculate or pseudo-pedunculate umbelloid conflorescences (sometimes some sessile). Grevillea gariwerdensis is very similar indeed to G. parviflora, a N.S.W. endemic, which has white flowers with a profuse beard of longer hairs on the inner surface of the perianth.' Olde & Marriott treated G. gariwerdensis as Grevillea sp. aff. micrantha (Vol 3 : 25). Don McGillivray treated it as Form 'i ' of G. linearifolia.

2. Grevillea micrantha Meisner.

This delicate species which grows 0.3-0.6m high also hails from Victoria where it has a scattered discontinuous distribution between Portland and Creswick, Maldon, near Ballan and in the Gariwerd NP. Many of the recorded localities of this species no longer support living populations. It makes an ideal border or rockery plant in the garden where it suckers lightly. It occurs naturally in woodland, often in moist sites. Grevillea micrantha is distinguished principally by the glabrous surface of the inner perianth. It also has pedunculate umbelloid conflorescences and narrow scabrid leaves. Most populations have leaves 0.6-1mm wide. Pistils are 5-6.5mm long; ovarian stipe is 0.3-0.5mm long. The Portland population has leaves sometimes a little wider (to 1.5mm). Flowers are white to pale pink. Don McGillivray synonymised G. micrantha under Form 'j' of G. linearifolia.

- 3a. *Grevillea neurophylla* Gandoger subsp. *neurophylla*
- 3b. Grevillea neurophylla subsp. fluviatilis
- 4. Grevillea wiradjuri Makinson
- 5. Grevillea alpivaga Gandoger
- 6. Grevillea imberbis Makinson
- 7. Grevillea halmaturina Tate subsp. halmaturina
- 7b. *Grevillea halmaturina* subsp. *laevis* Makinson
- 8. Grevillea patulifolia Gandoger
- 9. Grevillea parviflora R. Br.

Key to subspecies

- 1. Most branches ascending to erect; branchlets weakly secund or not secund; leaves mostly 0.8-1.1 mm wide; ovarian stipe 1–1.2mm long subsp. *parviflora*
- 1* Most branches spreading; branchlets usually strongly secund; leaves 0.6–2(-3)mm wide; stipe of ovary 0.5–0.6mm long

9a. subsp. parviflora

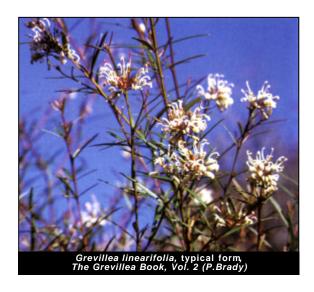
Robert Brown first described this species from a specimen collected between Prospect and the Nepean River. There have been no recent collections from this area. Its current distribution is scattered between Bankstown area and Pheasants Nest area. There is also a disjunct population in an area bounded from south of Putty to near Cessnock and Cooranbong. Characters that distinguish this taxon are its narrow straight-sided linear leaves (usually 0.8-1mm wide), its pedunculate, secund conflorescences, flowers with a profuse beard. Mostly this subspecies is a rootsuckering species 0.15-0.4m high. However one population at Wedderburn, discovered by Ray Brown, was single-stemmed and plants exceeded 1.8m in height. At Voyager Point, a small population of plants discovered by Robert Miller (Prostanthera SG leader) has prostrate to weakly spreading branchlets. Don McGillivray treated both elements of this species as form 'd', the narrow-leaved Sydney form of G. linearifolia.

9b. subsp. supplicans Makinson

This very distinctive taxon has unique (for the group) bicolor flowers in that the styles are reddish-cream ageing deeper brownish red. Its distribution is confined to the Maroota-Berillee area of north-west Sydney. It grows to c. 0.1–0.5m high on sandstone-drived soils. Leaves of this taxon are sometimes slightly wider than subsp. *parviflora* but are still parallel-sided and the leaves relatively straight. It is distinguished by having a short ovarian stipe (0.5–0.6mm long). I personally think that this taxon would be better recognised at specific rank as I feel the stipe character is very strong compared to some of the features distinguishing other taxa in this group.

to be continued

- 10. Grevillea linearifolia
- 11. Grevillea virgata Makinson
- 12. Grevillea viridiflava Makinson
- 13a. Grevillea humilis Makinson subsp. humilis
- 13b. Grevillea humilis subsp. lucens Makinson
- 13c. Grevillea humilis subsp. maritima Makinson
- 14. Grevillea leiophylla F. Muell. ex Benth.
- 15. Grevillea reptans Makinson



Grevilleas of Menai

Of the Menai grevilleas, Grevillea buxifolia is the most regal. It sits like the king of the castle on top of the rocky ridges that tower over the steep valleys that are such a feature of Menai. The stiff, grey-velvet flowers held erect above the plant, like a coronet above a kings head, add to the illusion of formality. But, alas, its common name is Grey Spider Flower. Buxifolia's preference for being on top and looking down has put it into conflict with humans and there is not as much of it as there was. It is still there in the un-invaded bush and on rocky shoulders further down the hillsides. In some areas it cohabits with its smaller relative Grevillea sphacelata and the absence of intermediate forms is firm evidence that they are separate species.

