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Australian Native Plants Society (Australia) (ANPSA)

Eremophila Study Group Newsletter No. 113

FEBRUARY 2016

SUBSCRIPTION NOTICES
Thanks to all who have paid subscriptions for 2015-16 and later years

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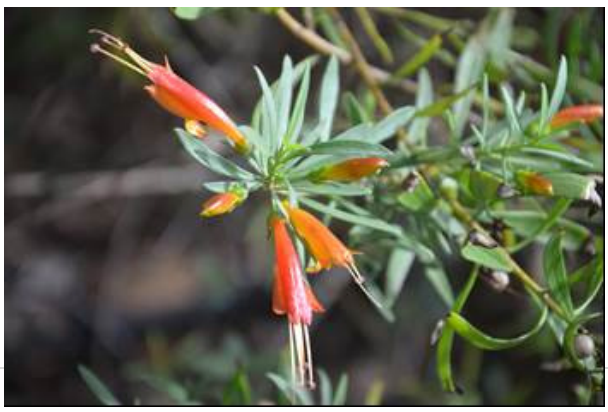


E. glabra var carnosa (in Canberra)

Letter from the Editor

Thanks to the many compliments sent about the November Newsletter. Good to know I am on the right track! Apologies also to everyone for emailing such a chunky newsletter in December – I have now worked out how to make it smaller (in a computing sense) without sacrificing pages or photos. So hopefully this time you haven't used as much of your download allowance receiving it.

This edition provides you with the results of the survey that was circulated in November. I received 55 responses from the 130 people on the email list. That sort of response rate is unprecedented so I am really grateful that so many of you have taken the time to put down your thoughts.

Thanks also to those 19 members who answered my call for material for our Plant of the Month (*E. christophorii*) (surely this must be a record!) and the seven who provided reports of Eremophilas in street plantings. We have some varied views and lots of opinions which will help people decide whether *E. christophorii* is likely to survive in their gardens; and some interesting places to visit to see Eremophilas in mass plantings.

Lyndal Thorburn

Leader and Newsletter Editor,
Eremophila Study Group

What's New in the Study Group

Ken Warnes' garden

The news of the damage to Ken's gardens in the Pinery fires prompted Ronda and Peter Hall in Port Augusta to co-ordinate volunteers at Port Augusta Arid Lands Botanic Garden to grow material to restore his collection. An email was sent to the members' email list on 6 December 2015 to ask if anyone who has received material from Ken would like to send cuttings for propagation – Ronda can be contacted on rondahall44 (at) gmail.com.

Ken reported (in December) "since the fire 800m of drip-line has been reinstalled and everything showing life has been has been given a good drink. There is so much information already only 2 weeks after the event. It needs to be recorded in some detail as we've probably never had such an opportunity before. What could be of real interest are the vast numbers of fruits exposed to varying degrees of flame and heat. If we get a big rain? Already the boobialla stocks (*Myoporum sp.*) are shooting from below ground level but I fear the crowns may be dead which means everything above ground will go even if the plant may have the ability to shoot. Perhaps a good demonstration of the need to bury the union as has been discussed before." More in the next Newsletter!

A website for the Study Group!

In November I called for assistance with scanning previous Newsletters into PDF format. I have managed to scan in about 70 of these (all the ones I have) and they have been upload to a special Eremophila Study Group ANPSA website which is at **http://anpsa.org.au/eremophilaSG/**. Brian Walters, the ANPSA webmaster, has done a brilliant job from the very scant information I sent him.

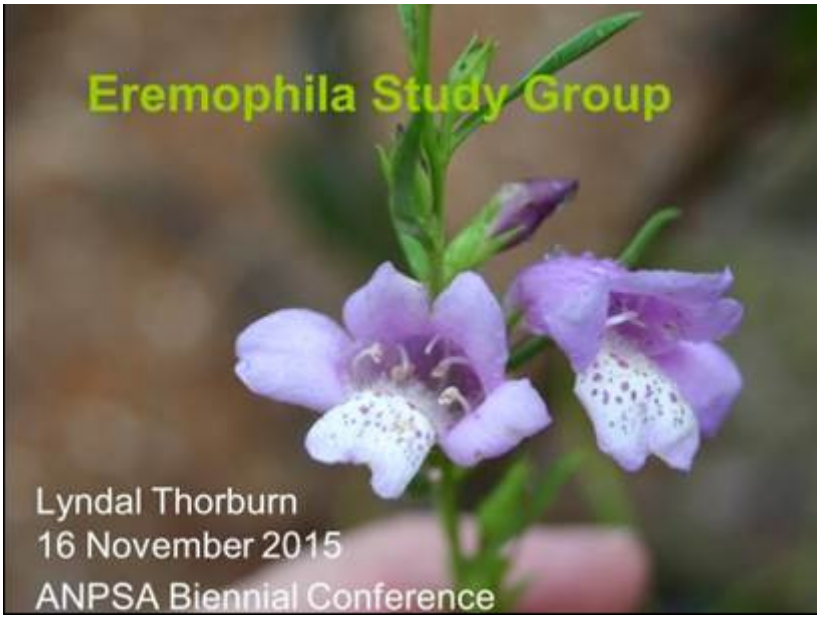
Having exhausted my own not-very-well maintained collection of newsletters, I need help from you to fill the gaps! The newsletters are at **http://anpsa.org.au/eremophilaSG/ESG-news.html** - you can see which ones we need! Please email me PDFs of any to which you have access, if you have a scanner.

New members

Welcome to new members Graham Lay (Horsham Vic), Tim Kolaczyk (Oakwood NSW), Steve Priestley (Alice Springs NT).

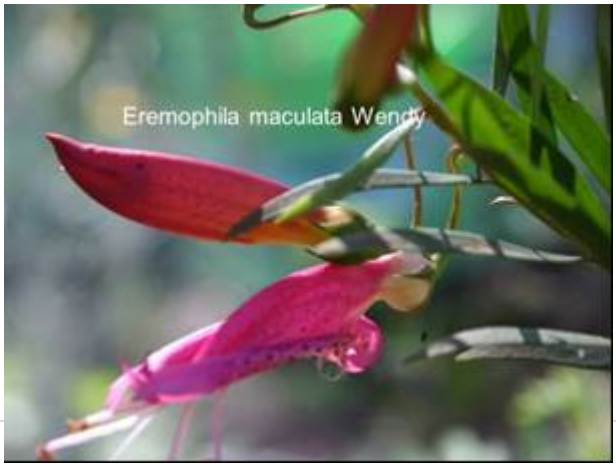
Presentation to the ANPSA Biennial Conference

Following is an edited version of the 15 minute talk given by Lyndal Thorburn as leader of the Eremophila Study Group to the November 2015 Biennial ANPSA conference.



As Ben said I'm leader of the ESG and I thought I would give you an overview of Eremophila first so we all know what we are talking about.

Eremophila are part of the Myoporaceae family and in fact is one of only two genera in this family that are widely grown, the other being *Myoporum*. Myoporum are, in fact, used as a stock plant for grafting *Eremophila*.



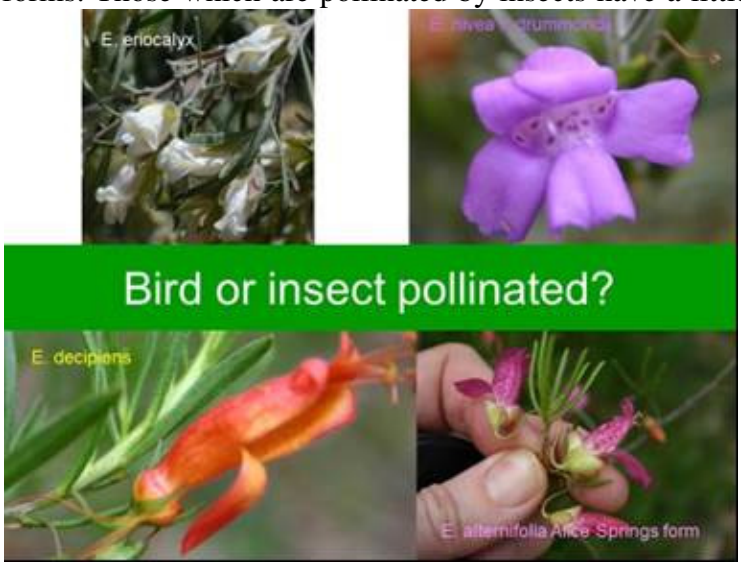
Eremophila are mostly dryland plants, naturally occurring in areas which receive a couple of hundred millimetres of rain per year. This map from Chinnock show the distribution of Eremophila across Australia and clearly most of the species are in South Australia.

