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OCTOBER 1991

Newsletter No 30

I would like to say a few "Thank You"s.

Firstly to Norm McCarthy of Toowoomba who is doing a great job of keeping us informed about what's going on in S.E.Queensland.

Secondly to Judy Smith for injecting new life into the seed bank, and hopefully into all those propagators out there.

Thank you also to all those people who comment on the presentation of the newsletter. All the credit for that must go to Alison Bailey who does such a professional job, coming up with ideas, rearranging, juggling and generally doing all the hard work, usually at short notice.

Members will be pleased to hear that a non-profit company has been formed to ensure the survival of Myall Park Gardens. This garden represents the life work of one of our Study Group members, Dave Gordon and his wife Dorothy. Dave has a large collection of Grevilleas including many grafted speciemns from the late Harvey Shaw. We have been promised a Study Group trip to Dave's garden — hopefully this will be in the not too distant future.

We have included information on how you can help by becoming a "Friend of Myall Park".

ACTIVITIES

Saturday 26th October, 10.30am

At the home of Peter and Nerida Abell, 10 Hall Parade, Hazelbrook 2779 Phone (047) 58 6311.

Bring a BBQ lunch if desired (if there is no fire ban). Peter suggests not parking in Hall Parade as it is busy and narrow.

Considering only Australian plants and not indigenous species, Peter and Nerida have over 100 genera from approximately 30 families, totalling approximately 300 species.

In the genus Grevillea, they have approximately 45 species, including 22 considered "officially" rare or threatened.

Peter and Nerida have kindly offerred some propagating material from their larger plants, so come prepared!

S.E.QUEENSLAND GROUP

Sunday 27th October, 10.00am at the home of Heather Knowles, Lot 2 Ebenezer Road, Rosewood.

Sunday 24th November, 10.00am at the home of Norm and Win McCarthy, 68 Holberton Street, Toowoomba.

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IN THE WILD



The Ant and the Grevillea

Peter Olde

Many of you will be familiar with the attendance of ants upon the flowers of many (?all) species of *Grevillea*. You will probably be aware that these ubiquitous creatures are the cause of many diseases associated with their predisposition to animal husbandry.

Ants are actually excellent farmers. They place nectar-secreting bugs such as mealy-bug around the roots of plants and instal communes of rapid-multipliers such as aphids and scale around new growth.

Ants love the sugary secretions of these insects and track the exudates on their feet around the branches, on which sooty mould then grows defacing the beauty of the lovely *Grevillea*.

Ants have also been known to spoil many an Aborigine's meal because they commonly infest the nectar-filled flowers of species which were sucked by the indigenous natives in search of a sweet drink. One can imagine the consequences of a mouth full of ants instead of a sweet tasting nectar.

Ants then should presumably be consigned to the role of pests worthy of destruction, something which we could be well rid of. However, the articles below may change your mind.

Removal of Seed of Grevillea pteridifolia (Proteaceae) by Ants

J. D. MAJER and B. B. LAMONT in Aust. J. Bot. 1985. 33, 611-618

Condensed by Peter Olde

ABSTRACT: Seed-taking by ants has rarely been recorded in Australian Proteaceae. Recent work in northern Australia showed that seed of *Grevillea pteridifolia* is taken by ants as readily as those of certain elaiosome-bearing *Acacia* spp.

The hard, flat seed is completely surrounded by a brittle, papery wing which is consumed by ants. The wing contributes 3-5% of seed mass and has a higher concentration of protein, available carbohydrate, fat and certain micronutrients than the seed body (embryo + coat).

Although present throughout the seed, cyanide is concentrated in the seed coat. The high lipid and protein content of the wing explains its success as an ant attractant while the hard, cyanide-containing seed coat may deter seed predation.

The apparent absence of seed taking by ants in closely related proteaceous genera in Australia may be attributed to scrotiny as the general condition, while Grevillea spp release seed annually and should benefit from the storing of seed in soil by ants.

Myrmecochory, in which the ant disperses the diaspore while leaving the embryo intact, is particularly widespread in dry sclerophyll vegetation in Australia where in excess of 1500 species have diaspores with ant-attracting food bodies.