The hilltops are also a favourite place for *Grevillea sericea* but it is a more gregarious species that doesn't mind pitching its swag in the shade of other plants so it can be found almost anywhere in the area. The flower colour varies from a deep pink with purple overtones through pink to almost white. While it has a flush of flowers in spring occasional flowers pop out at almost anytime. Usually it is a light open shrub but old specimens in exposed positions can be quite dense.

Grevillea diffusa is in the southern part of the area I've chosen to call Greater Menai, that is the area bounded by the Woronora and Georges Rivers, Mill Creek and the Heathcote Road. In exposed areas along Heathcote Road diffusa tends to be a sub-shrub but in more sheltered positions in the Woronora valley it can reach 1 metre high and 1.5 across. Because the dark wine-red flowers, in spring, hang beneath an already low shrub they are easy to miss.

Grevillea. mucronulata also occasionally pitches its tent on the ridges but is more common in the gullies, even shady, south-facing ones. It may be the least recognized of the local grevilleas but it is possibly the most ubiquitous. Its green flowers don't stand out to anything but the honey-eaters, spinebills in particular love it. The new growth can be tinged with a pink-purple and that may well be the thing that catches the human eye. The leaves

are variable within the area from narrow elliptic to almost round but always with the small point. In dry periods the edges of the leaves roll under until the underside is no longer visible.

With Grevillea longifolia we come to a species that has no desire for high office, instead it has a preference for the valley floor and fresh water at its front door. Longifolia does occasionally make do with seepage lines on hillsides where its terminal, red toothbrush flowers are proffered to passing honeyeaters on the ends of long cane-like branches. There are often patches of it along Mill Creek till the water turns salty, though the frequent recent fires have knocked the numbers down but it's sure to return. I'm also sure it would be on the Woronora as well though I haven't seen it on the Menai side, there are plants in the creeks that enter from the Sutherland side and also the other side of Heathcote Road.

Grevillea oleoides doesn't just like water at its front door, it prefers to have its toes in it. The long, dark green, linear leaves and the bright red flowers are a spring time feature of the Woronora south of Heathcote Rd, but there are some plants in the Menai zone as well.



Grevilleas that grow well at my place (Ingleburn)

My garden is small, situated in Ingleburn that is in the outer south western suburbs of Sydney. The soil is heavy, clay type and we get more extremes of temperatures, much less rainfall that is less consistent than coastal suburbs of Sydney.

The Grevilleas that grow well are all of the Robyn Gordon type Grevilleas, *Grevillea juniperina* particularly the prostrate red form and *Grevillea juniperina* Molonglo, *G. obtusifolia* (can't kill it), *G. pinaster*, many other hybrids such as G. Moonlight, G. Winpara Gem, G. Firesprite, G. Long John, G. Honey Gem. I also have *G. wickhamii and* G. Kimberley Gold (*G. wickhamii x G. miniata*) that are grafted, they are doing very well. More recently I have planted grafted *G. dryandroides* subsp. *hirsuta* that are doing very well. What a beautiful foliage plant they are and they are flowering very well. I also have grafted *G. stenomera*.

Now for one of my favourite Grevilleas.

Grevillea juniperina 'Molonglo'

The name "Molonglo" is derived from an Aboriginal word meaning "like the sound of thunder". It is the name of the river that flows through Canberra, which was dammed to form Lake Burley Griffin. Canberra is 550 metres above sea level. This river has its headwaters approximately 1200 metres above sea level and just above the small village of Captain's Flat which is 922 metres above sea level. The river is dammed just on the outskirts of Captain's Flat and provides water for the town and once water for the mine that once flourished until 1962. I am mentioning this because Captain's Flat was my birthplace and I lived there for my first 10 years.

From ACRA (Australian Cultivar Registration Authority web site)

ORIGIN: *Grevillea* 'Molonglo' was developed during hybridization experiments in 1964 by Mr. R Willing of the Australian National University, Canberra. It is *G. juniperina* (upright red flowered form from the Canberra region) x *G. juniperina* (yellow flowered prostrate form from the western foothills of the Budawang Ranges, New South Wales). ANBG applied for registration on 31 May 1974.