The thing that got me started on *Eremophila* was this particular plant

known as *Eremophila maculata* Wendy (previous page). We bought it in, I think, about 1985. It's still in our garden. Maculata means spotted and you can see it has a spotted flower and it is still quite happily sitting there flowering away, although it is quite small.

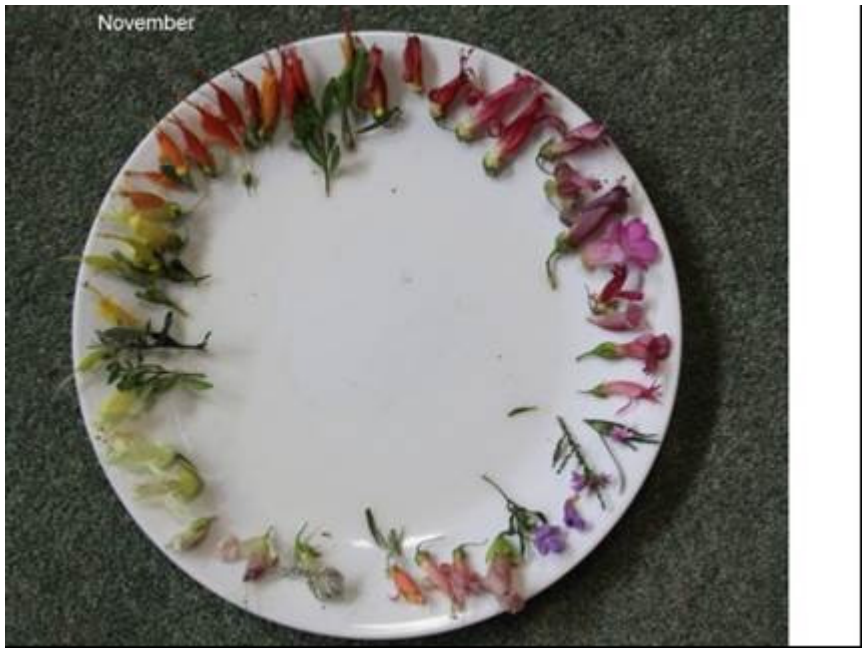
The other thing that got me interested in *Eremophila* is the amazing variety of leaf types – you can get everything from shiny bright green leaves to very grey furry leaves, and just about everything in the between so I am quite attracted to them as a garden plant because of their variety.

There are two basic flower forms. Those which are pollinated by insects have a little landing platform for the bee and are usually white, pink, mauve or blue. The other type is bird-pollinated and these are usually are brighter and have a tendency towards oranges, yellows and hot pinks



Study Group member Ian Tranter has put together a panel of pictures of *Eremophila* as part of the conference display (photo in November 2015 Newsletter 112), and that has been divided into bird and insect pollinated so you can see the difference.

Eremophila flower all year. I put together a flower calendar a few years ago (published in Newsletter 104 of October 2012) which is from August to August and I had a go at matching the main colour to the official colour chart. This photo (right) was taken in November 2 years ago; I went around the garden and I just picked one of every flower and put them on a plate and took and took a photo!! You can see that I am quite enamoured of the colour variety available!



So, let's now talk about the Study Group rather than the genus.

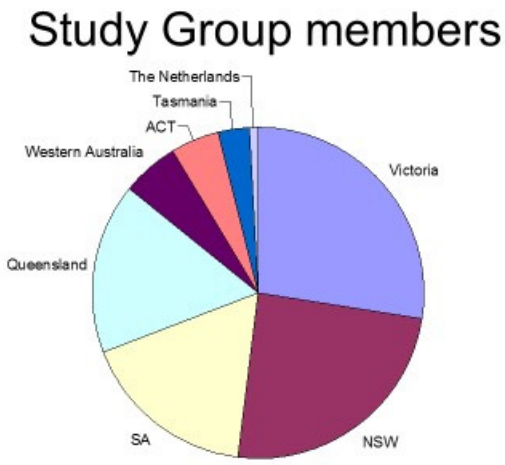
The ESG was formed in 1975 by Ken Warnes, who started studying *Eremophila* in 1963. I have a nice quote from him here – "many of us in the early days came to Eremophila via chlorotic Melaleucas, borer-ridden Acacias and drought-prone Grevilleas" – so that is what got Ken into Eremophila. He was a founding member of Project Eremophila which was sponsored by the SA branch of the Society. He started the Study Group in 1975 and was awarded for his contribution to the propagation and horticulture of Eremophila in 2011 when he was granted a National Amateur Award at the 2011 Biennial Conference. He has also submitted a number of applications to ACRA for named Eremophila and *Eremophila warnesii* is named after Ken.

The second leader of the Study Group was Geoff Needham. If anyone has a photo please tell me! Geoff was leader from 1980 to 1989 and he was leader when I joined in 1985. He was also highly regarded and was president of SA branch for a couple of years.

Geoff died suddenly in 1989 and Colin Jennings then stepped in and took over the leadership and was himself granted a service award by the SA branch of ANPS in 2014. Colin, as many of you might know, died very recently but he ran the study group from 1989 through to 2015. But he has actually been ill since 2011 and the study group has been fairly stationary while he has been dealing with his illness. Colin decided early this year (i.e. 2015) that he could no longer manage it and I stepped in mid-year. I will tell you later about what I hope to achieve as leader going forward.

First, I would like to tell you a little more about the Study Group and how it has changed. In the 1970s the Study Group had around 30 members and this grew to 130 members in the 1980s. We still have about that number –when I took over the Study Group we had a list of 160 but that hadn't been reviewed in a while and as I have contacted them that number has reduced to 130.

A bit surprising to me is the discovery that over half of the Study Group's members are in Victoria and NSW. I don't know how this compares to the spread of members for the Society generally, but an overall dominance of Society membership in the largest two States may be a factor in the distribution of members of our Study Group.



To date, newsletters have been published once or twice yearly and I think it is fair to say that those have been focussing on propagation and horticulture information. There are, I believe, just over 200 described species of Eremophila and at least another 60 still to be described, and I also hear that there are up to 900 hybrids and cultivars. If

you think that is a large number, I read on the weekend that garlic has 1000 so I have decided not to be impressed by a mere 900!

There are a few local groups operating – at least in SA, Queensland and NSW – and of their own volition in the last few years the activities have been very member-driven. There was a State workshop in 2013 in Owen, SA, which a number of us from here in the east "gate-crashed" and attended, and there was another in Sydney earlier this year.

There have been a couple of censuses – Colin, in particular, was interested in finding out what species people were growing – and there have been a number of State conferences where local people have rallied together and put up a display. As I said, the activity in the Study Group has been largely self-driven over recent years and over the next 6 months we will be looking at how we move forward and on what activities we focus.

Propagation has been a key issue. Eremophila produce seeds – but they are hard to germinate and there has been a lot of attention paid to grafting as some species are also hard to propagate from cuttings. Eremophila are currently grafted onto *Myoporum spp*. but we have trouble with stock re-shooting, so that needs to be understood. There is also a great opportunity for further work on cuttings and propagation because of the potential for their use in horticulture.

There are a few more immediate tasks, and I have highlighted five here.