Myrmecochory has been observed in three Grevillea species at West Head, NSW (Rice and Westoby 1981) while Lamont described it in Grevillea leucopteris (1982). (I have personally observed ants lifting seed from the newly-opened fruits on garden plants of Grevillea triloba in cultivation in Illawong, Sydney. I wonder does this occur in other species — send in your observations.)

Measurements were performed during June-July 1983 in tall, open forest of *Eucalyptus tetrodonta* at Groote Eylandt, Gove and Weipa. At each site, 10 masonite boards 12 x 12 cm were set in the ground with rough sides uppermost. Seed material had been stored for a few months prior to its use in these experiments.

Twenty seeds of locally collected G. pteridifolia, Acacia spp and Eucalyptus spp. were placed on the boards at approx 08.00 hours. Boards were then inspected five or six times during the following 30 hours in order to make observations on seed-taking and to count the number of seeds that had been removed.

Species of ants or other insects observed taking seeds were collected for later identification and the pattern of soil or seed disturbance at boards was noted to check whether any vertebrates were removing seed.

Removal of G. pteridifolia seeds were high at all three sites and at two sites greater than that for the Acacia seed. The absence of gross seed disturbance on the boards and the lack of positive vertebrate sightings suggested that vertebrates did not take seeds during the course of the observations.

G. pteridifolia seed was taken by both seed predators and elaiosome collectors. Although most ants simply chewed away the wing, a few were observed chewing the seed body and removing it in sections.

The high fat content of the *G. pteridifolia* wing fits the classic definition of an elaiosome (Sernander 1906). Because of the high concentration of protein, carbohydrate and most inorganic nutrients, the wing would be very nutritious to ants, although it accounts for only about 4% of seed mass.

The seed of *G. pteridifolia* appears to be adapted to both wind and ant dispersal. The rapid fruit maturation exhibited in *Grevillea* spp. together with spontaneous release of seed following seed maturation indicate that it is part of a syndrome which relies on ants for storing seed in the soil until conditions become suitable for germination and establishment. To what extent this syndrome is tied to the pioneer attributes of *G. pteridifolia* and other myrmecochorous Proteaceae warrants further investigation.

Further Reading:

Berg R.Y. 1975 Myrmecochorous plants in Australia and their dispersal by ants Aust. Journ. Bot. 23 475-508

Bond W.J. & Slingsby P. 1983 Seed dispersal by ants in shrublands of the Cape Province and its evolutionary implications Sth. Afr. Journ. Sci. 79, 231-233

Lamont B. B. 1982 The reproductive biology of Grevillea leucopteris incl.. reference to its glandular hairs and colonizing potential Flora 172, 1-20

Majer J. D. 1984 The influence of ants on seeding operations in Northern Australian mined areas Rec. Reveg. Res. 2, 299-313

Rice B. and Westoby M. 1981 Myrmecochory in sclerophyll vegetation of the West Head, New South Wales Aust, Journ. Ecol. 6, 291-298

Sernander R. 1906 Entwurf einer Monographie der Europaischen Myrmekochoren K. Svens. Vetenskapsakad. Handl. 41, 1-410

Smith J. M. B. 1989 An Example of Ant Assisted Plant Invasion Aust. Journ. Ecol. 14, 247-250

IN THE WILD

The Dispersal Mechanism of Grevillea Seed

Neil A. Marriott

The dispersal mechanisms involved in the spreading of Grevillea seed from parent plants are quite varied and are a field for research in their own right.

The majority of species simply drop their seed below the bush on maturation of the follicle. However, others such as *G. nana* remain attached to the bush for many months until the follicle splits sufficiently for the seed to fall out.

The most curious of all, however, would have to be G. candicans which has an indehiscent fruit; that is, it does not have a follicle which splits along one side to release its seeds, preferring to retain them within a hard woody shell. These drop to the ground and gradually break down over the years or possibly crack after fire to release the 2 seeds inside.

revillea species with winged seeds can utilize the wind to assist in the dispersal of their seeds. Observations of *Grevillea leucopteris* by the authors have shown that wind dispersal can spread seeds up to 6 metres away from the parent plant.

