Australian Native Plants Society (Australia) (ANPSA)

Eremophila Study Group Newsletter No. 140

September 2023

Above: *Eremophila decussata* flower in 2005 on the Connie Sue Highway, WA, by Andrew Brown, Below: left, wild *E. decussata* shrub photographed in Ooldea, SA, on red soil by Ken Warnes and wild *E. decussata* shrub photographed by Russell Wait

Contents

Letter from the Editor

Welcome to Spring! This month we have great articles from members on travels in SA (p.7) a new Tumut garden (p.8), and an almost miraculous recovery from La Nina in Sydney (p.9). Your contributions are important to the vitality of the SG – please keep sending them!

Tom and I joined the Queensland subgroup members for three days of their week-long western Queensland trip in August. We drove 5,746km over 18 days, plus a further ~250km as passengers with Matt and Lorelei Bartkowski on 4WD-only tracks out of Winton. A successful trip from many perspectives. Thanks to Jan Glazebrook and Denis Cox for organising it! A report will be in the next newsletter. We also collected fruit for our UQ research projects while we travelled – more on that at p.12.

I am pleased to report our relationships with Botanic Gardens are also going from strength to strength. See p.11 for reports on how we are working with both ANBG in Canberra and the Adelaide Botanic Gardens to promote Eremophila as a genus.

Thanks to all those who have paid subs for 2023-24. The financial report for 2022-23 starts on page 18. Recent efforts to diversify our income are bearing fruit and I hope to wind down the need for subs over the next few years – aligning us with common practice in many other Study Groups. Watch this space! Also, some of our merchandise can now be purchased through the Gardening with Angus website – see p.19.

Of course, I was busy when I arrived home as we collected a plant order from Peter Bevan (Pate's Hobby Nursery) when we met up in Winton. They survived the trip well. I am looking forward to spring and I hope the expected dry season doesn't stop my new plants from settling in.

Eremophilas in the News

Australian Plants Journal Vol 32 no. 254 focuses on "special areas". Connie Spencer mentions *E. cordatisepala* in regional South Australia, and Suzanne Lollback's article on sand dune vegetation outside Alice Springs mentions *E. willsii* and a possible hybrid.

An ABC item in March 2023 reports a new Eremophila has been found in western Queensland. More on this in the next Newsletter. In the meantime, see https://www.abc.net.au/news/2023-03-30/new-plants-discovered-in-arid-outback-queensland/102141214

Belatedly, I have discovered Russell Wait's website *Eremophila Park* (his property at Riddells Creek) (www.eremophilapark.com.au) – you can buy his *Growing Eremophila* book direct from him via this site.

Academic Publications

In August, CSIRO reported it has been evaluating *E. glabra* as potential feed for cattle to reduce methane emissions (https://phys.org/news/2023-08-australian-red-meat-industry-stakes.html). The research started in 2021 and showed methane production is cut by >80% when cattle eat *E. glabra*, but digestion is inhibited (surprise!). They suggest mixing *E. glabra* into other forage to reduce methane output while not affecting digestion.

What's New in the Study Group

Welcome to new members Rosamund Aisthorpe (Qld), Judy Biggs (ACT), Beth Gower (NSW) and Danielle Shallow (SA).

E. maculata at Gluepot – see p.7

Feature species – *Eremophila decussata*

Lyndal Thorburn, Ken Warnes and Russell Wait.

Eremophila decussata is, in Chinnock's book, the first species in Section Decussatae. All species in this section are small shrubs with hairy, opposite leaves, branches and calyces. They have lilac to purple flowers that are insect pollinated.

Chinnock records that this species is only found in two locations in South Australia – in the Ooldea and Billa Kalina areas. Ken was shown a single dead plant in the Billa Kalina house-yard and suspects that the location for the Brendan Lay collection was most likely to have been along the Dog Fence Service Road between Billa Kalina and Miller's Creek. The species was also found in West Australia in 2003, east of Kalgoorlie and north-west of Rawlinna. Chinnock postulates it is restricted to calcareous soils with exposed surface rock.

Ken Warnes brough the first *E. decussata* cuttings back from Ooldea Railway Siding in 1969. He found plants growing among flowering *E. hillii* of 3 colours plus numerous other plants.

Ken recalls the population to be basically of two standard forms: a low growing bush with slate grey foliage and a stronger growing form with golden tomentum. Both struck well from cuttings.[1] The grey leaf has a diploid count of 18 – Ken has often wondered if the golden ones were tetraploids with 36 pairs of chromosomes, but they have never been counted.

Ken returned to Ooldea in about 2003 and found only 6 plants, which were all slightly different. One of these has been propagated and is a robust shrub intermediate in features between his two 1969 plants.

Description

E. decussata is a low, spreading shrub which grows to 0.5m in the wild and up to 1m wide; however, Boschen, Goods and Wait report sizes of up to 0.75mH x 1.5mW in cultivation. The pic below is of Ken Warnes' grey-leaved plant prior to the Pinery Fire in 2016.

The soft leaves are arranged at right angles in alternate pairs, hence the name decussata for the species and the Section. The inter-locking branches lead to a densely tangled shrub. There is one flower per axil, and these are mauve or lilac and have a spotted white throat.

It is not commonly grown – only a dozen people responded to the survey for this feature species (pic below from Charle Farrugia of a young plant).

[1] Of interest he recalls that the river grit he used in his propagating mix had a distinct smell of 2-4D, a plant-hormone based herbicide. He has never struck cuttings since, relying on grafting for further plants, and wonders if the minute traces of herbicide had a positive effect.

Boschen, Goods and Wait report that flowering is in spring and summer, however survey respondents reported flowering as prolific for spring, summer and autumn (see table).

Season	Prolific	Sparse	None
Summer	67%	33%	0%
Autumn	75%	0%	25%
Winter	20%	60%	20%
Spring	67%	33%	0%

Horticulture

All respondents to the survey were growing their plants in the ground, with over 80% growing their plants in fine-grained soils (silts, loams or clays). Boschen Goods and Wait's book recommend well-drained, but not heavy, soils.

E. decussata can be spindly when young, but it rapidly develops into a dense bush, not fast growing, but always dense, as shown in photos on the previous page.

Sunny positions were preferred – over 80% of plants grown by respondents were in sun all day and the remainder were in sun for half the day. The tangling of the branches means that it is best in a location with some air circulation, to reduce the potential impact of mould during wetter periods.