The first is to upgrade the newsletter. In the past these have been posted to members and had neither photos nor any colour. The two interim newsletters that Bev Rice and Ken Warnes put out in May and August 2015 took the amazing step forward of having colour photos, so that will continue. I have been busy contacting Study Group members to get email addresses so the newsletter can be sent by email and I can now contact about two-thirds of our Study Group by that method. So getting the Newsletter sorted out and being produced more regularly is certainly a key issue for me.

The second step is consolidating active membership. I need to figure out who is active and where they are so I can understand better how we can use those people to actively support the activities of the Study Group.

The third thing is to survey members about on what we should be spending our money. Many of you will know that annual Study Group subscriptions are quite low – of the order of $5 per year – and that is certainly the case for the Eremophila Study Group. However as we have been dormant for some years we now have $4000 in the bank – so I am feeling rich but I have to remember that it is only $700 p.a. for the current membership size so we can't spend it all at once. A survey to ask members about what they have valued as activities, what they want to get involved in, and how we can spend the current funds (within ANPSA guidelines), will be coming soon.

The fourth issue is propagation, and continuing the good work that has been done over the last 40 years to get this genus into horticulture so people can grow them and to understand how and where they grow. Here in Canberra, we have found that a lot of Eremophilas are frost hardy when that hadn't really been expected; and we have

also found that a lot will grow in shade – they mightn't grow as large but they certainly survive and flower in those conditions.

The last issue I want to address while Leader is that of hybrids and cultivars. It is becoming clear that many of the species we have are naturally occurring hybrids and there is a lot of interesting variation within species – not only in colour – that make them very suitable horticultural subjects. There is great variety in the genus and great potential as garden subjects. So that is another topic that the Study Group will be looking at.

Talk closed by referring to existing books on the genus and Study Group contact details.

Results of member survey

BIG BIG thanks to the 55 people who responded to the member survey distributed at the end of 2015. Most of you are "old hands" at this Eremophila game – 46% have been growing Eremophila for more than 20 years, 30% have been growing them from 10-20 years, and 18% have been growing them for 5-10 years. Only 4% are new growers. It is good to know we have a lot of members "grafted on" to the species, but we also need new people – any thoughts on this, please send them!

Past activities

Respondents were asked to rank the important of Study Group activities to date. The most important activities were reported to be exchange of propagation material, local meetings and workshops where members could learn from experts.

Past Activities of the Study Group	Rank
Exchange of propagation material from members' gardens	1
Local meetings of members to exchange ideas and experiences	2
Workshops to learn something from an expert	3
Maintenance of living collections e.g. in public gardens	4
Day excursions/field trips (e.g. garden visits)	5
Promulgation of propagation information (e.g. how to grow cuttings)	6
Acquisition of propagation material from wild-collected plants	7
A census of species grown in members' gardens	8
Maintenance of a central repository of information on the genus	9
Excursions/field trips which require an overnight stay	10
Production of a book on the genus	11
Participation in flower shows or displays	12
Development/registration of cultivars	13
Production of materials that can be used as display materials (e.g. posters)	14

People valued the newsletter as the main communication tool in the past, followed by meetings/events It may not be surprising with the preference for events, to find that 55% of respondents had attended a local meeting and 27% had attended an event interstate. The value of these events were many and varied and included access to cutting materials, learning from local "gurus" (propagation, grafting, identification), seeing Eremophila in their native environment and in members' gardens, getting to know growers, and discussions on horticulture in different regions.

Fees

There was strong support for fees to be either $5 p.a. (40%) or $10 p.a. (53%). The option of $15 per year received only 4.0% support. There was also strong support for all members paying the same fee (90%), rather than a differential fee for active vs passive members.

On the other hand, 62% of members supported the view that that those who received the newsletter by post ought to pay more than those who receive it by email; 30% felt that the fees for post-only and email members ought to be the same.

At the time of writing, few of our "post" members have renewed their membership, and given the current healthy state of our finances the fees will stay at $5 p.a. Those on post will continue to receive a black and white copy of the newsletter, because of the prohibitive cost (~$17 to print and post a single 16 page colour newsletter).

The future

The strong view is that the Study Group should be focussing on horticulture (plant propagation and learning how to grow them "in captivity") (64%) followed by conservation (conserving species and forms which are rare in the wild) (32%) with botany (identification of new species and sub-species) a long way behind at 5.1%.

Future Potential Activities of the Study Group	Rank
Day excursions/field trips (e.g. garden visits)	1
Excursions/field trips which require an overnight stay	2
Workshops to learn something from an expert (e.g. about propagation)	3
Exchange of propagation material from members' gardens	4
Acquisition of propagation material from wild-collected plants	5
Development/registration of cultivars	6
Meetings of members to exchange ideas and experiences	7
Participation in flower shows or displays	8
Maintenance of living collections e.g. in public gardens	9
Production of materials that can be used as display materials	10
Production of a book on the genus	11
A census of species grown in members' gardens	12
Promulgation of propagation information e.g. how to grow cuttings, seeds	13
Email or moderated discussion group amongst members	14
Online public species list with propagation/horticultural notes (similar to the Grevillea Study Group's Gallery)	15
Eremophila Bibliography - a list of books and publications about the genus	16
Sponsor collecting field trips	17
Distillation of information on what to grow and where (geographic location and garden conditions)	18

Members also made a number of suggestions for other things that could be tackled over the next five years. When asked about the most important priority, members mentioned maintaining communication, sharing propagation materials, ensuring that species (when shared or in nursery trade) are named correctly (including clarification of forms and hybrids), collation of previous information, field trips and meetings.

There preferred communication tool for the future was the Newsletter followed by face to face meetings/events. The third ranked preference was email discussion

groups followed by pages on the ANPSA website. There was low support for Facebook, partly because many members aren't users.

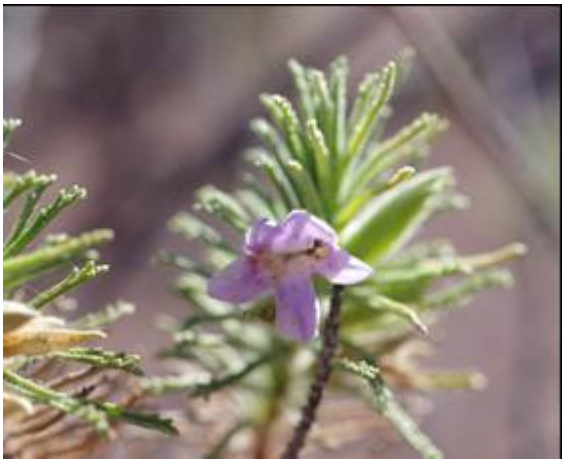
What next?

I am still getting my bearings but intend to follow up those individuals who did offer to do something concrete. The priority at the moment is getting a **cutting exchange** going, and maybe some local garden visits.

In relation to the cutting exchange, I am happy to print requests for specific species in the newsletter, if people are then willing to have their email address published – it would be up to other members to contact them direct to offer material. The other way is to print a list of names of people who are willing to be contacted to send packs of "assorted" species to others – bearing in mind complications from some quarantine laws (e.g. cut flowers other than Myrtaceae can be taken into South Australia from NSW, NT, Qld and Tas but you need a permit if from WA or Vic).[1] If you are happy to let people approach you for cuttings, also let me know!

The second priority is to take up some of the offers received via the survey for garden visits, open gardens and meetings – I will be in touch directly if you are one of these generous people!

New *Eremophila* Species



The November 2015 issue of *Austrobaileya* (Queensland Herbarium) includes an article "*Eremophila woodiae*: a new species from Queensland" It is one of 21 new plant species described for Queensland in 2015. *E. woodiae* is "a small resinous shrub with densely crowded linear leaves and purple tubular flowers." It is endemic to a small area near Opalton in western central Queensland (annual average rainfall 411mm), but is locally common. This species was described by Mark Edginton from the Queensland Herbarium (it is his photo above) and named in honour of Aileen Wood who has worked in the Herbarium for many years. Mr Edginton says "Aileen's knowledge of cultivated plants, including exotic and native cultivars, is unrivalled at the Herbarium. If we have an obscure cultivated plant to identify, Aileen is the person we turn to."