However, combined with wind dispersal of species with winged seeds is the amazing biological phenomena known as myrmecochory, in which ants aid in the dispersal of the seed.

The ants collect the seed, taking them back to their nests where they chew off the papery wing and dispose of the unharmed seed. Studies have shown that the seed wing has a high concentration of protein, carbohydrate and fat and is therefore attractive to a range of ant species while the seed coat contains a high concentration of cyanide to deter consumption of the seed itself.

Furthermore, not only do the ants assist in wide dispersal of the seed, but they often also assist the species by packing the disused seed in tunnels in the ground where they are isolated from predators and the extreme heat of fires.

Inspection of an area after bushfire often reveals Grevillea edlings sprouting out of the ground in massed eruptions.

Curiously, ants are also eager gatherers of Grevillea seed from non-winged species. The authors have observed several species of ants collecting many species of Grevillea seed both in the wild and under cultivation.

As with winged seed, they are carried back to their nests where they are stored unharmed in shallow tunnels in the ground. Close inspection of fresh, wingless seeds reveal a narrow fleshy membrane along the lower edge of the seed; we suspect that this membrane acts like the wing on wing seeded species to attract ants to collect and disperse them.

Another interesting method of seed dispersal may be seen in species such as G. annulifera and G. nana in which the seed are large, with a thick layer of corky material surrounding the actual embryo.

One may surmise at the reason for this, however the authors have observed these corky seeds being carried considerable distances from their parent plant by rivulets of water after thunderstorms. Whether this is the result of design or pure coincidence, it certainly acts as an effective mechanism for the wide dispersal of the plant seed.

ACTIVITY REPORT

Report of Activities in S.E.QLD

Norm McCarthy

Our June meeting on the 30th, was at the home of Mr & Mrs Bryson Easton of Forestdale.

This outer suburb of Brisbane is relatively new and its roads are pleasantly meandering, with larger than normal blocks, many are one acre. They are interspersed with treed nature strips and the streets and roads bear names from Robin Hood's era. Bryson's house is unique, as it is an earth-walled structure.

Our attendance that day was 26 people and the subject was propagation. Much discussion took place on growing from seed and its treatment for good and satisfactory germination, as well as preservation of the species, growing new plants from cuttings and finally good grafted material.

The use of "Dursban" spray as an ant deterrent for potted plants was suggested and endorsed. Good quality pure blood and bone used at planting time was recommended. However, as some proprietary lines can contain high amounts of phosphorous and other additives, beware of the nature of the product you use.

The use of a 10% solution of household bleach in water used as a foliar spray has proved to be a suitable antidote for sooty mould and scale in its various forms.

We are all learning so much about suitable and effective ways for the growing of good, healthy Grevilleas from our collective thoughts.

Our meeting on 25th August was held in the garden of Pat and Edgar Burt at Glasshouse, close by the mountains of the same name some 70 kms north of Brisbane.

With people everywhere, my headcount totalled 39. A good attendance indeed! Our theme for the day was garden visits and growing methods. But then, we hadn't allowed for our guest, in the nature of the one and only Peter Olde.

Peter spoke to our enthusiastic group about pollination. Is it the bees? eg G. speciosa and G. sericea. What is the pollinator? Many of course are self-pollinating in the species. Mice and dung beetles on G. leucopteris in W.A. — do they play a role? Peter said we should observe and endeavour to find out what pollinates what.

Further queries were raised regarding better rootstocks for grafting techniques. However at present, generally favoured is the species G. robusta for S.E.Qld.

Peter also spoke about the long awaited "Grevillea Book". He mentioned some of the problems and endless research to produce a book of this nature, with the authenticity and accuracy it needs to contain. Hopefully, Book 1, from A to L will be in print soon.

We gained so much this day that we look forward to encouraging more learned guest speakers to our future meetings. We are hungry for knowledge.

We must thank Pat and Edgar Burt for their great hospitality and enthusiasm and a wonderful garden of 2 and a half acres where many species of wonderfully healthy Grevilleas live something in the vicinity of 175, I'm told.

