

FRIENDS OF THE WAITE ARBORETUM INC.

NEWSLETTER 112 WINTER 2022

FORTHCOMING EVENTS

Free Guided Arboretum Walks

The first Sunday of every month at 11 am. Meet on lawns Urrbrae House. Please observe all SA Official Covid-19 directives when visiting the Arboretum. [Covid-19.sa.gov.au](https://www.covid-19.sa.gov.au)



Waite Arboretum App



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Peaceful setting looking east from the southern side of the Waite dam. Currently the dam area is not open to the public.

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2022 Winter Arboretum report

Dr Kate Delaporte

Robin Sinclair; some winter haiku

early winter walk...
a festival of fungi
in pop-up displays

white cockatoos
huddling on telegraph poles
gathering mist

fingers of light
stroking the frosted garden
into winter life

the mist comes down
enfolding us in silence
shutting out the world

My friend Robin Sinclair writes Haiku, and she is this season's guest poet. Very evocative for those who live in the Hills!

Each season, I look back at my previous columns from that time, to see what I say, and what I think is important, and to review what has changed. Sometimes there are new things, sometimes the same issues are still there, important and valuable, or frustrating due to the lack of progress.

No doubt I love winter; however, this winter has been a bit of a trial, as I've spent what seems like months sitting in front of my computer preparing lectures and assignments, delivering lectures and assignments, marking lectures and assignments! A picture emerges. It's the best of times, but also the worst of times.

I looked at my garden last weekend (shivering) and realised that the last day I worked out there was Before the Rain Came, that big rain event in late May early June. Jobs were half finished, items lying still where they were laid that warm sunny Sunday. Goodness! I don't want the rain to stop, but I would like a sunny weekend to get stuck in and get the planting done soon. I did take some much needed 'dirty nails' time to pot up my 'Aunty Roma's memorial geranium and fuchsia' that the local possum has recently taken a liking to and move them to a possum-free location. I do love the possums and appreciate that they don't have much to eat at the moment, and I will give them some sacrificial geraniums, but just not my Aunty Roma's.

What's happening in the Arb?! Lots of planting – amazing Erica and her band of enthusiastic and much-loved volunteers are planting so many things in our biodiversity gardens. I am quite astounded that we have reached the 1,000 plant mark (spoiler alert!). It's also wonderful to have so much engagement with the next generations of nature lovers, be it University students and primary school children. Thankyou to the guides who always help out with these extra special tours.

We've started the yearly maintenance schedule in the Arb; mowing and spraying to moderate and manage the ground vegetation for soil and plant health, and for fire fuel load reduction. One of our key drivers of management is to keep the site safe for all, so this means, at times, we have to really work hard to get on top of expected spring growth before it happens. We are able to share our resources with the Urrbrae TAFE Arboriculture students, to give them an opportunity to undertake training in different kinds of pruning techniques.

The Waite Campus' 'Indigenous Plant & Knowledge Garden' received its first batch of plants this month; lots of yam daisies (*Microseris lanceolata*), native lemon grass (*Cymbopogon ambiguus*), native marshmallow (*Malva preissiana*), a native elderberry (*Sambucus australasica*), some Sweet Apple-berry (*Billardiera cymosa*), and feature small trees *Eucalyptus caesia* ssp *magna* (Silver Princess) and *Acacia araneosa*. The next stage will come in late August when it's a little warmer and I've finished marking, so if you visit Waite, please take a look.

In the depths of winter, the good things start, making us happy, and soon we will have many new plants flowering.

In other news: TREES. Trees are very important to us as humans, and the fact that you are reading this means, as Friends of the Waite Arboretum, you believe in the value of trees. There is no doubt that Adelaide, and in fact Australia and the world, are losing our tree/plant canopy at an unsustainable rate. Governments are recognising that we need to plant and preserve trees, but are apparently conflicted with business opportunities. The Arboretum was established in 1928 as a scientific collection of trees and shrubs, growing under natural conditions, to inform the State of South Australia as to how different trees will perform. We now have an opportunity to realise the immense value of our near 100 year old site; growing interest in urban trees and climate change mean that the Arboretum collection can provide valuable insights into species performance under urban conditions. We have received seed funding from the University's Environment Institute to commence a collation of data on urban street trees, including the Arboretum collection, and undertake a comparative review of growth and performance that can inform near-future trials into new species to diversify and build resilience in our urban forest. Exciting times ahead!