When we surveyed members on their favourite Eremophilas, Ken placed decussata at No. 1, a fair recommendation. In his view, the open site in his plantation certainly helps produce a good plant. In gardens with competition, it doesn't perform nearly as well, and he doesn't recall ever seeing garden specimens which match his.

Drought, rain, frost and wind

This is a drought tolerant species that may, nevertheless, appreciate additional water during dry conditions. Members growing this species were growing it in drier areas – 42% in areas with less than 400mm p.a., 25% from 400mm to 600mm, 17% from 600mm to 800mm and 2 people in areas with >1000mm.

Eighty percent of respondents to the survey reported that heavy rain caused no ill effects on their plants. One person living in a region with >600mm reported damping off of leaves and one other person living in a region with between 400mm and 600mm p.a. reported their plant died after heavy rain.

Boschen, Goods and Wait report that young plants may receive tip damage from frost, however, all 12 survey respondents reported no ill effects from frost. The lowest temperature region where respondents were growing *E. decussata* was minus 5 degrees to minus 9 degrees.

They also reported no ill effects from severe winds, with the exception of one person whose plant had broken branches.

Longevity

Ken's original plant, planted in 1972 and therefore now 53 years old, is still going so there is potential for a long life in cultivation. However, respondents to the survey reported plants of 8 years old or less. The latter most likely reflects availability rather than longevity.

Pruning

Two thirds of survey respondents did not prune their plants, 17% tip pruned as required, and 17% reduced their plants by one third after flowering.

Pests

There are a few pests reported – one person reported problems with chewing caterpillars, two with grasshoppers, and one with rabbits.

Propagation

E. decussata can be grown from tip cuttings, and half of those who responded to the survey had only cutting-grown plants.

Ken's plants are growing near each other in the hope that the bees might hit the correct

target for once and enable production of *E. decussata* seedlings which are not hybrids. He notes that if we can breed seedlings true to the species by planting differing clones together, it will be an important step forward in preserving some rarer species.

E. decussata can also be grafted. Twenty-five percent of survey respondents had grafted plants and 25% had both. It grafts well and Ken has seen very little evidence of shooting below the graft. Perhaps this indicates an advantage in grafted plants.

Those who had grafted plants used *Myoporum insulare* or *M. montanum* as stock plants, although one person used *E.* 'Summertime Blue' and *M. bateae*.

Hybrids

There are two established hybrids – *E. decussata* x *parvifolia* 'Nullarbor Nymph' and a hybrid of *E.* 'Nullarbor Nymph' with *E. ionantha*. There are many other hybrids which have (relatively) recently emerged in Ken's garden and have not been trialled. These are dealt with below in a group.

E. decussata x parvifolia ssp. *parvifolia* 'Nullarbor Nymph'

Nullarbor Nymph arose as a hybrid in Ken's garden in South Australia, with the *E. decussata* parent being the grey-leaved form mentioned earlier in this article. It was registered with the Australian Cultivar Registration Authority in 2008, no. 1392 (https://acra.biodiversity.services/info/rdetail/629).

The term 'Nullarbor Nymph' relates to a hoax from the early 1970s – she was woman claimed to be living amongst kangaroos on the Nullarbor Plain. Ken used it for the plant to reflect its SA ancestry (*E. parvifolia* ssp. *parvifolia* is also from SA).

This hybrid is not in common cultivation, but luckily some members do have it, as Ken's original plant was almost killed by the 2016 Pinery Fire. At his place it re-shot from old wood (see pic next column, Ken Warnes). Half the survey respondents grew this hybrid.

Nullarbor Nymph is a smaller shrub than the *E. decussata* parent, reaching no more than 0.5mH but up to 3mW (the official width listed on ACRA is 1.2m and is an underestimate). Its flowers and leaves are smaller and greener than the *E. decussata* parent. It may be slightly less frost hardy than *E. decussata*, and also does best in full sun. Pic below is from Russell Wait.

Ken's plant has regrown since the Pinery Fires, but not to its former glory (pic below).

E. 'Nullarbor Nymph' x ionantha

Only one person grew this hybrid, which arose in Ken's garden (pic over page).

Other hybrids

The first of these may be a hybrid with *E. caerulea.* This arose in Ken's garden as two volunteer seedlings in an older plantation following heavy late Summer rain, adjacent to a grey-leave *E. decussata* and with *E. caerulea* as the nearest neighbour. It has low dense growth and a limited flowering period but could be useful as a border plant (picture below, Ken Warnes).

The second may be a hybrid with *E. malacoides* and is pictured below (Ken Warnes). This seedling came up at Ken's in the basin of *E. decussata* planted 9 months earlier, but which was killed by the Pinery fire. It has longer hairs, rounder leaves and denser flower heads and fruit than *E. decussata*, hence the potential relationship to *E. malacoides*, which grew about 15m away. Closeup below by Ken Warnes.

Other seedlings have emerged as probable hybrids but are yet to be followed up. The four in the photo below, which were found under Nullarbor Nymph in Ken's garden are, from left: suspected hybrid backcross to *E. decussata*; suspected x *E. weldii*, another suspected x *E. ionantha* and a suspected x *E. pustulata*.

Conclusion

E. decussata is a great garden plant because it has (potentially) a long flowering period but is nevertheless neat and tidy when not in flower, as long as it is in a sunny spot.

Survey respondents recommended it as a bird attractor (despite its blue flowers), insect-attractor and as a small feature species. Clearly, this is a plant that should be more widely grown. It seems ideal for a rockery or container plant, and also a groundcover. Nullarbor Nymph appears to have similar virtues.

Eremophilas in Gluepot

Mike Beamish

After retiring at the end of May, I was keen on getting away for a bit of a break before tackling all the jobs that retirement and turning sixty tend to lay at one's feet. So, foolishly perhaps, we decided to head off on a camping trip in the middle of winter, in a motorhome rather than a tent, but out in the wilds rather than in a caravan park.

The weather didn't cooperate, generally being cold, wet and windy for the whole time we were away, but that's what you need to expect if you're silly enough to travel in winter. One of the places we visited threw up some unexpected Eremophila sightings that might be of interest.

Out in the Birds Australia Gluepot Sanctuary, some 50km north of the Murray River (Waikerie) in South Australia, we were driving around the Reserve near the old Kangaroo Dam site when the rounded shapes of *Eremophila maculata* caught my eye out on the claypan. Some of the bushes were quite large domes up to about 2m tall but about 4 or 5m wide.