DESCRIPTION: A low spreading shrub 1m high x 1m+ across; branches pubescent, arcuate to declinate, the longer branches becoming decumbent; leaves 8–20mm long and 1–2mm wide, linear-subulate, somewhat angular, with pungent apices, the upper surfaces glabrous, the lower pubescent and almost hidden by the revolute margins; flowers apricot (RHS colour Chart 1965 609/1 to 609/2) in sessile racemes, terminal on short lateral branches; perianth tubes 10–12mm long, silky pubescent outside styles ca 30mm long red.

DIAGNOSIS: *G. juniperina* 'Molonglo' differs from *G. juniperina* (yellow flowered prostrate form) in its spreading, not prostrate habit, its narrower, more pungent leaves with closely revolute margins and in its larger apricot flowers with red styles. It also differs from other forms of *G. juniperina* in its low spreading habit and in flower colour.

CULTIVATION: It has been tested by the Research Section of the City Parks Administration at Canberra and over several years has displayed high frost and drought tolerance. These factors, together with its low spreading habit, contribute towards its suitability for planting on steep banks especially in cooler districts.

This Grevillea grows very well at my place in clay. I prune it yearly in late summer to early autumn. It is very well established over many years, approximately 15–20 years, does not require any watering apart from rainfall and I do not generally feed it. So it is a very low maintenance, drought tolerant, very prickly, bird attracting, attractive Grevillea.

The prostrate red form of *G. juniperina* grows as well as 'Molonglo' and it's flower is a very striking red.



Grevilleas in Washington

Well, about -4C seems to be about the worst that winter has to dish out for us this year here in western Washington (although it has been around -3 to -4C many nights, with some daytime highs around 0 - 2C, and a little snow. So the Grevillea collection is still looking good for now with just a couple exceptions. Grevillea 'Poorinda Royal Mantle' is looking a bit stressed – this is its first winter in the ground. It did not get established as quickly as I had hoped last summer. It is probably ticked off at how wet last summer was. We had an amazing amount of rain last August and September not typical for this region. G. x gaudichaudii is also looking stressed. Most others are doing quite well. G. 'Poorinda Constance' is now 2.5m x 4.5m and covered in blooms. Hummingbirds are back; tried to get a pic of one but I haven't managed to yet. G. victoriae 'Murray Valley Queen' is also looking spectacular. We have had a much drier than usual winter this year (all the rain got used up last summer I guess).

I made another trip down to the UCSC arboretum and got several new plants to try! I picked up *G. shiresii*, am wondering if I dare to try it on poorly drained soil. I also got 2 forms of *G. acanthifolia*, which I hope will tolerate poor drainage. I think I have about 50 Grevilleas now though not all have made it into the ground yet. A few were lost due to sheer neglect or competition from grass after planting (as well as *Lambertia formosa* – argh!) but I have cuttings to back most of them up. I'm always looking for more Grevillea sources in the US! I

am aware of the UCSC Arboretum, Sierra Azul Nursery (and others that buy plants from Monterey Bay Nursery), and Cistus Design. Windmill Outback and Downunderontop still don't have a lot that will grow here.

I have a couple of questions.

- 1. I purchased a plant at the UCSC Arboretum labelled *G. barklyana*. However it has no lobed leaves. It has only been in the ground since last spring so I can't say much about its growth habit. I am thinking it is probably *G. macleayana*; what do you think? Don Burke's book makes reference to a coastal and inland form of barklyana have these now been separated out into *G. barklyana* and *G. macleayana*?
- 2. *G. aspleniifolia* has done poorly; branches keep dying off. There is only one little alive part left. Is this species in particular susceptible to some kind of problem? Or should I just try another one?
- 3. Is there any kind of Grevillea seed/cutting /plant exchange affiliated with this page (or unaffiliated)? (I would only be able to send cuttings/plants within the US though.)
- 3b. Who wants to buy me a plane ticket to Australia? ha ha.

For an update: *G.* 'Ivanhoe', *G. alpina* yellow form and *G. macleayana* all seem to be dead after last winter. *G.* 'Poorinda Royal Mantle' is growing pretty well now.

Dot Gallagher, Nowra

How to have a garden with ONE Grevillea

About 4 or 5 years ago I bought *Grevillea* "Golden Lyre" at the Mt Annan plant sale. In the next few years it grew slowly but steadily, flowering for about two months during the winter.

In the winter of 2004 it was, to say the least, sluggish. Buds just sat there and an occasional pathetic flower emerged. Because I was tidying the edges of the bed I cut it back to a neat shape around about the end of November. To the bush this must have been like hitting it with

a 4 x 2! It immediately began to shoot out long arms, began to summer-flower and it is now (despite some necessary pruning) almost 6m x 4.5m. It is so spectacular, friends are telling friends etc and people are coming just to see it.