PROPAGATION

Can You Help With Propagation Trials?

David Burt, Emerald, Victoria

I have been a member of the group now for eight years and up until now have not really got involved. This is because of time factors as I have been setting up a propagation nursery which now seems to be operating quite well. Considering this, I thought it was about time that I did offer my services as regards the Study Group.

As propagation is my profession, I thought that might be the place to start. As I read through all my old newsletters the other night, there didn't seem to be a great deal of knowledge expounded on this subject.

Therefore, I thought maybe an exhaustive trial and experimentation might be in order.

What I would propose is that all species could be propagated from seed, cutting and graft to give us some figures and results to use in the future.

I think that this would be a worthwhile project. I am willing to undergo such experiments and to co-ordinate other people's results so we could have a complete record of Grevillea propagation.

If you would like to assist in any way, either by propagating or by supplying seed or cutting material could you please contact David Burt, 164 Emerald Monbulk Road, Emerald, Vic 3782.

SEED BANK

Hello, I'm Judy and I have recently taken over the seed bank. I've been busy writing to various seed companies. The old seed will be given away free to the first people who send me a self addressed envelope with a 70 cent stamp.

There is doubt as to whether the seed is viable, as most of it is 6 or 7 years old.

Our main aim at this stage is to enlarge the seed bank which would be beneficial to all. It would be in the best interests of everyone to collect and donate as much seed as possible.

... So how about it! Next time you're out admiring your beautiful Grevilleas, take an envelope with you and collect some seed. Don't forget, all donated seed is free, except for the price of the postage.

Unfortunately, we have had to increase the price of the new seed to \$1.50 a packet plus self addressed envelope with 70 cent stamp. At the moment we have

Grevillea pilulifera

Grevillea quercifolia

Grevillea stenobotrya

Grevillea dryandri

Grevillea refracta

Grevillea decora

Anyone who is interested in donating or collecting seed is quite welcome to drop in. Please call me first on 579 1455. If anyone requires information about a particular seed — just write to me and I'll tell you basic things about the size of the grevillea, flower colour etc.

Judy Smith, 15 Cromdale Street, Mortdale.

Success with Grafting Grevilleas

Philip Strong, Charmhaven, NSW

I have become fairly involved with grafting, mostly Grevillea and Prostanthera and have been having a good deal of success with my own variation of the approach graft.

I don't like the top wedge graft at all. Unfortunately, the approach graft gives a rather ugly union which, with certain combinations of scion and stock seems to be a focus for shoots from the stock. Also breakages seem to be common above and below the union due, I think, to the abrupt change in section of the plant stem.

I have been happy, therefore, to be rewarded with beautiful unions when using Merv Hodge's method of grafting viz. a long slanting cut in stock and scion then taping over union of scion completely. The method is fast and the union practically invisible with little callousing produced.

G. johnsonii and G. venusta are 2 species I recently grafted to G. robusta and all are going well. With warmer weather approaching, I have a good supply of G. robusta seedlings with which to do further trials.

OLD SEED

Send a self addressed envelope with 70 cent stamp.

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The year of donation of seed is given if known angulata
aquifolium
asplenifolia
banksii (red tree form)
benthamiana (Freguson River)
crithmifolia
crithmifolia prostrate 84
decurrens
endlicherana
eriostacha
glossedenia
hookeriana 84
integrifolia
juncifolia
leucopteris 82, 85, 87
obliquistigma 85
petrophiloides
polybotrya
pteridifolia
pteridifolia upright 82
pterosperma
robusta
sessilis
stenomera
stenobotrya
striata
synaphaea
03 03 05

whiteana



IN YOUR GARDEN



Surviving a Cyclone

Bev Weston, Mackay

Tropical grevilleas are magic. They are showy and hardy for our conditions here in Mackay and I couldn't live without them.

Even G. dryandri survives the rainfall here on its own roots and seeds itself all over my rocky hillside. I know I should be satisfied, but I'd like to grow some of the southern species as well. This has led me to try a wide variety of species from other parts of Australia. The failures have been spectacular!