I took a quick walk around the bushes while the others chased birds (Red-capped Robins, Yellow-plumed Honeyeaters, etc) and found not a sign of buds and flowers on any of those exposed on the claypan. Past visits have revealed that these *E. maculata* flower in a full range of colours: from white through yellow and orange to red, spectacular when they have Splendid Fairywrens (iridescent blue) feeding in them, so I was a bit disappointed when there was no sign of either flowers or birds.

However, when I wandered back to the vehicle, a shrub on the other side of the road caught my eye. It was another *E. maculata* growing in the woodland adjacent to the claypan and it was in advanced bud with a few nicely open red flowers (pic next column). Worth the stop!

Also, just down the road, were some *E. scoparia* with a few flowers on display, so we managed two species of Eremophila when we were expecting none, along with a few other species in flower (Eucalypts, Saltbushes). And the birds of course.

We found some more Eremophila in flower later in the trip, in the Whyalla Conservation Park around Wild Dog Hill. There were three species there, but only two had a few scattered buds and flowers on display. These were *E. oppositifolia* (pic below) and *E. deserti*, while *E. alternifolia* showed no sign of flowering.

A New Garden in Tumut

Steve Cathcart

I am just developing a new section of my garden in Tumut NSW with a nice northerly aspect, on the other side of trees planted 20 years ago. I have been using past newsletters and the vast amount of information in them to help decide what new Eremophilas I will start pursuing to plant.

New garden beds, both raised, with northerly (left) and easterly (right) aspects

As a quick summary, I have about 20-25 Eremophila species (hybrids) in my garden currently. More than half of these are grafted. Those at left include *E. glabra*, *E rotundifolia* and a cerise *E. maculata.*

While I pretty much love all natives and have a reasonable range of them, I absolutely adore Eremophilas and it appears they generally love the hot dry summers of Tumut/Gundagai and can cope with the reasonably cold winters (temp range +1to 12 degrees, and up to 880mm rain p.a.), particularly when grafted. While the last couple of wet summers have seen some grey-leaved Eremophilas like some of the *E. glabra* (pictured at right, with frost damage) struggle a bit, I haven't lost any during that time that I recall.

Given I try to minimise issues of wet feet by using grafted individuals, the biggest issue I tend to face here is frost. I believe I have lost species such as *E. cuneifolia* in the past because of it; but thankfully I have recently got hold of another one, along with an *E. flaccida*, from a good friend of mine. I planted both into large pots under cover during the winter and they seem to be going OK. Species such as *E. muelleriana* seem to survive OK here despite often being frost-burnt slightly.

Under the generous tuition of a friend of mine, I have been trying to master the (difficult) skill of grafting in recent years. While I have had some success, I am yet to get consistent results. Interestingly, after seeing an article in a ESG newsletter, I recently (yes, in winter) tried cutting grafts on a bit of a whim and surprisingly seem to have had success with both *E. glabra* and *E. rotundifolia*, so I will be trying more of this method in the spring.

Hopefully I can source some new and interesting material to try for the new garden.

Sydney recovery

Charles Farrugia

This (immediately below) is my garden after the rains in Sydney in September 2022 and (below that) in August 2023. Read about the technique I used to help recovery in the last Newsletter.

What's the Resin for?

Lyndal Thorburn

I had an inquiry from someone in APS NSW who wanted to know the purpose of the resin on Eremophila.

I looked up Chinnock and, though he talks about the resin, he doesn't speculate as to its purpose. However, he did refer to the work of several chemists who have analysed its composition.

The resins, on those species where it is obvious, is made of terpenes and fatty acids.[2] The terpenes are toxic, and also occur in the leaves of some species which are not particularly resinous e.g. *E. maculata.* There have been many reports of cattle being poisoned after eating Eremophila (see June 2023 NL for a recent example), and, where the Eremophila have been analysed, the terpenes seem to be reported as quite high in concentration.

Hence, perhaps the terpenes and the resins are there to repel chewing insects (or browsing organisms including cattle)? On our recent trip we found stands of *E. duttonii* (below), looking shiny and magnificent as they had been untouched by cattle (which were loose on the road and could easily reach them).

In contrast, *E. maculata* at other sites had been browsed (probably by goats – maybe goats are impervious).

Another view I found online is that the resin's purpose is to reduce transpiration and enhance drought-resistance. However, the resins are produced by glandular hairs on the stems and leaves, and Chinnock notes that these then get stuck in the resin itself – making the stems and leaves look glossy.

I would have thought that if the resin's purpose was to resist drying, then they would not want to jam up the hairs, which in many Australian plants (including non-resinous Eremophila) are also thought to reduce the drying effects of wind.

Having said that, one WA academic has indeed postulated that the purpose of the resin is to resist water loss, but not by reducing wind effects.[3] He suggests that the resins reflect light and hence reduces the amount of heat reaching the leaf. In that case the toxin argument is secondary (though perhaps also useful).

[2] Gericke, O. *et al* (2020): *Nerylneryl diphosphate is the precursor of serrulatane, viscidane and cembrane-type diterpenoids in Eremophila species*. *BMC Plant Biology*,20, 91.

[3] Bell, D (1977): *Distribution and Function of Resin and Glandular Hairs in West Australian plants.* Jnl of the Royal Society of Western Australia 59(4): 119-123

Botanic Gardens Collections

Lyndal Thorburn

Australian National Botanic Gardens

Since the last NL our relationship with the Australian National Botanic Gardens has blossomed. They provided us with a wish-list of species they'd like to obtain and Tom and I, Jan Glazebrook, Denis Cox and Russell Wait have since posted cuttings collected under relevant permits in WA, Queensland and SA (see p.16 for more on permits generally).

I was relieved that the cuttings we sent survived Australia Post, which only took a week to deliver four Express Post envelopes sent from each of Bourke, Charleville, Longreach and Winton. I took the hint given to me by Chris Lill, who recommended using "slightly bleachy" water to soak the kitchen paper that I used to wrap them, before putting them into plastic bags and then the Express Post envelope.

Species sent have included: *Eremophila gilesii ssp. gilesii, E. dalyana, E. oppositifolia ssp. rubra, E. latrobei ssp. glabra, E. latrobei ssp latrobei, E. calorhabdos, E. glabra of various forms* and *E. rugosa.* Many of these can be grown from cuttings, but I have alerted ANBG to those that do better, or can only be propagated, by grafting.

A photo of the ANBG cuttings team is in the next column (no Eremophila cuttings in the pic, however) (pic Tamera Beath).

Adelaide Botanic Gardens

Meanwhile, a busy team at Kadina and Port Augusta has propagated the species in the table below, and has delivered them to Adelaide Botanic Gardens, to help renew their collection:

The picture of the plants prior despatch is at right (pic Tim Wood).