Elm Avenue showed significant impact of Elm Leaf Beetle this year and we will commence a treatment program in spring 2022. The last treatment was in 2016; we have had a good run, but the long mild autumn resulted in an explosion of the pest and severely impacted most of the trees. We are taking the opportunity to record images of the trees and leaves, and collect soil microbiome samples prior to treatment, and will take new samples each year to see what impact the chemical treatment has on the trees and the surrounding environment. Lifelong learning in action!

And finally... we are taking advantage of the winter rains to progress the reinstatement of the Dry Rainforest Garden. We will plant new specimens of as many of the original species that we have been able to source in a new, under canopy area west of the Water Course. We have documented the growth of the existing specimens to determine how successful those species were in that location. The new location will have irrigation provided through a temporary system to enable adequate watering to establish without the need for hand-watering – which is a significant task for over 60 specimens!

On this auspicious number date, there was an amazing sunrise. Hopefully this is a good sign for the future. See you all in the sunshine and the rain.



Eucalyptus pyriformis Pear-fruited mallee MYRTACEAE 1973



Report from the President FWA Dr Wayne Harvey Winter 2022

Our 27th AGM was held in May at the Coach House on the Waite Campus and was once again held during the day rather than the evening and included presentations by University staff and students. It's a model we will continue with.

The business section of the meeting included the adoption of our financial position for the financial year ending December 2021 and the appointment of a Management Committee for the next year, with some new committee members. The formalities were followed by presentations by Adelaide University students on their investigations into topics relevant to the Arboretum.

The current investigations in the Arboretum by the students remind us that the Arboretum is a living integrated system, and like all living systems shows relationships that may not be immediately apparent. An on line international seminar held in June on the subject of establishing small forests in urban areas posed the question of selecting and planting species that are regarded as 'climate ready' rather than selecting species designed to reinstate the previous, 'natural' vegetation that may have occurred in an area. It's a notion that many might challenge but reinforces the value of the management applied in the Arboretum where fallen limbs often remain on the ground and where supplementary water is withheld from the trees during Summer. The trees and shrubs in the Arboretum receive minimal intervention and therefore show how they and the wildlife they attract might adjust to shifts in the weather patterns in South Australia. The Arboretum trees that flourish are 'climate ready'.

Animal populations that use trees for food, for shelter or just as a place to briefly visit may also change depending on what we plant. Adelaide University's Dr Katja Hogendoorn reminds us of the sensitivity of insects to the availability of certain plants when she describes a special bee-to-plant interaction that might occur in the Arboretum. Dr Hogendoorn emphasises the scarcity of the Golden Pea Bee in the Adelaide suburbs and adjacent foothills, presumably because of the scarcity of the flowers they visit. The last comprehensive survey of animal life in the Arboretum was in 2017 and that survey showed the diversity of vertebrate and invertebrate species that either live in or visit the Arboretum. Seven types of bees were listed at that time, but not the specific bee referenced by Dr Hogendoorn. The list from 2017 also includes species we might regard as arrivals from elsewhere, notably the Wanderer Butterfly that is both the most commonly observed butterfly in the Arboretum and was introduced into the Adelaide area in the 1880s.

There can be no doubt the trees in the Arboretum contribute to the diversity of life in the Urrbrae area. Its an aspect worth noting.

Jennifer Gardner Prize for 2021

Hi everyone, my name is Jaylie (Jay) Ryan and I am currently completing my honours in soil science at the University of Adelaide. My project title is "Assessment of soil carbon in Waite Arboretum using infra-red spectroscopy as a predictor of aggregate stability and erosion potential".

Soil carbon is really important for a healthy soil as more carbon within the soil helps to improve water holding capacity, structural stability and nutrient retention. Soil carbon is also important to help mitigate climate change as trees take in carbon dioxide from the atmosphere and store it in their leaves. These leaves then fall to the ground where they are decomposed and the carbon is then stored within the soil.

I am looking at how the soil carbon concentrations vary within the Arboretum and what causes this variation. My research builds on work I did in a small section of the Arboretum last year where I looked at the relationship of different nutrients between leaf litter and soil. My results found a strong link between high nutrients in the litter and high nutrients in the soil. I was also lucky enough to receive the Dr. Jennifer Gardner Prize for my Waite Arboretum Research presented at the 2022 awards ceremony.