Lace Bug Pests on *Eremophila*

Maree Goods

Recently I was at a meeting where Dennis Crawford, author of *Garden Pests, Diseases & Good Bugs,* was the guest speaker. A friend of mine had brought in a piece of *Eremophila* 'Kalbarri Carpet' which was badly damaged. He showed it to me

[1] http://www.quarantinedomestic.gov.au/destination-south-australia.html

(photo below) and I immediately thought of lace bugs. I suggested he show it to Dennis and unfortunately my fears were confirmed.

In the summer of 2008-09 I had several forms of *E. maculata* and *E. glabra* attacked by lace bugs. The year was very dry and the plants were under stress. Fortunately I only lost one plant due to lace bug attack, the rest recovered extremely well. Norma Boschen experienced the same problem and we live roughly 65 kilometres apart.

The following years we experienced average or above rainfall until the latter part of 2014. Since then it has been exceptionally dry and the plants are again under stress due to the lack of rainfall.

This species of lace bug belongs to the genus *Lasiacantha* – a group that specialises in attacking Eremophila. They belong to the family "Tingidae" and there are 194 known species in Australia (some exotic) with 25 sp. in the genus *Lasiacantha*. *Lasiacantha* has never before been recorded in Victoria, but that is a collecting artefact rather than something monumental. It has been collected in all other States except TAS.

Lace bugs are exclusively phytophagous (feeding on plants) and are commonly found on the underside of leaves. They feed on the epidermis (the outermost layers of the leaves) extracting sap from the cellular tissue (Drake & Ruhoff 1965). They can cause speckled discolouration of leaves.

Dr Ken Walker, Senior Curator, Entomology, Museum Victoria, has provided the following information: "It is not known if there are any specific predators or parasite for lace bugs. It is believed they fall prey to a wide range of indiscriminate predators or parasites. The red mite in your photo will attach itself to almost any invertebrate. It is an immature Erythraeidae mite which parasite a wide range of invertebrates. As an adult these mites are free living predators."

Postscript - As a follow up from the article above, Maree has since emailed to say that she has since given Eremophila 'Kalbarri Carpet' a good watering. This has promoted new healthy growth and the lace bugs have disappeared. There is very little evidence now of any attack which shows they only go for stressed plants. It would be good to hear other members' experiences.

The genus *Eremophila* in Australia's Arid Zone: phylogeny and biogeography

Rachael Fowler – PhD student, University of Melbourne, Royal Botanic Gardens Vic
Reprinted from Australia Flora Foundation newsletter, with permission (Jan 2016)

Eremophila (family Scrophulariaceae, tribe Myoporeae) is a diverse and uniquely Australian genus of > 200 described species and a continuously growing list of newly discovered taxa. The name Eremophila is derived from the Greek words eremos and -philus, which translate to 'lover of solitary or desert places'. This name perfectly describes the genus, which thrive in arid and semi -arid environments throughout Australia.

For the past two years I have been focusing on this fascinating group of plants for my PhD research, which is based at the University of Melbourne and Royal Botanic Gardens Victoria. One major aim of my research is to develop a DNA based phylogeny, or family tree, of all *Eremophila* species. Such a phylogeny would be the first of its kind for *Eremophila* and will allow us to better understand the genus – using new molecular data in conjunction with traditional morphological methods for an integrated classification. In turn, this classification will provide a framework for formally describing a number of new species, and will help us investigate broader patterns of evolution in Australia's arid zone.

I am also interested in a number of genera thought to be closely related to Eremophila, including *Myoporum* (Boobialla), *Diocirea, Calamphoreus and Glycocystis*. These groups are predominantly found in Australia, and in the case of Myoporum, throughout the Pacific Islands and beyond. While we know them (Myoporum) to be closely related to Eremophila, including them in an additional phylogeny will shed light on how each of the genera fit together within tribe Myoporeae.

To complete this research I have been awarded a Jim Ross PhD Scholarship, funded by the Cybec Foundation, as well as an Australian Conservation Taxonomy Award through the Nature Conservancy and the Australasian Systematic Botany Society. So far I have managed to collect over 450 plant specimens from right across Australia, representing approximately 95% of total Eremophila diversity. These collections have been made predominantly in the field, but also include specimens from living botanic garden collections, and private gardens.

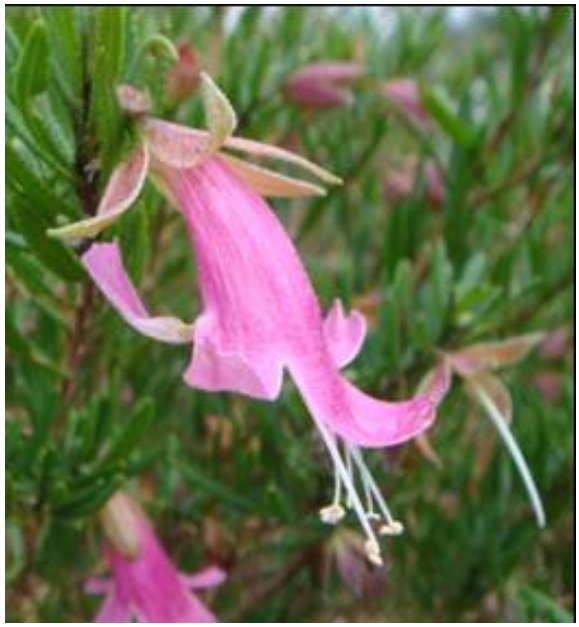
Once collected, I dry a small amount of leaf tissue from each specimen for DNA extraction then Next Generation Sequencing (a new technique that allows us to piece together DNA from an organism's entire genome). For this particular research I am interested in the chloroplast genome, a ring of DNA found in all plant chloroplasts that contain genes coding predominately for photosynthesis and protein production.

Earlier in the year I ran a pilot study to test these new techniques on a subset of my samples, and have since been working on putting together and analysing this data. Just recently I assembled the first ever Eremophila chloroplast genome, followed by a (very) preliminary molecular phylogeny using data from nine species. The Eremophila chloroplast appears to be similar in structure to another distantly related member of plant family Scrophulariaceae (used as a reference), however I have also observed some significant differences – namely the loss of a stretch of about 3000 base pairs of DNA including 4 genes from a duplicate copy region of the genome. It's still too early to make any solid conclusions, however the sheer amount of data produced using the new Next Generation Sequencing techniques certainly leaves me optimistic in the capability of this novel approach in providing us with the data required to answer my initial questions and make sound conclusions on the evolutionary histories of these plant groups. So for now it's back to the lab to expand

my dataset and generate a comprehensive analysis of Eremophila and related members of tribe Myoporeae.

Post script on *Eremophila latrobei*

Hans Griesser has written about his *E. latrobei ssp. glabra* (also a cutting from Ken Warnes' garden) which has had no problem with the frosts in the northern Adelaide Hills (gets to minus 5 or 6 several times most winters) but still goes backwards a bit each winter, apparently when the soil gets too wet. But like others he reports that it responds profusely to good rainfall by flowering within weeks - except in winter when frost can kill the flowers.



Neil Duncan has also emailed: On reading the newsletter I was very interested in the information re *E. latrobei*. I am growing. two forms the grey leaf *E latrobei ssp. latrobei* and what I thought was *E latrobei ssp. filiformis* but now I am not sure (this has turned out, at right, to be *E. latrobei ssp. latrobei* – thanks Russell!). The two plants are grafted (probably from Phil Vaughan) with the grey leaved plant about 80cm x 80cm and often suckering from the graft. The green-leaved plant is 1m x 1m but does not sucker. The grey-leaved plant dies back in winter but recovers as the weather warms; the green form grows happily all year and both flower for long periods. They are growing in Essendon Victoria which rarely gets frosts although we did have mild ones this year with no ill effect.