It was planted abut 2m in from the driveway so with this incredible growth I have to do U-turns to go up the drive. Every morning the nectar flows and it is covered in bees but I get my share tickling the nectar for myself. Its ambrosia!

Ozgraft Grafting trials Update

Grevillea cheilocarpa: Grafted onto Grevillea robusta, top wedge method under mist. This species callused and grew strongly until late May. Although the plants are not dead, growth has almost ceased, The plants have not gone backwards and the graft still looks strong. I think that this combination may be incompatable with Grevillea robusta but will see what happens. Next attempt will be on another rootstock or a interstock used. 5 plants grafted 5 still alive.

Grevillea 'chiddarcooping': This species was grafted onto Grevillea robusta, the top wedge method was used and placed under mist. The graft union healed and the scion started to grow away after aprox 3 weeks. The grafted plants are growing very well and are of a saleable 140mm pot size. I feel that this grafting combination is very successful. 5 plants grafted 5 growing strongly.

Grevillea irrasa: This species was grafted onto Grevillea robusta using the top wedge method and placed under mist. Some trouble was encountered in the prop shed with the mist being too heavy for this species although half the grafts healed and are growing ok. The remaining plants are shooting away slowly and compatibility should be further assessed. I think that the combination will be a success but time will tell. 6 plants grafted 4 growing slowly.

Grevillea minutiflora: Grafted onto Grevillea robusta using the top wedge method under mist. This species callused and started to grow after 2 weeks. The plants are very vigorous and are of a saleable size for a 140mm pot. I consider that this combination is very compatible as the vigor of the resulting plants is exceptional. 5 plants grafted 5 growing strongly.

Grevillea oxyantha: This species was grafted onto Grevillea robusta using the top wedge method under mist. Despite being a hairy leaf, there was no ill effect from the heavy mist applied. The graft union healed and started to grow after 4 weeks. The plants are growing well and the combination is compatible at this stage. The graft is strong and neat and growth is good. 5 plants grafted 5 plants growing well.

Grevillea sp aff occidentalis: This species was grafted onto Grevillea robusta using the top wedge method under mist. This being another hairy leaved grevillea showed no ill

effects of heavy misting. The graft union healed and the scion was growing after 4 weeks. The resulting growth was very uniform and the resulting plants are rather compact and very healthy, with a strong and very neat graft union. Another species I would deem at this stage to be compatible with *Grevillea robusta*. 5 plants grafted 5 looking good.

Grevillea sp aff occidentalis: This grevillea was grafted onto Grevillea robusta using the top wedge method under mist. The grafts healed well and the plants were potted on after 4 weeks into 140mm pots. Growth was slow at first but the plants are now growing vigorously. The union of the graft is neat and strong and I feel this is a compatible combination. 5 plants grafted 5 growing strongly.

Grevillea sp aff williamsonii: This species was grafted onto Grevillea robusta using the top wedge method under mist. The graft union healed well and no problems with the heavy mist on the hairy foliage was encountered. The plants were moved to the growing area and potted into 140mm pots after 4 weeks. Healthy graft but only a small amount of growth after 3 months not unlike G. williamsonii grafted) don't know if this combination is compatible but the new growth appearing on 2 of the 3 surviving plants is healthy but slow. 5 plants grafted 3 still growing.

Grevillea sulcata: Grafted onto Grevillea robusta using the top wedge method under mist. Some problem with heavy mist (could have been leaf nematode), graft healed after 4 weeks. The plants are slow to grow on, compatibility uncertain and there were some losses. Graft union is neat and strong and growth is slow but uniform. 5 plants grafted 3 growing slowly still, 2 dead.

Conclusion: I feel that *Grevillea cheliocarpa*, *G.* sp aff *williamsonii*, *G. irrasa* and *G. sulcata* might need a interstock for compatibility – although still early days yet. The other species described are (so far) very compatible with *Grevillea robusta* and all of the above mentioned species will be monitored further to assess their growth and vigor for release to the public.

Will update soon.

Very Low Fruit: Flower Ratios in Grevillea (Proteaceae) are Independent of Breeding System

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Abstract

Members of the family Proteaceae have extremely low mature fruit: flower (FR: FL) ratios (range 0.001-0.163) compared with other temperate, hermaphroditic, woody perennials. Sutherland's (1986) survey of FR: FL ratios indicated that compatibility was an important factor explaining levels of fruit set. The role of compatibility in regulating FR: FL ratios was tested in five closely related species of Grevillea (Proteaceae). Species-specific compatibility was compared using the selfcompatibility index (SI = ratio of selfed fruit set to crossed fruit set) calculated at fruit initiation to minimise the confounding effect of other post-fertilisation fruit losses, such as inbreeding depression and pre-dispersal predation. Fruit: flower ratios at initiation ranged from 0.041-0.249, and at maturity 0.015-0.096. Grevillea species showed highly variable breeding systems: G. linearifolia was