Anyway, a couple of years ago, I was wandering through K-Mart when I spotted G. "Winpara Gem". I was taken with its lacy grey-green foliage and thought it would be worth "a try". Later, browsing through some back copies of Australian Plants, I discovered its parentage.

G. olivacea and G. thelemaniana in the garden of a dairy farm called Winpara near Jervois in South Australia. (Both of these species curled up their toes for me in a matter of weeks!)

Registered and promoted by Tony Clark of the Nellie Nursery in South Australia, he noted that when his stock was 1m tall they experienced two lots of eight black frosts with temperatures going down to -5°C killing thousands of plants and bankrupting many nurserymen in that state.

During those frosts G. "Winpara Gem" made active growth and was completely untouched. (It was at this point that I abandoned all hope!)

He also noted that it flowered heavily from April to November with the odd flower at other times.

Well, we don't have black frosts in Mackay. In fact, we rarely have frost at all. (Having lived at Camden in NSW, I'd be hard pressed to call it frost!) But, we do have cyclones.

From Christmas Day 1990 to the end of February 1991, yelone Joy and its aftermath dumped over 3 metres of rain on us. In the middle of all this, G. "Winpara Gem" put on a magnificent display, completely out of its flowering season.

There is a lot to be said for hybrid vigour!

A Move from Victoria to Marian, Qld

Alf & Shirley Hughes

We moved to Queensland from Victoria a few years ago. Gardening in Queensland and Victoria is completely different, so we had to change our ways and ideas very quickly on how to grow and fertilise up here. We are still learning and finding better ways of doing certain jobs all the time.

Its a big job getting our trees and shrubs to grow and keeping them alive, but we now seem to be winning. We have a lot less losses each year. We now have worms in most places. We couldn't find one worm when we first started planting out. So we must be doing something right.

In 1989, I bought G. "Winpara Gem" and in 1990, G. "Winpara Gold". They are both in flower now. "Gem" is really lovely, but "Gold" isn't quite as nice colour-wise, maybe nicer as it gets older. I will buy more G. "Winpara Gem" for sure.

In 1989, we grew G. stenomera (red flowering form). It's very nice, with red flowers amongst the dark green leaves and never without flowers. G. stenomera (pink flowering form) is another really nice bush that does well here. They are growing in fairly heavy clayey, rocky, shallow soil & are 6 to 8 years old. Two others are growing in better soil and doing well and are 12 months old.

In 1988, we planted G. pinnatifida. It's about 3m high x 0.7m wide, but it hasn't flowered yet. It could be because it's one of the trees that don't flower for 7 or so years, being a rainforest tree.

G. obtusifolia is growing on a fairly steep bank on shale type rock with very little top soil. It doesn't receive any special attention, but is doing extra well and flowers continuously. Last year, I spread a piece of weed mat under it, and it has helped keep weeds down and its leaves seem to be much darker and shinier green.

It's going to be well worth all our efforts when our trees and shrubs have grown and are in flower and we can enjoy the lovely colours not to mention all the birds that come around now. We are being visited by birds that weren't here 2 and 3 years ago.

Friends of Myall Park

Set in natural bushland near Glenmorgan in Queensland, Myall Park Botanic Garden is internationally recognised for its wide collection of rare plants. Specialising in Australian native flora from arid, semi-arid and sub-tropical regions, it represents the life work of Study Group member, David

With his wife Dorothy, a well known wildlife artist, David assembled a vast selection of seeds and cuttings to form the basis of the 90 hectare garden and the herbarium of approximately 7000 specimens. David, now in his nineties, will always be remembered for the superb hybrid grevilleas named after his daughters Robyn, Sandra and Merinda. Plant Varietal Rights came to Australia too late for these plants to bring any royalties from the hundreds of thousands of sales made by nurseries, and to date the considerable cost of establishing and maintaining the garden has been borne solely by David — a situation which for many reasons cannot continue.

Gordon who started this outstanding project in the 1940's.

BOTANIC GARDENS

David works closely with the co-directors of the non-profit company and they are taking increased responsibilty for the administration, maintenance and further development of this precious piece of national heritage.