My research this year builds on this by looking more closely at multiple different factors influencing soil nutrient concentrations. I have also focused my research purely on carbon this year and hope to generate a soil map of the whole Waite Arboretum showing how the carbon concentrations vary. I have chosen to use infra-red spectroscopy to measure carbon as it is a novel inexpensive method which allows me to sample a larger quantity of sites.

So far my results are looking very promising as the areas of high carbon have been found under trees compared to in the open areas. Soil with high concentrations of carbon have also been found to have a greater structural stability which means they are less susceptible to erosion. I will go into the detail about my results and how this project is looking in the next newsletter so please stay tuned.



Figure 1: This is a photo of the soil profiles along the row of the Dutch Elms. The top of the photo is the ground surface and the bottom is 80cm below the surface. Photo JR

Volunteers in the Waite Arboretum



FWA Committee members. From left, Terry, Marilyn, Joan, Ramute, Wayne, Allan, Jenny and Jo.



Thanks Mallee-team, Ernest (photo), Sam, Laetitia, Jennifer and Martin for your help in keeping our mallee trees free of weeds and very well mulched. It makes an immense and beautiful difference!

What's flowering at the BB&B? By Erica Boyle

This beautiful Rice-flower (*Pimelea* sp.) is in full bloom at the moment in the Waite Arboretum BB&B. A beautiful plant to include in your garden to provide nectar to butterflies and insects which will also attract insectivorous birds such as wrens, robins, and Willy Wagtails. *Pimelea* species belong to the *Thymelaeaceae* family and are commonly known as rice flowers. *Pimeleas* range from small upright herbs to small shrubs and can offer a wide variety of colours. A genus of 108 species from which 90 are endemic to Australia with a few other species occurring in New Guinea, Timor and Lord Howe Island.



BB&B inspiring our next generation of biodiversity custodians.

By Erica Boyle

On Monday, July 4, a group of 25 Coromandel Valley Primary School students with their specialist science teacher, Sarah, visited the BB&B Arboretum and Native Bee Hotel. Sarah was thinking of setting up a garden with the students at her school and contacted us for ideas and inspiration. After playing and reading the interactive BB&B map (<https://prezi.com/view/SRQfAyPWvZMMwBZrewig/>) that I shared with them, they were ready to come for a visit. Kindly, three of our excellent volunteer guides, Linda, Jenny, and Terry, gave the kids an intensive tour packed with inspiring information.

With our team of BB&B volunteers, we were all so happy and excited to hear Sarah say, "We had a magical time in the BB&B garden. The kids found it fascinating, they asked lots of wonderful questions and took notes for a bee hotel." She also added that "the children also noticed some plant species that Dr. Katja Hogendoorn had left us for Golden Pea Bee when she visited a few weeks ago" (more about this in the next edition!) "Terry, Jenny and Linda were very knowledgeable and they included a walk through the eucalyptus trees where the children saw some wasps that we had seen as pinned specimens that morning in the museum."

An extraordinary experience that adds to the importance of this project by educating audiences keen to learn. Thank you so much to our awesome guides!



July 4th. Coromandel Valley Primary School students, interested in building a bee hotel and learn about native bees. Terry showing the students how to construct a bee hotel. Photos by Sarah.

Bee, Butterfly and Bird Garden. Erica Boyle

BB&B reaches 1000 plants! By Erica Boyle

A very exciting planting season at the BB&B. Thanks to our BB&B team of volunteers who planted an additional 300 seedlings in just two sessions, the arboretum habitat garden has reached 700sqm with more than 1000 specimens from 50 different species.

For more inspiration visit: <https://www.adelaide.edu.au/waite-historic/waite-arboretum/bee-butterfly-and-bird-garden-bbb> or come to the Arboretum to visit in person.

We can all do our bit, let's plant this winter!



Rob, Les and Julianne on a super busy planting day!



We want to see more birds in the arboretum! By Erica Boyle

That's why the Curator has decided to develop mini habitat gardens within the arboretum grounds to give refuge, food and a nesting site to some of the smaller birds that usually don't visit our trees.

Adelaide's bird community has changed drastically since European settlement, with loss of native species and arrival of exotic species competing for food and dwelling.

The decrease in number of native birds is directly linked to the loss of habitat. The lower layers of dense native shrubs are the ones many small woodland birds use as their preferred habitat and feeding site. The decline of native shrubs and small trees in urban areas is an example. Our new Bird Garden has been set up within the *Hakea* collection of the Arboretum. The three *Hakea prostrata* species are mature with dense and prickly foliage offering small birds protection and safe nesting sites.