self-incompatible (SI = 0.003), G. sphacelata, G. mucronulata, and G. oleoides were partially self-compatible (SI = 0.07-0.28) G. longifolia was self-compatible (SI = 0.61). Intrapopulation variability in the level of selfincompatibility was high in all species but G. linearifolia. The correlation between SI and FR: FL ratios was non-significant, indicating that compatibility has a minimal effect on fruit set in the *Grevillea* species studied, and that these data, together with other data on proteaceous species do not support trends observed in Sutherland's survey. Low FR: FL ratios resulted from of a combination of pollen limitation, and high levels of flower and fruit predation.

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Recent Scientific Abstracts.

Proteus in Australia. An Overview of the Current State of Taxonomy of the Australian Proteaceae

Alex S. George

Abstract

With the Proteaceae completed for the 'Flora of Australia', we now have a reasonably accurate picture of its alpha systematics. Currently the family world-wide contains some 1769 species in 80 genera. In Australia there are 1093 species (c. 61.7 % of the world total) in 46 genera (57.5 %); about 99% of the species are endemic. Where do we go now? For many small genera (e.g. Franklandia, Austromuellera) the alpha taxonomy is settled, but in some small and all larger genera further research at specific and infrageneric level is needed, especially into highly variable 'species' (e.g. Banksia marginata) and species-complexes (e.g. the Grevillea biternata group). Much field work is required for some groups, not only to explore under-collected areas (where new taxa will undoubtedly be found) but also to study variation and such aspects as root systems. response to fire, seedlings, flower and fruit development, predation, seed dispersal and dormancy. There will be some further refinement of generic delimitation. Phylogenetic relationships and infrageneric classifications require further elucidation; even well studied genera (e.g. Banksia) contain problematic taxa. This will involve new data from such fields as anatomy (including developmental anatomy), molecular studies, DNA analysis and gene sequencing. As data improve, so will understanding world-wide relationships. Despite the use of computer technology, intuition and interpretation will continue to generate different classifications and evolutionary models.

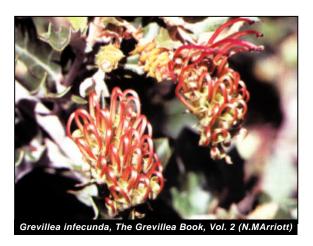
Australian Systematic Botany 11(4) 257–266 Full text doi:10.1071/SB98024 Reproductive biology and genetic marker diversity in *Grevillea infecunda* (Proteaceae), a rare plant with no known seed production

Sarah K. Kimpton , Elizabeth A. James and Andrew N. Drinnan

Abstract

Grevillea infecunda D.J.McGillivray is a narrow endemic that reproduces vegetatively via root suckering. The reproductive biology of five Grevillea infecunda populations was investigated by scanning electron microscopy and light microscopy. Stigma maturation follows normal Grevillea development. However, a large number of pollen grains with aberrant forms were documented. A fluorochromatic reaction (FCR) test revealed 0.04% pollen viability. All pollen samples collected from two populations were completely sterile. All viable grains were >100 µm in diameter and included aberrant forms. Amplified fragment length polymorphism (AFLP) technique was used to investigate genotypic diversity in G. infecunda. Three primer pairs revealed sufficient variation in 109 loci to assign a unique phenotype to every individual (N= 40) sampled. This suggests that the populations were established from founder seedlings. The species has apparently lost the ability to reproduce sexually but genotypic variation is maintained through asexual reproduction via root suckers.

Australian Systematic Botany 15(4) 485-492



continued

Cluster root development in *Grevillea* robusta (Proteaceae). II. The development of the endodermis in a determinate root and in an indeterminate, lateral root

Keith R. Skene, Joan M. Sutherland, John A. Raven & Janet I. Sprent

Abstract

Light, fluorescence and electron microscopy were employed to follow the development of the endodermis in cluster roots and lateral roots of Grevillea robusta A. Cunn. ex R. Br. Endodermal cells had three different origins: rootlet endodermis arose from the rootlet meristem; endodermis covering the primordium shortly after initiation came from division of parental endodermis; cells at the junction between parent and rootlet endodermis developed from re-differentiated rootlet cortical cells. In the cluster root, the Casparian band formed in three ways, and was not initially present opposite the two sets of single xylem elements in the rootlet stele. A new clearing technique was developed that allowed visualization of xylem, suberized endodermis, Casparian band formation and phenolic compounds. In lateral endodermal differentiation asynchronous, but was related to position relative to protoxylem poles. However, the observed delay began before these poles had differentiated. At the tip of mature rootlets, which are determinate, the endodermis terminates in a 'dome' of cells, with the initial cell differentiating as an endodermal cell. Results are discussed in terms of determinate development in roots and the spatial and temporal contexts within which this development takes place.