Ken has reported "most latrobei forms don't like radiant heat but many are gamely making new shoots. First frost, now flames. 'Such is life' could be their theme song."

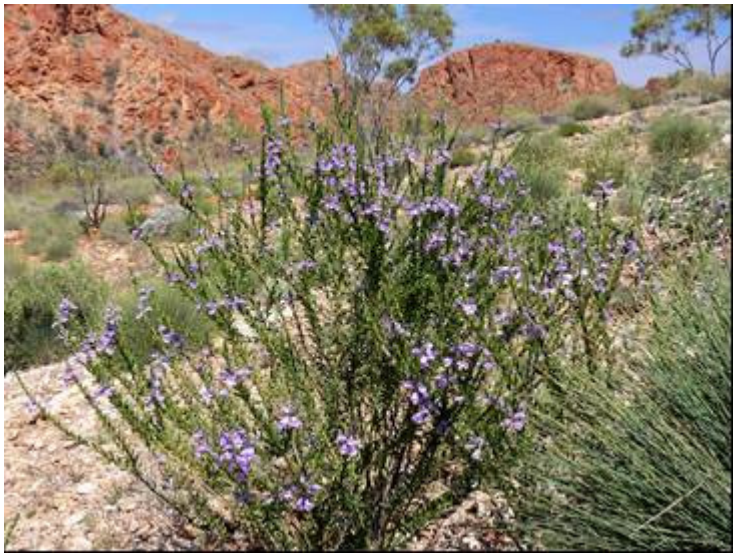
Eremophila christophorii

Eremophila christophorii, whose common name is the Dolomite Fuschia Bush, (according to Gardening Australia which featured it in August 2014), is found in the southern Northern Territory from the Macdonnell Ranges (west of Alice Springs) to the Queensland Border. Ken Warnes has written noting that "it's named after Ernest Giles' brother who was a Christophor, by accident or design who knows".

Chinnock describes it as an erect shrub 1m-2.5m tall, with sessile flowers (one per axil) and a lilac to white unspotted corolla.[2] In its natural habitat it often grows along drainage courses or on rocky limestone rises with the more common colour being lilac/blue.

[2] Page 457 *Eremophila and Allied Genera*

Colour forms

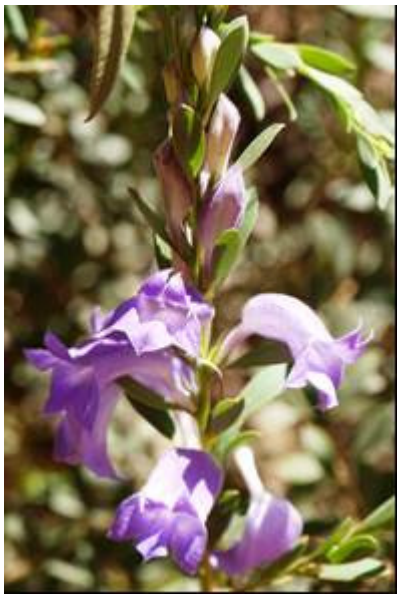


Maree Goods, whose photo of the lilac plant in its MacDonnell Ranges habitat is at right, reports "In 2010 Graham and I, with Alan and Jan Hall, visited the MacDonnell Ranges. It was an excellent year with the area receiving well above its annual rainfall. The Todd River flowed five times that year. We were right in the heartland of *E. christophorii* and it was flowering profusely. We were fortunate enough to see all the various shades of lilac, white and pink with lilac being the most common.

Ken Warnes (Owen, SA) says "I first saw a white one 35 miles west of Alice Springs on the road out past Simpson's Gap. It was growing behind a small mound that the road had cut through. I searched in vain the next time I drove past but on a later trip I was able to ascertain that the mound had been flattened to widen the road and the plant was gone. I failed to propagate it from the first trip but it was very obvious initially and may be the source plant for those in cultivation.

"On a later trip further west and about level with Mount Sonder I collected from a large plant right on the southern side of the road on a bend. It was very obvious for some time before our arrival so it is likely that others had seen it also." Photos of the white form above are from Charles Farrugia (left) and Bill Handke (right).

Ken continues: "The flowers on this one were smaller but it was a much older plant and I think flower size diminishes with age, just like most garden plants. "Russell (Wait) was with me and we scouted around for some time before finding a lovely pink one so we collected all 3 from the one spot. I had been told that all 3 colours were available in Alice Springs but I didn't see them at the nursery that I visited but there were white ones planted in the vicinity of Macdonald's Burger House. A nurseryman friend grafted all 3 onto a single stock.



The pink form is usually a smaller flower which is pure, pale pink. According to Ken, the bush seems is smaller and denser than the normal blue/lilac flower (which is above, photographed in the Olive Pink Flora Reserve by Noel Baxter). A larger pink form was found near Mount Sonder and was coined Pink Alice by Russell Wait (who supplied the photo at right) from material sent back to the Lang Nursery. The plant was only young but the flower was large and a pure, bright pink. Tim Kolaczyk's close-up of a pink variety is below.

Laylee Purchase in Queensland reports seeing all three colour forms "flowering side by side outside Desert Park, Alice Springs. They have a really good selection of Eremophilas there. Until then we had only seen the blue form but have had limited success with it. Let's just say the pink and white forms came into cultivation here in Queensland shortly thereafter." Connie Spencer has seen the white-flowering form on the Santa Teresa Road about 23 km from the end of the bitumen (noting that the bitumen may have been extended since taking that reading) and has been told that all three forms can be found growing together around the turn off to Owen Springs Reserve off Larapinta Drive. These are naturally growing occurrences.

Phil Trickett (Ulladulla NSW) has found lovely specimens of both the lilac and white forms at the caravan park at Yulara near Uluru.

Horticulture

Members seem to be growing *E. christophorii* as grated plants as well as from struck cuttings, and in all cases have plants that flower for much of the year. Charles Farrugia reports that his *E. christophorii* is growing on its own roots and has been in flower for a long time. "It was one of the first *Eremophila* to flower in the garden in 2015 and it is still in flower (December) even though it has been cut back." Jan Hall, on the other hand, is growing grafted plants because her heavy red clay soil is too much for many *Eremophila spp.*

Bill Handke reports that he has grown *E. christophorii* in Canberra and down at the coast near Tathra: two very different climates / soils, and two very different results. "It is a very attractive plant which, on the basis of the one down at the coast, is rarely without some flowers: the snow-white flowers against the glossy dark green foliage are stunning. The site at the coast is on a dry bank, with poor soil (a very thin loam layer over a shaly/ rocky base), set back 2 km from the beach on the ridgeline behind Tathra where it grows and flowers happily. The area is not a wet coastal spot, more of a rain shadow, and there is generally a breeze. I water it each time we go down (every 3 weekends or so). This is in contrast to the one I had grown in Canberra and which has now died: it suffered badly from the frost as it was in an exposed spot, but when transplanted to an area with overhead tree cover (a very dry spot comprising a thick layer of broken down leaf litter over white clay), it recuperated with additional watering, only to die subsequently during a dry period when we were away for a month. The books indicate that it does not like to be in a wet position: no problem with that in the places I had planted it; the opposite seems to have been the cause of the death of the Canberra plant." Bill's plants flower for much of the year, whereas the Australian Native Botanic Gardens records the plant as flowering in Autumn (March to May). Bev Rice suggests that the blue form flowers in spring and the white form more or less all year.

Steve Priestley, who grows the plant in Alice Springs, says that they don't like being planted in heavy soils but will cope with being over-watered (this statement may be relative!). He finds them hardier than *E. nivea* which apparently is prone to "mass sudden death" there.

Laylee says that "the white form seems to be the hardiest of the three. It is growing on its own roots here in Toowoomba but it has only been in 6 months." Jan Glazebrook has grafted all colour forms and "they don't last any longer than those on their own roots and have never been as hardy as indicated in 'Eremophilas - changing gardens for a changing climate'. We have medium clay-loam soil that they should thrive in. They flower sporadically throughout the year."