The public is invited to help this worthwhile cause by becoming a "Friend" of Myall Park Botanic Garden. The annual membership dues will assist in continuing David Gordon's work in the garden and herbarium and they would welcome any practical assistance. In exchange, Members Benefits include a newsletter with botanical and horticultural information, free entrance to garden including Open Days, Invitations to field days and botanic functions and the opportunity to participate in activities at the garden.

Subscriptions range from \$15 for an individual to \$250 for Life Membership. More information and applications forms can be obtained from Nita Lester (076)329540 (AH) or Joan Schwennesen (076) 265303 or write to The Executive Officer, Friends of Myall Park Garden, Post Office, Glenmorgan 4423

IN YOUR GARDEN (continued)

Grevillea "Sid Reynolds"

Wal Remington, Belmont North, NSW

Early this year, I wrote to Christine Guthrie in regard to a Grevillea I had growing (G. "Sid Reynolds"). I had not been able to find any information on this particular Grevillea in any of my reference books. The request was included in Newsletter Nº 29, in "NEWS IN BRIEF".

I received a phone call from Mrs Patricia Ratcliffe from Raymond Terrace. She advised me that Mr Sid Reynolds lived at Paterson (outside Maitland NSW). Patricia gave me Mr Reynolds home address and phone number. Mrs Strong from Caves Beach also made contact in regard to my enquiry.

After contacting Mr Reynolds, I explained my reason for ringing. His story is as follows:-

About 10 years ago while potting on some G. stenomera he noted that one plant was a little different from the rest. This was subsequently planted out separately and its difference became more obvious.

Some material was later sent for identification. The reply identified it as a Hybrid. G. pinaster and G. commutata were identified as possible parent plants. (G. pinaster is now more commonly identified as G. thelemanniana subsp pinaster).

Sid advised me that there was no G. commutata growing on his property at that time. Sid does not agree with this identification and leans towards G. pinaster and G. stenomera.

Forest Native Nursery in Sydney obtained cutting material and has marketed the plants under the name G. "Sid Reynolds" since that time. It has not been registered.

I have since met with Sid and as a result was able at first hand to walk through his extensive native garden. While Sid has not continued with the search for more details on G. "Sid Reynolds", Noel Jupp, a nurseryman from Gresford, NSW has been doing a little research of his own.

Noel advised that he had only just sent off material to the Canberra Botanical Gardens for clarification. Noel is very keen to find more of this Grevillea. He will pass on the information to me, as it becomes available.

G. "Sid Reynolds" is best described (in my laymans way) as an erect shrub to about 2.5 metres. Flowers are borne in umbel-like racemes in winter and spring often on older wood. The flowers and foliage are attractive and the reddish flowers are bird attracting. It is fast growing and would make a goo screen plant. A must for someone who wants a Grevillea a little different. Propagation is from cuttings.

I didn't leave Sid's place empty handed. As it happens, Mrs Phil May Reynolds had a Callistemon named after her (another of Sids accidents of nature). My garden has been enriched with more colour, and my life has been enriched by meeting with two wonderful people.

FINANCIAL REPORT

OCTOBER 1991

Income		Expenditure	
Subscriptions	\$255.00	Newsletter Expenses	200.00
Donations	15.00	Postage	120.52
Seeds	10.20	Stationery	2.00
Newsletter Backcopies	20.00	Travel Expenses	\$198.00
	\$300.20		\$520.52
		Balance on Hand 1.10.91	\$700.09

OFFICE BEARERS

Leader: Peter Olde, 138 Fowler Road, Illawong 2234. (02) 543 2242

Treasurer and Newsletter Editor: Christine Guthrie, 32 Blanche Street, Oatley 2223. (02) 579 4093

Curator of Living Collection & Herbarium: Ray Brown, 29 Gwythir Avenue, Bulli 2516. (042) 84 9216

Seed Bank: Judy Smith, 15 Cromdale Street, Mortdale 2223 (02) 579 1455

Cuttings Exchange: Hessell Saunders, Box 31, P.O. Bulli 2516.

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.

1990

1991