	SPECIES	SOUTH AUSTRALIAN	GRAFTED	GROWER
Eremophila	*abietina* ssp *abietina*		gr	Sandra McKenzie
Eremophila	*abietina ssp ciliata*		gr	Sandra McKenzie
Eremophila	*battii*	Y		Tim and Sandra Wood
Eremophila	*calorhabdos* x *splendens* 'Beryl's Gem'			Sandra McKenzie
Eremophila	*glabra* x *maculata* ssp *brevifolia* 'Beryl's Lipstick'			Tim and Sandra Wood
Eremophila	*delisseri*	Y		Tim and Sandra Wood
Eremophila	*duttonii*	Y		Tim and Sandra Wood
Eremophila	*freelingii*	Y		Tim and Sandra Wood
Eremophila	*georgei*			Tim and Sandra Wood
Eremophila	*latrobei*	Y		Sandra McKenzie
Eremophila	*mackinlayii* ssp *spathulata*			Tim and Sandra Wood
Eremophila	*miniata*		gr	Tim and Sandra Wood
Eremophila	*neglecta*	Y		ALBG
Eremophila	*nivea*			Tim and Sandra Wood
Eremophila	*glabra* x *nivea* 'Pink Pantha'			Tim and Sandra Wood
Eremophila	*punicea*			ALBG
Eremophila	*rotundifolia*	Y		ALBG
Eremophila	*serrulata*	Y		Tim and Sandra Wood
Eremophila	*waitii*			Sandra McKenzie

Eremophila on the Fly

Lyndal Thorburn

Our trip to Western Queensland in July this year and August last year had two purposes – to hunt out Eremophila in the wild for our research projects (and for fun!) and (this year) to visit all the main dinosaur sites in the State. We had to travel a long way and be able to identify Eremophila from a distance as we flew past at speeds of anything from 60km to 110km per hour.

Over this trip and the last, we both developed our "eye" enough to do this, for most species for which we were looking. We were helped initially by quite detailed locations lists in Chinnock – these gave us the general idea about what we were looking for, and when we found a species once, we developed our ability to find likely specimens at a larger scale.

I have started recording sightings of the more common species in iNaturalist (www.inaturalist.org) so if you are up that way, you can find them as well. The table below gives the broad scope of what we found we had to look for, to find each species. We nearly always had to double back to then stop and look, so you need a compliant driver as well!

Species	**View from a distance**
E. bignoniiflora – Shrubby trees with multiple dark branches without leaves at ground level, wide crowns and droopy branches. Flowering more likely in August than July. Found within and either side of floodways (may be hundreds of metres from the creek line). Light reflects from fruit, if present. Wilga is similar, but grows in a ball shaped, has leaves all the way to the ground, and no fruit.	
Eremophila bowmanii ssp. bowmanii – small, yellowish-grey shrubs with stems curving upright. Flowers will be visible if flowering (August). In stands of many hundreds of plants, including in shaded areas away from road. Recurved leaf is distinctive close up. *E. bowmanii ssp. latifolia* is generally larger and greyer. 	
Eremophila cordatisepala – tiny dark grey plants scattered across bare, rocky ground. These were in full flower in August, but flowers were not visible from the road.	

E. debilis – not visible from road because of prostrate nature and habit of growing under trees. Will not grow among pasture grasses, need to look for areas where native vegetation remains (marked green on Google maps) and then get out of car to hunt. May be partly covered by other vegetation. Not flowering when we saw it.	
E. deserti – almost universally found in the shade under Eucalypts or *E. bignoniiflora* – the latter in floodways. Irregularly rounded shrubs with bright green leaves. If flowering, you might be able to distinguish small white dots from a distance. Flowers were visible in both July and August, but time of flowering seemed to vary widely as some plants were also well into fruiting.	
E. duttonii – in stony soil, shrubs that are a darker green than other species in the area. Look neat and have round crowns, no animal damage. Likely to be well-scattered in the landscape. Flowers, if present, can be seen from the road, as can the light green calyces. Flowering in July.	
E. gilesii ssp. *gilesii* – grow on roadside following clearance, particularly beneath stands of Acacia. Often a darker green than surrounding vegetation. Flower in July and August if in full sun, later if in heavy shade. Shrubs are distinctive "inverted triangle" in shape and less than 1m high with floppy leaves. Mauve to purple flowers can be seen from road. Often hundreds in a single stand.	

Eremophila glabra ssp. *glabra* – although widespread, this is difficult to find. Plants are under Eucalypts and can be in deep shade, and even when flowering it is hard to see colour from the road. They also look quite similar to *E. deserti* from a distance, although *E. glabra* is generally more upright and V-shaped – but the former is more prevalent.	
Eremophila goodwinii – in sun or semi-shade as small shrubs with woody stems. Very visible in flower, otherwise nondescript. We suspect the flowering we saw last year was in response to La Nina, as this year the plants looked half dead!	
Eremophila hispida – low shrubs in stony soil, with upward-growing stems, in full sun. Plants abut but do not overlap. Flowers not visible from the road.	
E. latrobei ssp. *glabra* – in stony/lateritic soils along roadsides. Grow either in the open or in semi-shaded patches underneath Acacia. Sometimes found with *E. gilesii* but also with Senna and Ptilotus. The largest stand we found had >100 plants and was in semi-shade. Flowers are quite visible, otherwise need to look for twiggy shrub with upward-growing, angular stems.	

E. latrobei ssp. *latrobei* – Grey-leaved forms may be growing amongst grass, in the open, or in stony soil. Shrubs 1-2m high. Can be very visible when flowering.	
E. longifolia – great numbers of plants along roadside, many in full flower in July/August. Found in sunny locations in between stands of Acacia – usually well out in the open May be also in association with *E. gilesii*. Flowers visible from road.	
E. maculata ssp. maculata – in floodways or claypans. Likely to have >20 plants in a cluster out in the open, well spread. Many colours likely in a single stand and will be visible from road if flowering. Smaller specimens may be hard to see amongst the grass.	
E. mitchellii – very green tree with round crown and distinct, fissured trunk. Flowers very visible when present. Often in a stand of many trees at various stages of development	

E. oppositifolia ssp. rubra – tall open shrub, growing in full sun. Very noticeable in flower. Plants are isolated rather than growing in stands, can be difficult to find.	
E. polyclada – in floodways, in full sun. Very dense thickets 1-1.5m high, look a bit like blackberries but light green. Thickets may be next to each other or hundreds of metres apart. They do not flower until December.	