Several members including Russell Wait offered the view that the white form grows larger and is denser than the blue form. "*E. christophorii* never did well for me up at Natya. I think it was just too dry, apart from the white form that was growing in the car park of McDonnell's in Alice Springs. A plant from this bush was last seen to be 2 m high by 3.5m wide and it flowered for most of the year. It grew really well but the blue form and the pink forms were quite weak."

While, like all Eremophilas, they do better in sun, some members have them in light shade and Connie Spencer in Alice Springs reports that under these conditions her plants take on a more open form. Tim Kolaczyk has planted his in a raised bed because the Inverell area gets 800mm p.a., somewhat wetter than in its natural habitat.

Fungal attack

Broad experience seems to be that *E. christophorii* suffers from fungal attack in cold, wet weather, due to excess water on the top growth rather than "wet feet". Ken has reported this, as has Hans Griesser in an article in Australian Plants Online.[3] For Hans, who lives in Victoria, the species dies back each winter and then recovers quickly in spring. Ken notes that fungal attack "is not all that obvious but it attacks the stems and the plants die back to the point of infection. I have lost a 5ft plant following multiple infections and protective fungicide spraying has not saved them." Dave Bishop (his plant at right) has also had dieback at Moonta Bay – he describes this as "leaves going brown towards the inner part of the bush", but also notes that it was growing on "a solid limestone slab" and dieback could have been due to the tough spot. Hans recommends removing spent flowers and keeping vigilant in order to minimise dieback damage. Bev Rice removes dead shoots in spring.

Charles' (Sydney) plant also died back after the first rainy period in 2015 "and the dieback continued on and off after that wet spell. This didn't seem to affect the plant as it still growing and flowering. It will be interesting to see what happens after the current (December) wet spell. This species seems to be quite resilient as even during dry spells, when some of the other *Eremophila* are showing signs of stress *E. christophorii* still flourished."

Frost

The Boschen/Goods/Wait book also records that the plant is tolerant of only light frost. Ken's plants were damaged by frost and the cold showery weather in SA in July/August 2015. Bill Handke's Canberra plant died last winter, but he feels that it was a combination of frost and a very dry site. He says: "I moved it to a more sheltered spot, which it liked, but also a dry area competing with other plants including gums; during a recent hot spell, when we were away, it gave up the ghost."

Alison Earp grows white *E. christophorii* at Myrrhee in north east Victoria, quite different climatic conditions to Jan Hall at Yarrawonga. Her plant flowers most of the year except the depths of winter: "I planted it where it gets some frost protection, it still loses a few inches of growth each winter but bounces back well."

Connie Spencer, who also lives in Alice Springs, reports "*E. christophorii* is a favourite of mine and a worthy shrub for central Australian gardens. It will grow in

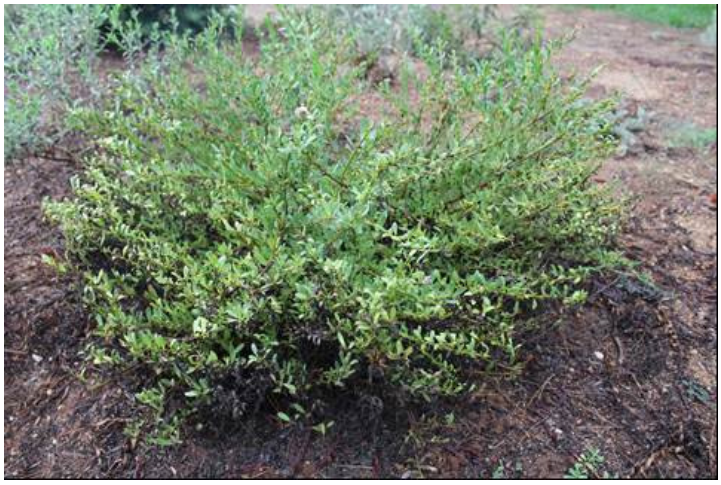
[3] http://anpsa.org.au/APOL27/sep02-3.html

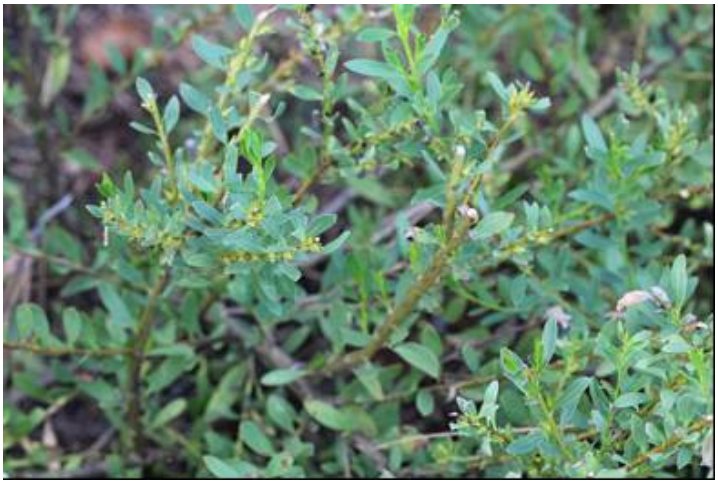
light shade (takes on a more open form) as well as full sun and is frost hardy. We had minus 6 degrees and colder in some parts of town this past winter and it was not affected." Tim Kolaczyk (Inverell NSW) also reports tip burn down to minus 6 but the plant "bounces back once warmer weather arrives."

Pruning

Several people, including Ken Warnes, Dave Bishop, Bev Rice and Graeme Nicholls, note the value of pruning. Dave commented that his plant "seemed to flower all the time" and that he kept putting off pruning. He also noted that some were growing at the bowls club and were pruned "as per English garden style" and as a result were very dense and compact.

Connie Spencer has blue/mauve & white form and finds the white form more unruly even with regular pruning. To maintain a dense bushy shrub, she gives it a good prune after flowering (and/or regularly tip prunes). Tim Kolaczyk reports he prunes his plant sometimes in advance of a major rain event (though how he can be sure of this who knows?). The photo below left shows Tim's plant after December 2015's 160mm of rain, and the one below right shows it two weeks after pruning with new growth.





Propagation

All colours will strike and graft readily, but it can be hard to find suitable cutting material on a plant that flowers all year – Ken notes that "the very soft tips make selecting both cutting and grafting material difficult at times as the this soft growth is susceptible to blacking fungus and there are nearly always copious buds to remove." As it always grows on rocky rises Ken recommends good drainage and plenty of air circulation. He has germinated it from seed on several occasions and most of his blue ones are from volunteer seedlings. Bev Rice recommends taking cuttings in spring.

Phil Trickett is growing grafted plants of *E. christophorii* (white) on a *Myoporum acuminatum* stock – he finds it hardy and vigorous in their rich, volcanic soils and high rainfall (1200mm average). Phil finds that no Eremophilas are very happy on their own roots in his conditions and most Eremophilas, if on their own roots, grow vigorously for 1-2 years before quickly dying.

According to the Tropical Savanna Fire Response Database, *E. christophorii* will re-sprout following fire, from a lignotuber, or from seed (plants appear 2-3 years later).

Hybrids

There are two known hybrids. The first is the widely-grown *E. christophorii x E. nivea (*or *E. nivea x christophorii)*, shown at right (photo Dave Bishop). This hybrid gets to at least 2m x 1.5m (says Bev Rice, SA), has noticeably more furry leaves than the *E. christophorii* parent and attractive markings on the buds. Charles' hybrid plant is shown in all its glory below, with the white form of *E.*

christophorii at the front. The hybrid appears to tolerate heavier soil than the *christophorii* parent and is growing well at Bev Rice's where the soil is heavy clay.