Other References:

Keith R. Skene (1998) Cluster roots: some ecological considerations. Journal of Ecology 86: 6, 1060--1064.

The New Phytologist Volume 138 Issue 4 Page 733 – April 1998 doi:10.1046/j.1469-8137.1998.00153.x Use of RAPD analysis in devising conservation strategies for the rare and endangered *Grevillea scapigera* (Proteaceae)

Rossetto M, Weaver PK, Dixon KW.

Biochemistry Department, University of Western Australia, Nedlands.

Abstract

Extensive human impact in south western Australia has resulted in a high incidence of rarity throughout the highly endemic flora of the region. Grevillea scapigera (Proteaceae) is a typical example, with 27 plants (represented by four extant populations) remaining in the wild. In order to devise an appropriate strategy for the conservation of this species, its population genetics were studied using RAPD analysis, which enabled the discrimination of individual plants and the detection of a relatively high amount of variability (V = 0.32) within G scapigera. This variability was found to be evenly distributed within the plants analysed despite the clear distinction between most populations (87% of the variability being attributable to single plant difference and 13% to population difference). Finally, RAPD analysis was used to select a small group of plants that captured maximum genetic variability to be used in the recovery program of the species. Because of the low genetic difference between populations, the mixing of these selected plants during the recovery process should not create genetic imbalances. The methods used in this study provide a useful model for future projects involving the recovery of rare flora.

1: Mol Ecol. 1995 Jun;4(3):321-9.

PMID: 7663751 (PubMed – indexed for MEDLINE)

What is apomixis?

Apomixis is the naturally occurring ability of some plant species to reproduce asexually through seeds. The embryos of seeds are normally the product of sexual union between male and female reproductive cells (gametes: sperm and egg cells). In the case of apomixis, embryos develop without the contribution of a male gamete. The result is that apomictically produced seeds inherit their genes exclusively from the mother, and so the plants that grow from these seeds are identical to the mother plant. Sexual plants produce a wide variety of different offspring by forming new combinations of traits inherited from both the father and the mother, but apomictic offspring inherit all of the traits from the mother in an unaltered form.

Sexual reproduction involves the generation and fusion of gametes. Unlike somatic cells which carry two copies of every chromosome (a paternal and a maternal one), gametes carry only a single copy of each chromosome. This reduction in chromosome number is achieved through the meiotic divisions which ensure that each chromosome is represented only once. This process leads to diverse and novel combinations of traits among the gametes. During fertilization a male and a female gamete fuse to reconstitute the somatic chromosome number and embryo development is initiated.

In flowering plants, the fertilization process involves two pairs of reproductive cells (Figure 1). The egg cell fuses with one sperm cell to form the embryo that will ultimately give rise to the next generation. A second sperm cell fuses with the binucleate central cell to form the endosperm, a nutritive tissue of great agricultural importance, that does not contribute to the next generation except to the fitness of the seed since the endosperm plays an important role in germination for some species. Normal seed formation requires the coordinated development of both the embryo and the endosperm within the protective cover of the seed coat.

Apomixis occurs naturally in about 400 plant species distributed over more than forty plant families. Apomixis is thought to have evolved independently multiple times from sexual ancestors. The mechanisms that lead to apomictic reproduction are diverse but share the common feature that the normal sequence of events during sexual reproduction is short-circuited, i.e., the next step in a series of developmental events is initiated before the preceding one is completed.

During apomixis the reduction in chromosome number is bypassed such that an unreduced reproductive cell with unchanged chromosome constitution ultimately gives rise to the embryo. The unreduced egg cell develops into an embryo without fertilization in a process called parthenogenesis. In some apomictic species, the central cell also initiates endosperm development autonomously, but in most apomicts fertilization of the central cell is required for normal seed development. The net result of these various apomictic mechanisms is that seeds are formed containing embryos with a chromosome and genetic constitution identical to that of the mother plant.

Current research on apomixis focuses on trying to understand the genetic basis and molecular mechanisms controlling apomictic reproduction. Two main avenues have been pursued: (1) to understand how apomixis is regulated in naturally occurring apomictic species and (2) to identify the individual genetic components of apomixis (genes controlling non-reduction of the chromosome number, parthenogenesis, and endosperm development) in a well characterized sexual model system. Recent progress suggest that in the not too distant future novel insights into these processes will allow the engineering of apomixis or components thereof in sexual plants.

Naming Grevillea macleayana

Recently I was doing some research in the Botanic Gardens Library and I came upon three letters that had been written by Joseph Maiden to Ferdinand von Mueller which I thought might be of some interest to our readers. They concern the naming of a new species of Grevillea.