A Note about Permits

Just a reminder to members that any collections of wild material of any species must be done under the parameters of the collection requirements in each State – **and every State is different**.

All fruit collections for the UQ projects and cutting for the ANBG collected by individual members of the Study group in Queensland have been authorised under the *Code of Practice for the Taking and Use of Protected Plants Under an Exemption* which applies in that State. This is partly because of the status of the plants we want to collect, and partly because we are collecting for non-commercial (research and conservation) purposes. It is also important to understand that it is not the Study Group that has been granted the exemption – it is the individuals involved. Further, this exemption only applies on public land that is not a national park or reserve. The exemption excludes or modifies collection of some species because they are rare and endangered.

In South Australia we have been told that individuals wishing to collect specimens for any of our projects need to apply for a permit (in their own name) which also specifies the location of collection.

Western Australia also has collection permit requirements that apply to individuals.

There are no permit requirements for the species in which we are interested in NSW for non-commercial use. However, we have to follow the rules for seed collection which apply in both NSW and Queensland, that is, we cannot collect more than 20% of the fruit off any one plant or 10% of the vegetative parts of any one plant, and we need to be careful we don't bring weeds into the collection site on shoes or equipment.

If you are collecting anywhere in Australia for your own non-commercial use, please check the requirements that apply in that State and make sure you do have the necessary permits. There are inquiry email addresses for each State, and we have found them to be responsive to our questions – better to be safe than sorry!

Research Update

Robyn Cave

Native Plants Queensland pollination study

This project is rolling along with ESG members providing an additional 245 garden fruit during July to balance existing samples. Members also collected 54 fruit of *E. polyclada* and *E. debilis* during their travels in NSW/Qld in July and August. So, our total tally is 6,436 from domestic gardens and 6,657 from the wild (wow!). A great result and thanks to all who contributed!

Lynn Hoffmann (pic below) and I (pic next column) spent aa day in Charleville in July collecting fruit and soil samples from 5 species, including four different stands of *E. longifolia* (only one stand had plants in full flower). From the soil samples, we hope to learn more about the nutrient properties of the soil in which Eremophila grow naturally. We also collected flowers from three species to investigate pollen production and health (pic below of samples).

We were very grateful for the precise coordinates supplied by the ESG members. As a result, we could make the most of our time at Charleville and develop an eye for spotting the plants (such as the *E. longifolia* at left) along the roadsides.

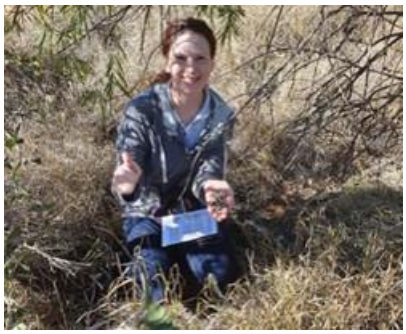
Australian Research Council germination study

The Study Group members who trekked around Western Queensland in late July and early August collected lots of fruit to start the ball rolling on this project. Species collected were:

E. bignoniiflora – 1,011 fruit, 6 sites	*E. longifolia* – 1,130 fruit, 6 sites
E. gilesii ssp. *gilesii* – 684 fruit, 4 sites	*E. duttonii* (green) 162 fruit, one site
E. deserti (green) – 230 fruit, one site	

These have all been received safely at UQ. Despite finding *E. latrobei*, all fruit still on the plants had been eaten out by insects (pic right) or were galls. The new fruit were insufficiently developed to enable ESG members to collect them.

We will hold a Steering Committee meeting in September to plan staff and student recruitment, a protocol for removing seed from fruit, and the first germination trials.



Australian Flora Foundation ploidy study

In June we submitted a revised proposal to the AFF to explore how ploidy affects germination in Eremophila. There will be more on this project in the next Newsletter.

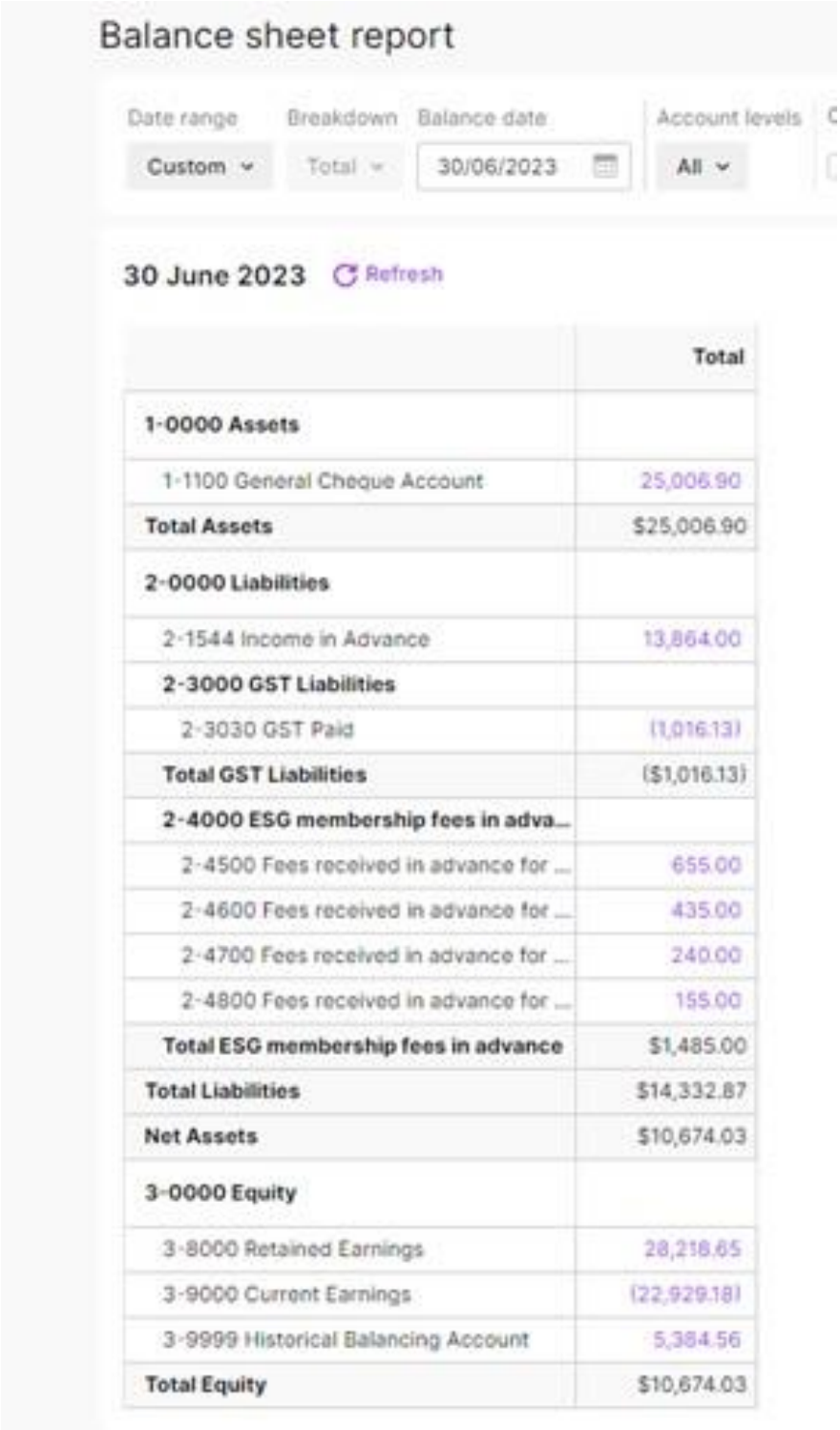
Updating "Where to Buy"