This hybrid was identified in the Eremophila Study Group Newsletter 84 (2004) as coming from Waikerie. Ken Warnes, our font of all knowledge on these matters, has since reported that the source was Tom Loffler's block on Popes Road about 3km south of Waikerie. He had the two parent species growing alongside each other and the seedling came up *in situ.* Ken also noted that there is no way to tell who was the provider of the pollen so the order of the two names is conjecture (in general terms he says that there are more volunteer seedlings from *E. christophorii* than *E. nivea* but *E. nivea* appears to have been more involved in cross pollination).

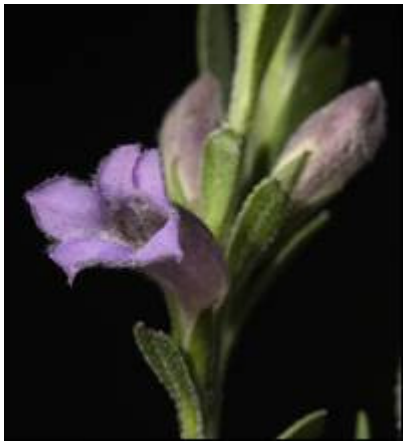
Lyndal's hybrid plant (left, grown from material provided by Charles) has come through a Queanbeyan winter (down to about -4^{o}C last year) but is in a tub on a deck and hence has a lot of air movement which may have helped with any fungal issues (given Canberra also had a damp winter in 2015). *E. nivea* is quite frost hardy in Canberra so it may be that this hybrid has better resistance to cold that the *christophorii* parent. Charles Farrugia also finds this hybrid "does very

well in Sydney region whether it is grafted or on its own roots. It strikes quite readily from a cutting. Year after year it gives a tremendous show when in flower. If a rainy period follows the end of the flowering period another burst of flowering will follow. There is rarely any dieback on this species in the Sydney region. After flowering finishes this species is pruned back about 50%. This is another species that tolerates dry & wet spells."

Sandra Wood (SA) notes that her hybrid is long lived but becomes woody with age.

There is also a known cross of *E. christophorii x E. pantonii.* Again, Ken says, "this is named on the basis of probability because of the limited available parents following a mass germination some years ago (on his block in SA). Under mature *E. pantonii* were several seedlings, most of which I think have *E. scoparia* fathers as I had a low and a tall *E. scoparia* right there. The resultant row planted from the *E. pantonii* seedlings show both denser and taller variants. One of the seedlings was obviously different and the *E. christophorii* right there was assumed to be the pollen provider." He describes it as a wispy shrub

David Oldfield started taking photos about two years ago in ultraviolet (UV) light of the *Eremophilas* grown by his wife Sue, a long-time member of the Study Group, after seeing UV images of overseas wildflowers. Such photos show dark markings on petals which only become visible under UV light where they may act as nectar guides for insect and bird pollinators. So, the challenge was to find to what extent such UV markings exist on Australian native flowers. The three photos over the page show *Eremophila christophorii x nivea* under Visible (left) and UV light (centre) and the effect of UV Induced Visible Fluorescence (right). This species shows a typical response of insect pollinated *Eremophila* with dark blue false-UV colouration of the inside of the corolla (bird-pollinated species tend to be dark grey or black in the same regions). The bright blue fluorescence seen on the hairs surrounding the corolla is also a common response found in many other Australian natives. This is part of a work in progress which can be seen at: http://www.ultravioletphotography.com/content/index.php/forum/250-scrophulariaceae/.

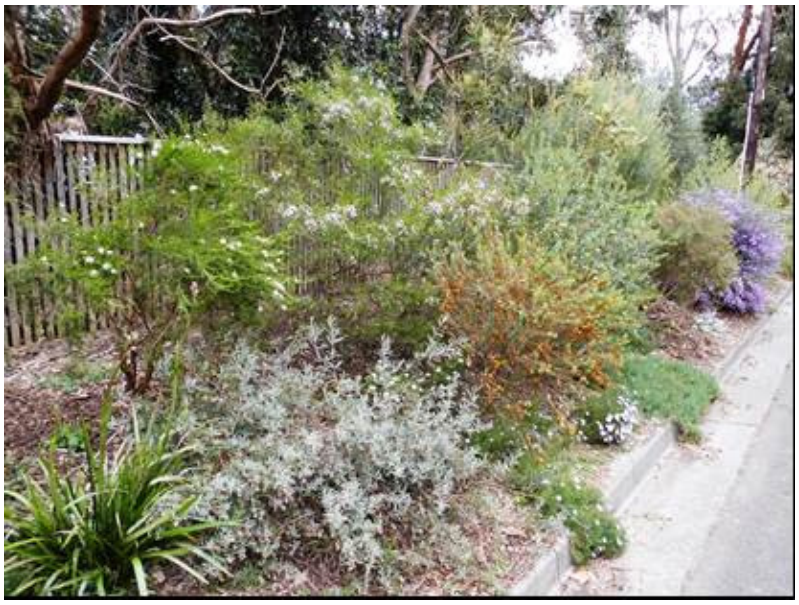


Eremophilas as Street Plantings

Many of us have been delighted to see, from time to time, Eremophila growing in street plantings. Members were asked to provide information on their use as input to this section in this newsletter.

Steve Priestley in Alice Springs has reported "Alice Springs is the perfect climate for most Eremophilas. They cope with our hard water and climatic extremes up to 45 degrees in summer and we had a -8 last winter. This means Eremophilas are used widely in street and amenity plantings in Alice Springs, with the most common species being: *E. maculata var brevifolia, E. maculata* (red, yellow, orange), *E. bignoniiflora, E. alternifolia, E. glabra* and its many hybrids, *E. latrobei ssp. glabra*, *E. macdonnellii* (all forms), E. Arookara Range[4], *E. ovata, E. polyclada, E. youngii, E. prostrata, E. calorhabdos, E. nivea, E. nivea x drummondii, E. weldii*.

Russell Wait reports that in Broome he has seen his hybrid *E. glabra x E. racemosa* growing very well in a roundabout with Grevillea Formosa. He also reports widespread use in Victoria of E. glabra *E. maculata, E. polyclada, E. dempsteri, E. scoparia* and *E. oppositifolia* with *E. maculata* being the most popular.

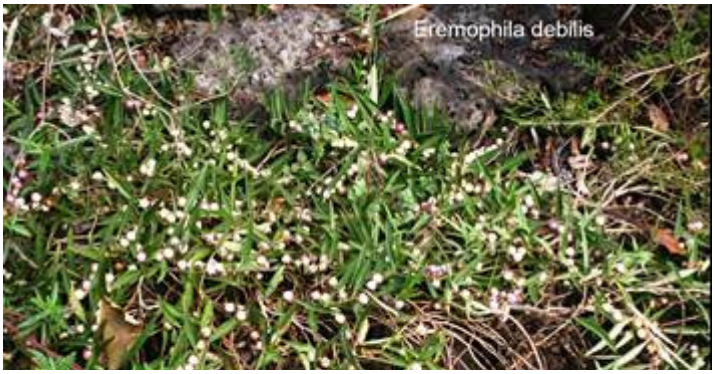


Graeme Nicholls, of Blackburn, Melbourne, grows Eremophila on the verge outside his property: "There are no footpaths just here, and I have taken over the road verge (photo left) and planted it with various native plants which I expect will cope well with neglect. The *Eremophila. spp.* I have used are mainly variants on *E. maculata* which grow easily in our soil and climate here - *ssp. brevifolia*, *ssp. aurea*, different colour forms of *E. maculata*. They thrive brilliantly in heavy clay soil with absolutely no attention except for regular and heavy pruning. I think there is also an *E. denticulata* too, which became rampant and leggy, and I have just cut it back severely to renew it.