Small birds such as Silvereyes, Red-browed Finch, Eastern Yellow Robin, Spotted Pardalotes, Grey Fantail and Superb Fairy-wren, forage in the protected lower levels of the garden to feed on insects,

caterpillars and spiders as well as berries and seeds. We are now most interested to observe the change in these parts of the Arboretum and we hope visitors will check out the return of our native BB and B's, and be inspired for their gardens.

Tips to create a bird heaven:

Focus on creating a multi-layered vegetation habitat garden by planting some tall, evergreen native trees, dense clumps of shrub specimens, and wide strips of native grasses and groundcovers, not only for birds but for smaller creatures that birds can feed on.

Birds feed early in the morning and seek shade during the warmest part of the day: for appropriate shelter provide plants with dense foliage from the ground up to three meters or higher; try to plant trees and shrubs closely together instead of scattered; create rows of trees and shrubs for birds to use as pathways across the garden. Dense, prickly foliage like *Acacia paradoxa*, *Acacia acinacea*, *Acacia sclerophylla*, *Banksia blechnifolia*, *Banksia repens*, *Daviesia brevifolia*, *Pultenaea largiflorens*, *Xanthorrhoea quadrangulata* are good protection plants.

Native grasses like *Themeda triandra*, *Cymbopogon ambiguus*, *Rytidosperma fulvum*, *Poa labillardierei* are beautiful drought-tolerant garden plants that attract seed-eating birds.

Minimize the size of the lawn area by planning species like: *Bursaria spinosa*, *Calytrix tetragona*, climbing *Clematis microphylla*, *Enchylaena tomentosa*, *Scaevola albida*, *Pimelea ferruginea*, *Philotheca angustifolia* to benefit native bird over exotic species.

Provide a reliable water source to encourage visits. Birth baths under some of your prickly, dense shrubs are ideal. Keep the water fresh and clean.



Bird Garden volunteer Sam marking the new site.

WAITE LABYRINTH REMOVAL

Due to safety concerns, the Labyrinth has been removed from its current location and will be rebuilt in a more sustainable form as part of the Waite Gatehouse relocation project.

In its new model, the Labyrinth will retain the shape and purpose of the original design, while taking on a central role as part of the new volunteer centre development.

We thank all our volunteers who have worked hard in the maintenance of the Labyrinth during the last twelve years.

Let's bring the Golden Pea Bee back to the burbs!

Katja Hogendoorn



Figure 1.
Trichocolletes venustus.
Golden pea bee.
Female (left) and
male



The genus *Trichocolletes* is an Australian endemic bee genus that consists of around 30 species. All species are food specialists, and most feed only on native peas. Specialist bees can now and then be seen foraging for nectar on a variety of plants, but their larvae only eat pollen from a narrow range of plant species.

Bees that specialise on a few plant species for pollen are particularly vulnerable to habitat loss and extinction, because changes in land use and land cover, can result in insufficient densities of the specific food plants they rely on.

The Golden Pea Bee is a case in point: these bees still occur in areas with sufficient native peas in the Adelaide and Mt Lofty Ranges, but is largely absent from suburban gardens and parks, because the plant species that these bees require, a narrow selection of native peas (*Fabaceae*), are in short supply.

The Golden Pea Bee (*Trichocolletes venustus*) is the most common species of its genus around Adelaide. The bees are nearly as large as honey bees, but much faster flying. The female has beautiful golden bands, the male has abundant red hair (Fig.1). The golden pea bee specialises on narrow leafed bitter pea (*Daviesia leptophylla*) and other bitter pea species. Adult males and females are only seen around September-October, when these native pea species are flowering. The bee nests in the ground. The adults die after the flowering season is over, and their offspring emerge a year later.

Important pollinators

These bees are important pollinators, not only for the pea species they visit, but also for donkey orchids, which are food mimics of peas. The orchids do not offer any rewards to the bees, but the bees now and then mistake them for peas, and as a consequence the bees visit and pollinate the orchids. Pea Bees are regularly observed carrying the pollen packages ('pollinia') of donkey orchids (Fig. 2).

So the Pea Bee is an important pollinator of the Donkey orchid, and native peas support the pollination services to the orchid. Without the peas, there would be no Pea Bees, and no cases of mistaken identity!