It is time to update our list of nurseries which sell Eremophila again – see the list at https://anpsa.org.au/wp-content/uploads/Buying-Eremophila-May-2022.pdf.

Please email the editor if you know of any new nurseries that sell Eremophila, ones which have started stocking them, or ones which have stopped.

Finances

Below is the balance sheet (on a cash basis) for 2022-23. The income in advance of $13,864 is the remainder of the NPQ grant, which is sitting in our account pending the next progress payment to UQ (expected to be fully paid out within this financial year). Our GST bill is high because the payment of the grant to UQ by us is attracts GST (technically, we are commissioning research services from UQ).



Balance sheet report

Date range: Custom | Breakdown: Total | Balance date: 30/06/2023 | Account levels: All

30 June 2023 Refresh

	Total
1-0000 Assets	
1-1100 General Cheque Account	25,006.90
Total Assets	$25,006.90
2-0000 Liabilities	
2-1544 Income in Advance	13,864.00
2-3000 GST Liabilities	
2-3030 GST Paid	(1,016.13)
Total GST Liabilities	($1,016.13)
2-4000 ESG membership fees in adva...	
2-4500 Fees received in advance for ...	655.00
2-4600 Fees received in advance for ...	435.00
2-4700 Fees received in advance for ...	240.00
2-4800 Fees received in advance for ...	155.00
Total ESG membership fees in advance	$1,485.00
Total Liabilities	$14,332.87
Net Assets	$10,674.03
3-0000 Equity	
3-8000 Retained Earnings	28,218.65
3-9000 Current Earnings	(22,929.18)
3-9999 Historical Balancing Account	5,384.56
Total Equity	$10,674.03

The cash-based Profit and Loss report for the year is below. You will see we are starting to generate reasonable income from several sources, and many members donate extra with their membership fees (recorded under miscellaneous income). I hope this income will enable us to reduce or eliminate Study Group fees in the future – such a step will depend on the amount of support (that is, sales!) we can get for things like merchandise. Your State coordinators have sample of these, and both the colouring book and wrapping paper are now available from Gardening with Angus (www.gardeningwithangus.com.au).

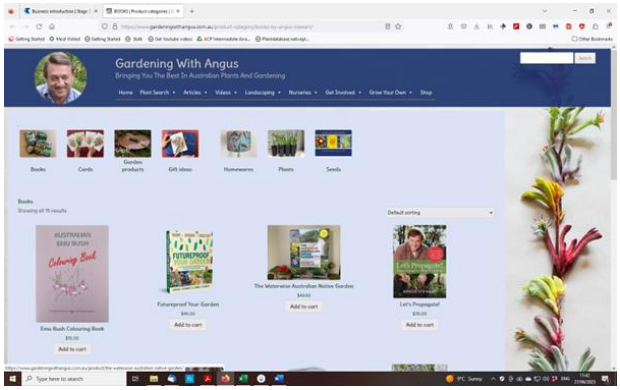
If anyone has any questions about the finances, please contact me.

Profit and loss report

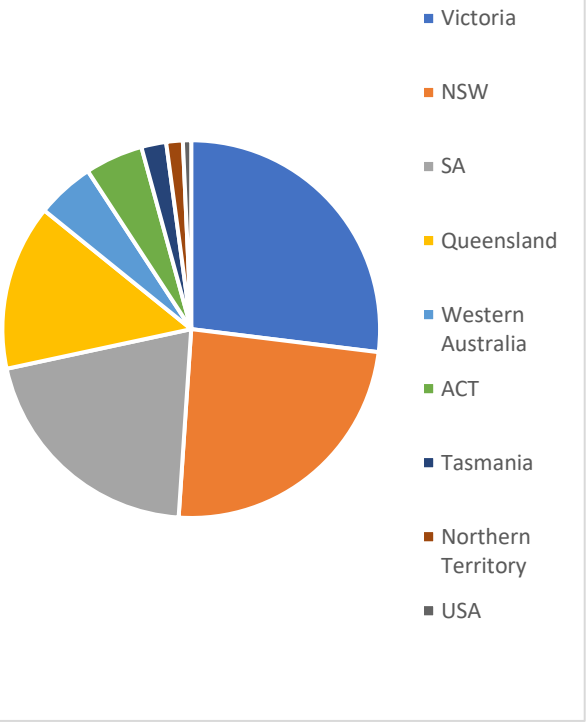
Date range: Custom | Date from: 01/07/2022 | Date to: 30/06/2023 | Breakdown: Total

1 July 2022 to 30 June 2023 Refresh

	Total
Income	
4-1100 Memberships	730.00
4-400 Card sales	605.50
4-4100 Book sales	60.80
4-4200 Wrapping paper sales	322.80
4-4300 Colouring book sales	270.40
4-4500 Raffles	488.00
4-4600 Postage	68.60
4-5100 Propagation material sales	2.00
4-6100 Miscellaneous Income	629.48
4-7100 Cultivar use donations	675.00
4-8000 NPQ grant	(13,864.00)
Total Income	($10,011.42)
Cost Of Sales	
5-1000 Postage supplies	151.04
5-2000 Publications cost price	1,911.31
Total Cost Of Sales	$2,062.35
Gross Profit	($12,073.77)
Expenses	
6-2000 Printing and photocopying	302.79
6-3000 Postage	90.49
6-4000 Stationery	7.60
6-4500 Software	454.53
6-4800 Research expenses	10,000.00
Total Expenses	$10,855.41
Operating Profit	($22,929.18)
Other Income	$0.00
Net Profit	($22,929.18)



Pie chart showing distribution of our 141 members by State, August 2023.