"I also use a lot of *E. debilis* as groundcovers (see photo below). These perform very well, except when it rains a lot (not very often lately!), when they tend to die off. I have a lot of trouble keeping *E. drummondii* going for some reason. I have been growing *E. glabra* (I think *ssp. tomentosa* 'Murchison River' form). It seems to be able

[4] an undescribed species that has been around Central Australia for about a decade - http://bie.ala.org.au/species/urn:lsid:biodiversity.org.au:apni.taxon:619784

to grow in concrete, but it has become very straggly and woody, and I have now cut it back to the ankles. If it doesn't come good, I will pull it out."



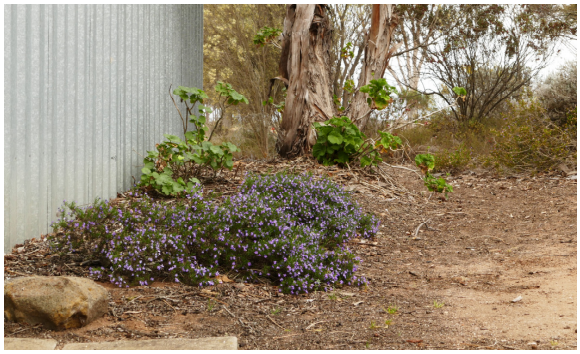
The Barossa and Adelaide seem to have a few large scale plantings. Hans Greisser says *E. nivea* has been used on the street near the western entrance to Tanunda. Margaret Lee in Adelaide says that there are at least two public gardens which display a good range of Eremophilas. The Barossa Bush Garden, Penrice Road, Nurioopta, SA is open daily from dawn to dusk. (Margaret's photo above) focuses on the region's native plants and grows over 100 of around 400 local species on a 7 Ha site. The Eremophila Garden is one of five themed gardens on the site. The Adelaide Botanic Garden (ABG) has an *Eremophila* garden in the south-east corner, near the Wine Centre. Plants were donated to the ABG by the South Australian Region to celebrate their 50th birthday in 2008. "I went with staff from the gardens to Ken Warnes' plantation to select the species they wished to grow and which had the best chance of success. They made careful soil preparations well ahead of planting and the plants were propagated by Keith Pitman and purchased from him by APSSA for donation to the ABG."

Ken Warnes reports seeing *E. youngii* as a tall shrub along the footpath in Port Augusta and *E.* oppositifolia in the median strip passing through Whyalla. He continues: "in Owen we did have some *E. maculata aurea* on footpaths but these were planted as a mistake because I recommended *Eucalyptus eremophila* 'and make sure you get the yellow ones because the red ones are crossed with *E. nutans'*. So they bought yellow Eremophilas which the house owners turned into neat topiaries and which never flowered – the Council removed them as visual and foot traffic hazards.' Ken also says that Owen has a native garden opposite the Town Hall with several good Eremophilas including seedlings, and an area of *E. maculata* at the disused rail crossing, "all 60 or so being seedlings from home and not one of them on Ian's (Tranter's) list!" Merbein and Mildura in Victoria also have several good plantings, possibly courtesy of Peter Lang.

Finally, Sandra McKenzie from Moonta in SA has reported that several small towns on the road between Pinnaroo in South Australia and Ouyen in Victoria have used Eremophilas as street plants. Ouyen itself has *E. maculata*, also *E. youngii* and *E. oppositifolia* in the street near the bakery and the Shire Office has grown what she thinks are E. Big Poly and E. Meringur Crimson. Similarly Warracknabeal has Eremophila plantings in the main street and in front of their Shire Office.

From your letters:

Ken Warnes writes about *E. delisseri:* We know only of a group of 8 plants of this species some 42 miles (note – miles) north of Cook Railway Siding (west of Maralinga SA) on a rough track north through to the Wyola Lakes and on to Vokes Hill Corner; typical Nullarbor Plain, clay-loam over sheet rock among saltbush and bluebush. The best were about 1m x 2m half pudding shaped bushes. In cultivation they have tended to be more upright but after 10 years are thickening up. There's probably more but a hovercraft after a good rain would be the way to look for them in what is basically an inaccessible area. We found them on their best day for the century, the best plant I rate as equal best Eremophila I have ever seen. I recall some plants sent from Ooldea Railway Siding many years ago which I believe had *E. delisseri* as well as what is now *E. decussata* but it was 45 years ago and the collector has no memories. I certainly did not see it when I was at Ooldea on 3 separate occasions. *E. decussata* as a separate species didn't exist at the time but I still remember the stiffer plant with wide spaced leaves. Treasure it.



Norma Boschen from Victoria has sent a photo of a low growing form of *E. drummondii* which is growing on the south side of her garage under a Eucalypt (at left). It was collected from the wild in WA.

Graeme Nicholls from Victoria has followed up from the article in November on Eremophila in the shade: I wonder whether you might consider a note in the E. newsletter about species that perform more better (if I can put it like that or less worse!) in less sunny sites. I have had quite good results from *E. georgei* (grafted) growing in about 70% shade. It has flowers on it all year. In a bit more sun, I grow *E. latrobei ssp. filiformis*, *E. Yana Road*, and *E. youngii*. I have just planted out an *E. splendens* which I grafted, and it is looking good so far. I am intending to use only grafted plants in an effort to compensate a bit for the lack of a sunny site, but I don't know how well this will work. Time will tell. I have an *E. spectabilis* coming along in the early stages of grafting, but so far so good.

Events

The Qld group of the Eremophila Study Group has about 30 members and meets 3 times a year, in April, July, and October. Their next meeting is on 9 April 2016 at the home of Peter and Carol Bevan, 10 Patrick St, Lowood. The meeting starts at 9.30am with a shared morning tea followed by the formal meeting at 10am. Contact Jan Glazebrook for more information (janglazebrook (at) gmail.com).

Corrections

"Summertime Blue" mentioned in December 2015 newsletter is of course a hybrid between *E. divaricata* and *E. polyclada*.

Future Newsletter Themes

Next issue of the Newsletter will feature: ***Eremophila viscida***, so send in your stories of growing this species. It comes in pink and blue versions and there is at least one hybrid in cultivation, with *E. maculata*.

Also of interest is any advice from people who regularly take cuttings of Eremophila "in the wild" and have to keep them alive until they return from their travels – how do you keep them fresh and happy??

SUBCRIPTIONS
Subscriptions can be sent by cheque made out to the ASGAP Eremophila Study Group and posted to 3 Considine Close Greenleigh NSW 2620.

You can also pay by direct deposit into the Group's bank account:
BSB: 105-125 Bank name: Bank of South Australia
Account Number: 013 751 340 Account name: Eremophila Study Group
Please put your surname and local/state group membership in the deposit details

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About the Eremophila Study Group

The Eremophila Study Group aims to further knowledge about the cultivation, propagation and conservation of the 200+ species of Eremophilas, an endemic genus of Australian plants. It is one of several Study Groups which operates under the auspices of the Australian Native Plants Society (Australia) (ANPSA). Study Groups allow members with specific interests to develop that interest to the fullest extent and to contribute in a practical way to the body of knowledge on the Australian flora. Active members collect information on the plants being studied and forward their observations to the leader who collates and publishes the information, usually in a newsletter or in other Society publications. The Study Group can record any aspect of cultivation, propagation and ecology of the plants under study. All Study Groups are expected to publish at least two newsletters per year.

Each Study Group charges a small fee to cover expenses such as newsletter production and postage, and to cover the costs of specific group activities. Members must also be members of an ANPSA-affiliated regional society (http://anpsa.org.au/region.html).

The Study Group aims to study the cultivation and propagation of the genus *Eremophila*; to expand cultivation of *Eremophila* in gardens; and to examine the growing requirements of the various species to improve their reliability.

For information about the Eremophila Study Group contact:
Dr Lyndal Thorburn, Study Group leader lthorburn (at) viria.com.au Ph: 0418 972 438 or 02 6297 2437

Honorary members: Ken Warnes and Russell Wait

Newsletters are available in Black and White by post and in COLOUR by email.

For more general information about Study Groups, contact: Email: jlfountain5 (at) gmail.com
Ms Jane Fountain Coordinator, Study Groups, Australian Native Plants Society (Australia)

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