Maiden to Mueller September 1892

Technological Museum, Sydney From the Curator to

14th Sep [18]92

Dear Baron Mueller,

I sent you a Grevillea yesterday which I am unable to place under any of the species described in the Flora. I gathered it myself near Jervis Bay. It is an erect shrub 4 or 5 feet high. I at first thought it must be a form of *G. laurifolia* in spite of its habit, but examination of the plant showed it to be different.

Yours truly, J.H. Maiden

Mueller to Maiden September 1892

Technological Museum, Sydney

From the Curator to Baron von Mueller K.C.M.G, FRS

19th Sep [18]92

Dear Baron Mueller,

By this post I send sketch drawing of Hakea Bakeriana, which can be properly finished after you have examined it and made alterations (if any). The matter of a species name for the Grevillea might stand over for a little if you are agreeable. Perhaps if it were called after my Minister it might be misunderstood; he might think I wished to curry favour. He is, all the same, a very good man, and bears an honoured name. It might be more desirable to give it some name descriptive of the species. I found it on flat, moist, sandy, barren land 2 or 3 miles as the crow flies from Jervis Bay and of no great elevation, say 100 feet above the sea. I should require to define the place more accurately by means of a map, as it was not near a township or prominent landmark.

The species may require to be described (at least provisionally) in absence of fruits. It is 111/2 miles from a main road & in very rough

country. I took a buggy and nearly had a smash. The place is uninhabited and it maybe a long time before I am able to revisit the locality.

Yours truly,

J.H. Maiden

I did look for fruits in July but none were to be seen there.

Maiden to Mueller September 1892

Technological Museum, Sydney

From the Curator to The Baron Ferd.von Mueller K.C.M.G, FRS

21st Sep [18]92

Dear Baron Mueller,

The Linnean meeting takes place this day week, and therefore I would ask you kindly to decide on a name, as soon as possible for the new Grevillea. Unless you have thought of a particularly suitable name do you not think it would be a graceful tribute to the memory of the late Mr William Macleay to call it after him? I shall give preliminary notice this afternoon at the Council Meeting:- "Preliminary note on a new Grevillea from Jervis Bay, New South Wales." as a regulation is in force that papers cannot be read without notice being first given at a council meeting. For this preliminary note it might be sufficient to say that "the new species (as far as seen), is of erect habit, and about 4 feet in height. Its closest affinity is to G Barklyana F.v.M. but it has different vestiture and smaller leaves (is it necessary to describe these now?) This handsome species is dedicated to the memory of Mr William Macleay the founder and munificent supporter of this Society.

This could be ----in the abstract, which would be dated 30th Sept.

Yours truly J.H. Maiden

Ferdinand von Mueller died in 1896 before he described this species. It also remained undescribed by any subsequent botanist before it was formally named in 1986 by Don McGillivray as Grevillea barklyana subsp. macleayana McGill. It has subsequently been recognised at specific rank, much as Maiden would have wanted as *Grevillea macleayana* (McGill.) Olde & Marriott.

New Members Working in Myall Park Botanic Garden

My husband Peter and I are two of the Directors of Myall Park Botanic Garden, Glenmorgan, Queensland and we would like to learn more about Grevilleas.

We have been helping with the Hybrid Grevillea Garden near the Gallery for the last ten years. Peter organises the working bee there each year. The drought of the last few years has taken its toll on some of our plants, especially in one of the raised front beds, and I would like to replaced the deceased with better options. We are thinking of putting here hybrids similar to *G*. 'Robyn', 'Sandra' and 'Merinda' Gordon—perhaps others with similar parentage.

The other idea I'm working on is to plant in the Garden some of the wonderful Grevilleas Peter and I saw last year as we drove across the Tanami Track and round the Kimberley. I believe one of Dave Gordon's desires was to have plants in the Garden that visitors didn't have to go across the continent to see. I'd love to have *Grevillea juncifolia*, *Grevillea refracta*, *Grevillea wickhamii* and *Grevillea eriostachya* delighting visitors, as we were delighted last year. I'm hoping to learn where we might get plants/seeds of known provenance to try this.

We will be driving to the ASGAP conference in Perth in September and hope to see and photograph more of our 'prospective specimens' in the wild.

Jeff Irons, Heswall, England

Rare Grevillea Shown on English Television

Grevillea maccutcheoni, unfortunately not in bloom, appeared on the BBC television programme 'Working Lunch' last June. It was featured in a slot about the Welsh National Botanic Garden - usually referred to as Garth Fotaneg. Situated west of Swansea, the Gardens are not well placed to receive many visitors. A year ago they were in a poor financial position and underwent severe retrenchments. Today the situation is more promising and visitor numbers are up. Their unique feature is a very large single span glasshouse with a naturalistic planting of plant species from the areas of the world with a Mediterranean climate. As you might expect there were several pretty shots, but G. maccutcheonii was the only plant mentioned by name.