Sub-Group meetings and events

NSW sub-group

Lyndal Thorburn

There are no meetings planned in NSW by the sub-group, despite attempts by Ian Cox to generate enthusiasm.

In the meantime, I am speaking at the **APS NSW State** meeting in East Goulburn on the morning of Saturday 18 November. The topic is (roughly) *A Plant for All Climates – Eremophila, its Study Group, and how you can have years of fun growing Emu Bush.* I will definitely be there all day Saturday, including at dinner. The weekend also includes a wetland walk, a garden visit and a dinner speaker.

For more information log into your APS NSW website and search under Events.

Victorian sub-group

Chris Strachan

It has been a cold and miserable winter here in Melbourne and some of the Eremophila have not been too happy about that. Wondering how they will react when the predicted very hot summer arrives? We shall see!

The Growing Friends of the Cranbourne Botanical Gardens had our Winter Sale in July and the Eremophilas sold very well. Most of them are grown from cuttings from my small garden and it is very pleasing to think our Group is spreading the word and variety.

See below for details of the next meeting.

NEXT VICTORIAN MEETING:

Members have agreed to meet at Melton Botanic Gardens on Saturday 7 October, commencing with morning tea at 10:30am.

For more info email Chris Strachan: doowop49 (at) hotmail.com or 0432 621 392.

Queensland sub-group

Lorelei Bartkowski

The July meeting at Pete's Hobby Nursery, Lowood, welcomed 15 people. Jan Glazebrook was given an Eremophila gift in recognition of keeping members informed and excited about Emu Bushes since 2012. Thank you, Jan.

The meeting discussed the planned west Queensland trip and Robyn Cave and Lynn Hoffman from UQ provided some briefing about collection protocols for the research projects (see page 17).

The main topic of the meeting was propagation by cuttings. Various potting mixes were discussed e.g. 1/3 course washed sand, 1/3 perlite, 1/3 vermiculite; or replacing the vermiculite with coconut fibre (coir); or preprepared native potting mixes.

Rooting hormones used included Clonex, Rootex-G, or rooting powder – but some use honey or no treatment.

Cuttings should be placed where they can receive morning sun for 2 or 3 hours during winter but dappled light in summer or hot days. Methods to prevent drying out after cutting include using peat plugs with misting under 50% shade-cloth, commercial oven bags over pots, large soft drink bottles, and polystyrene boxes covered with glass or Perspex.

A technique for rooting in water was discussed in detail. Myoporum cuttings root well when placed in a cup of water on a warm sunny windowsill. It was noticed cuttings grew roots quicker in clear glass cups than in normal cups and this idea progressed to the following set up:

1. Obtain a clear glass baking dish and cut a rectangular piece of cardboard (corflute type from larger boxes not the thin cereal box stuff) to similar size so it sits on top of the dish.
2. Punch holes in the cardboard with something like a darning needle or knitting needle or thin scissors – holes around 3mm work well for most cuttings.
3. Prepare cuttings around 10cm size but can be bigger or smaller if needed.
4. Insert cuttings into holes in cardboard and support in an upright position with airflow around each one.
5. Fill dish with water and add a little rooting hormone (unsure if this made a difference).

6. Place in a level position that gets 2 or 3 hours of morning sun and then shade or dappled shade.

A 30cm baking dish can fit heaps of cuttings – label varieties on the cardboard or make a separate list of rows of cuttings. The cuttings tend to weigh it down a bit.

Check the setup every few days and top up water if needed. If it is a mix of variety cuttings roots should appear on some quickly and slowly on others – lift the cardboard and inspect. Gently pull out the rooted cuttings from the bottom (root side) – the leaves pull through the holes easily for most species. Pot up and place in similar morning sun for a fortnight or so.

We then toured the Rail Trail. Many of the Eremophila were in full flower or about to come into flower. It was a spectacular sight. A particular stand out was *E. cuneifolia* x *fraseri*. Many grevilleas and wattles were also out in flower. Many thanks to Peter Bevan for once again hosting the meeting at his nursery.

NEXT QUEENSLAND MEETING:

Sunday 8 October at Lorelei Bartkowski's home, 89 Glencoe-Yalangur Road, Glencoe Qld.

Topic is discussion of the Winton Trip.

For more info email Lorelei Bartkowski on esgqld (at) gmail.com.

South Australian sub-group

NEXT SOUTH AUSTRALIAN MEETING:

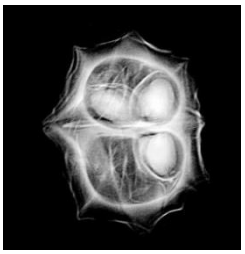
On Saturday 7 October 2023 at the APS Clubrooms in Kadina SA, starting at 10am.

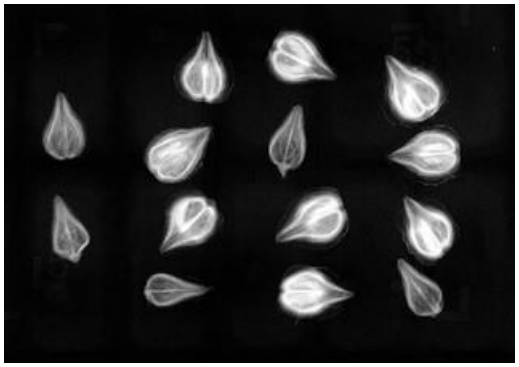
Topic is Peter and Ronda Hall's trip to Cape Range and Mt Augustus

For more info email Tim Wood: drspock52 (at) gmail.com

Snippets

Dave Bishop (NSW): I found some Xray of Eremophila that I was doing on old seedbank stock... you may be interested as you can see the four sections, the empty chambers and the full ones.





I finally got some cuttings of the *E. glabra* from Canning Stock Route to strike so have a couple in garden now. Strangely, the one that was looking great on my Myoporum graft kicked the bucket during the wet, but the ones on their own roots survived, didn't look happy but started putting out new shoots when the rain slowed.

Steve Cathcart (NSW): Thank you for my first newsletter since joining. It was great and I also absolutely loved the 1972-1985 newsletter compilation.[4] Reading about the trials and adventures of Ken Warnes, Russell Wait and others from those early days is fantastic. It is inspirational to read current newsletters and realise they are still such active members. I regularly use Boschen/Goods/Wait as a reference (yet to get Russell's book but will hopefully soon). I was interested to read in NL#6 about a red flowering *E. subfloccosa*, now that would be an impressive plant, do you know whether it is (or has ever been) in cultivation? I can't find mention of it anywhere?

Ross Dawkins (SA): Another great read (June 2023). Much appreciated for all the hard work you do with each edition.

Beth Gower (NSW): Rainbow lorikeets enjoying my *Eremophila maculata* 'Magenta' in my Manilla garden.

Ross McDonald (Vic): I do not wish to renew my membership of the ESG as my age and infirmity now prevent me from any gardening activities, or garden visits.

Thank you for years of very interesting and informative newsletters.

Russell Wait (SA): Now with seeds, I have never found a viable seed even from the wild and I think conditions might have to be very good for them to set seed. Ken and I believe there have to be two different plants of the one species nearby to get viable seed for most species. Those out of gardens are mostly hybrids, and they may germinate differently to those out of the wild. So, germination rates may differ between garden grown and wild ones. I did an experiment with removing the seed from the fruit and all responded to smoke except *E. clarkei*.

Ken Warnes (SA): In relation to the last newsletter, Chen Zhang may have worked with *E. subangustifolia* rather than the true *E.*

[4] We are almost out of stock of these If interested, email the editor - $5 plus postage.

microtheca. We were using the wrong name for many years until they were split and Russell managed to find the original *E. microtheca*, which some of us now grow. It has nowhere near the aromas and so presumably has lower aromatic oil levels.

In relation to Queensland (see p.12), Peter Hall and I ended up in the Welford National Park by mistake once. I remember it as being quite spectacular plant-wise. From Windorah to Quilpie (which really impressed me as a town) you travel past the jump-up about 30 miles west of Quilpie. I recall seeing *E. arbuscula* there, but it looks like *Acacia coriacea* and I think one of the Corkwoods, so you need to be aware of subtle differences in outline. It won't be flowering in July so that's no help.

At the jump-up we found *E. linsmithii* and I think *Prostanthera megacalyx*. It is a good spot for a ramble. We also saw a few plants of *E. bowmanii ssp nutans* near the Pinkilla turn-off (or perhaps it was Eromanga – it was 33 years ago and memories play tricks). I seem to also recall a few plants west of Thargomindah on the Nockatunga Road, but never big stands.

To seeds. The x-rays shown in the last NL showed no seeds in *E. pterocarpa* fruits. It's possible that all *E. pterocarpa* in SA, and possibly interstate, are a single clone collected by Bryan Barlow back in about 1971/2. If, as we suspect, cross-pollination assists in seed set in many species, the lack of a pool to provide cross-pollination would explain why no seeds were observed in the x-rays. Russell has since collected it and reported no evidence of mature seed set. However, lack of cross-pollination still holds as a possibility.

My thoughts on the more likely germination of cross-pollinated species are based on field observations in "species" such as *E. arenaria* and *E. praecox* and populations of *E. forrestii x latrobei*, among others, backed up by volunteer germinations in our gardens. The current studies in Queensland might need to take account of them.

I note that UQ wants fruit of *E. deserti*. Bob Chinnock records that *E. deserti* tends to being dioecious, i.e. separate male and female plants. Because the male flowers are larger and more showy, we may have selected more male plants from the field in our initial collections. This would naturally lead to lower fruit set. However, when I scratched around under one of my clearly predominantly male plants, I found lots of fruit, but it was tedious trying to find them among the trash. I must collect more and then determine the level of seed within. I have several specimens from more than one collection, but I don't know the origin of any, and I don't have any that I would say are predominantly female flowered. So much still to learn.

This leads on to Rusell's and my own current attempts to set up breeding groups in our plantings to achieve fertilisation within a species (not unlike Zoos do throughout the world). If we are successful, it will be a real step forward in the conservation of endangered species and will tie in well with the UQ project. I'm not too concerned about specific pollinators, I think we have enough birds, bees and insects to do the job while being aware that it may be a factor. Certainly, this indicates a change in our previous approach where we collected from only the best specimens and keep plants isolated in cultivation. Now we collect from more than one in a population and group our plantings.

To show our progress we now can list group plantings of *E. hillii, W. decussata, E. waitii, E. balythunensis, E. vernicosa, E. subangustifolia, E. viridissima* and *E. gilesii ssp variabilis* and are working on several others.

Speaker available

If your local group is looking for speakers, don't forget your trusty Study Group leader can always come and talk about Eremophila! I have two talks available, with slides:

Eremophila – the genus as a garden subject and the work of the Eremophila Study Group

Eremophilas in the landscape – three trips hunting Emu Bush in western Queensland

Next issue

The feature species for the next issue will be *Eremophila divaricata*, including its hybrid 'Summertime Blue.'

About the 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).

SUBSCRIPTIONS

Membership is $5 per annum. Subscriptions for a financial year can be sent by cheque posted to 3 Considine Close Greenleigh NSW 2620 or (preferably) paid by direct deposit into the Group's bank account:

BSB: 105-125 Bank name: Bank of South Australia

Account No.: 013 751 340
A/c name: ASGAP Eremophila Study Group

Please put your surname and state/group membership in direct deposit details

ANPSA policy is that regional groups pay for two subscriptions in recognition that Study Group material will be used by several group members

New members, please download the application form from our website and send with your cheque/transfer (details below) https://anpsa.org.au/study_group/eremophila-study-group/

Study Groups allow members with specific interests to develop that interest to the full and to contribute to the body of knowledge on the Australian flora. Active members collect information on the genus and send their observations to the leader who collates and publishes the information, in a newsletter or in other Society publications. The Study Group can record any aspect of cultivation, propagation and ecology of the preferred genus. Study Groups are expected to publish at least two newsletters per year. Back issues of newsletters can be found at https://anpsa.org.au/newsletter/eremophila-study-group/.

This 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.

In addition to paying annual Group fees, members must also be members of an ANPSA-affiliated regional society (https://anpsa.org.au/membership/).

Leader: Dr Lyndal Thorburn, Life Member of ANPS Canberra. Contact her through lthorburn (at) viria.com.au or phone 0418 972 438. Address: 3 Considine Close Greenleigh NSW 2620

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 Ms Jane Fountain Coordinator, Study Groups, Australian Native Plants Society (Australia) (studygroups (at) anpsa.org.au)

NEXT NEWSLETTER when I have enough for 24 pages