Although not on the usual tourist route the Gardens really should be a must for keen Australian gardeners visiting Britain. They are different from anything else that will be seen.

When I tell you that the full name is Garth Fotaneg Genedlaethol Cymru you will understand why the Gardens switchboard staff do not use its full name but simply answer 'Garth Fotaneg'. In Welsh a single 'f' is pronounced as an English 'v', 'ff' is the English 'f'.



Grevillea bipinnatifida grown by Jeff Irons in England from seed supplied by Neil Marriott

News from Wandin, Victoria

We have been busy at Wandin. I have been named as the ABC Ornamental Gardener of the Year 2005 and as such I am one of three finalists for the Gardener of the Year 2005 to be advised later. We were scheduled to be aired on Gardening Australia on Saturday 20 August and to appear in an article in the September issue of Gardening Australia due out in August.

We have had a winter so far of light rain, for us perhaps 60% of normal. The effect is that there has been almost no runoff for our dam which remains as a low level and not filling at all. Our garden is very happy as we often have more rain than some plants prefer.

Editors Note: Have a look at the website www.abc.net.au/gardening/stories for more details about Bob's garden.

Mark Ross

I was just reading the GSG newsletter and found the piece on Nathans grafting methods under lights very interesting indeed. I have been grafting Grevilleas, Hakeas and Eremophillas like this for quite a few years now (about 10) with exceptional results recently being achieved.

I have a room that has a flood and drain irrigation system and a 600watt sontiagro light. This light is a cross between a metal Halide (High red spectrum for vegetative growth) and a high pressure sodium (high blue spectrum for flower and stem growth and is classed as a cool type light). I use the mummy method for Grevilleas and a small yates mini glass house

for the Eremophillas. The success rate is quite high (90% for Grevilleas and virtually no losses in the Eremophillas). A lot of heat is generated from the lights but this is good in winter. I have 2x 250mm exhaust fans to cool and change the air. Once summer comes though, I find the results are just as good under mist in a prop shed not using the mummy method, It can get up to 50 deg celsius in the room in summer even though the photoperiod is run at night time. The optimal photo period is about 18 hrs day and 6 hrs night, growth is usually forthcoming in 2 to 3 weeks for grev and 2 weeks max for Eremophillas.

Seed Bank

Matt Hurst

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G. banksii tree banksii grey leaf barklyana Caloundra Gem endlicheriana johnsonii juncifolia leucopteris linearfolia white longifolia longistyla petrophiloides	phanerophlebia rivularis robusta scortechinii stenobotrya Superba thelemanniana triloba trifida venusta White Wings

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Financial Report - October 2005

Income

Subscriptions	\$358.00
Plant Sale	4,459.50
Seed Sales	20.00
Donations	10.00
Interest	207.42
	\$5.054.92

Expenditure

Newsletter Publishing	\$240.00
Postage	145.95
Printing	135.50
Stationery	29.00
Post Box	56.00

\$572.15

\$10,441.89 in Interest Bearing Deposit till 14 January 2006.

Balance in Current Account as at 5/10/05 \$10.988.61.

Balance in Business Cheque Account as at 26/9/05 \$14,253.86.

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Curator of Seed Bank

Matt Hurst 13 Urana Street, Wagga Wagga 2650 NSW Phone (02) 6925 1273

Email Group

This email group was begun by John and Ruth Sparrow from Queensland. Free membership.

To subscribe, go to groups.yahoo.com and register, using the cyber-form provided. You must provide a user name and password as well as your email address to enable continuing access to the site which houses all emails and discussions to date.

You will receive a confirming email back and then you are able to access the site wherein you can select the groups to which you would like to subscribe. In this case search for 'grevilleas' and then subscribe.

Following this you will receive the latest emails regularly in your email to which you can respond. This is a good way to encourage new growers and those interested in the genus.

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List owner: grevilleas-owner@yahoo.com

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Online Contact

- 1. President's temporary email address petero@bb.com.au
- 2. The email group grevilleas@yahoogroups.com
- 3. URL for Grevillea Study Group website

http://users.bigpond.net.au/macarthuraps/grevillea%20study%20group.html

Deadline for articles for the next newsletter is 31 January 2006, please send your articles to petero@bb.com.au before this date.

If a cross appears in the box, your subscription of \$5.00 is due.

Please send to the Treasurer, Christine Guthrie, PO Box 275, Penshurst 2222. Please make all cheques payable to the Grevillea Study Group.

2004	2005

If a cross appears in both boxes this will be your last newsletter.