Figure 2. A donkey orchid (*Diuris orientis*) and a *Trichocolletes* species carrying orchid pollinia.

Native peas and ants

The Golden Pea Bee is not the only insect that is intricately linked to native peas. Pea species typically make use of ants for seed dispersal. To attract the ants, the seeds have attached to them a hard food body, called an elaiosome, that is rich in fats. Upon finding a seed, the ants carry it back to the nest, where they consume the elaiosome, and then discard the seed outside the nest on their scrap heap. There, the seedling is supported by the nutrients from the waste pile. Seeds of about 1500 plant species in Australia have elaiosomes and are dispersed by ants, and they are quirky structures!



Figure 3. A selection of seeds with elaiosomes, which help seed dispersal by ants.

In the Adelaide and Mt Lofty Ranges, the Golden Pea Bee still occurs locally, in conservation areas with sufficient densities of the appropriate native pea species. However, the pea bee has disappeared from the leafy green suburbs in the foothills, probably due to a lack of food plants. Realising this, my

partner and I started planting narrow leaved bitter pea (*Daviesia leptophylla*) ten years ago, adding a few plants every year in our garden in Eden Hills, and seven years later, we saw our first pea bee!. This success gave rise to the idea that gardeners, councils, schools and parks can band together to support this beautiful bee species. Now, I lead a grassroots project, funded by Green Adelaide to raise awareness of the importance of this bee, and its specialised food requirements, called: 'Bringing the golden pea bee back to the burbs'.

The project involves presentations at high schools and community groups. So far, we have done plantings at three high schools, one primary school, and Brown Hill Creek and we are creating two demonstration sites. One demonstration site will be situated in Belair NP, where the bees are still present, the other demonstration site is at Eden Hills railway station, where the bee is currently not. We also try to enhance our success by making corridors in the landscape, to facilitate dispersal of the bees. As plants have also gone in the ground in the Urrbrae wetlands and Brown Hill Creek, the Waite Arboretum is ideally situated to be part of this corridor.

And, of course, any avid gardener is encouraged to support the Golden Pea Bee in their own garden!

Support the Golden Pea Bee by planting a clump of narrow leaved bitter pea (*Daviesia leptophylla*) or other bitter pea species.

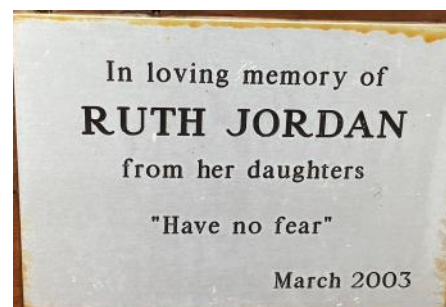
Available from native plant nurseries and Trees for Life.

GREEN ADELAIDE

This project is seeded by Green Adelaide.

For more information contact katja.hogendoorn@adelaide.edu.au

Seat of the Season. Terry Langham Ruth JORDON March 2003



Located on the south side of the watercourse - past the Meliesa Judge "Waterbirds" sculpture, east of the dam fence and parallel with Claremont Avenue. The seat is facing north.

Nearby tree / plant species: *Eucalyptus cladocalyx*. Sugar Gum, MYRTACEAE, S.A. 1915

Callistemon sieberi River Bottlebrush MYRTACEAE. S.A. 1983

Winter in the Arboretum



Syzygium paniculatum MYRTACEAE Brush Cherry MYRTACEAE NSW, QLD. The name Lilly Pilly use to apply to the species *Acmena smithii*, but now includes all related species in the *Acmena* and *Syzygium* (formerly *Eugenia*) genera. There are around 52 species of Lilly Pilly in Australia, with closely related plants also in Indonesia and South America, all with edible fruit. Lilly Pillies can be eaten raw when ripe, and contain vitamin C. Suitable fruit for jams and jellies. The Lilly Pilly fruits were enjoyed by the first settlers, James Cook and the botanist Daniel Solander. The Arboretum also has *Syzygium oleosum* growing, which is not in fruit at the moment.



Eugenia pendula MYRTACEAE Java 1930



Eucalyptus calycogona Gooseberry Mallee MYRTACEAE S Aust. 1959. A multi-stemmed mallee. Pink flowered variants, thought to originate from Eyre Peninsula are the most sought after and planted for ornamental use.



E. calycogona shares with *E. gracilis* and some other W.A. species the distinctive flowers with short fertile inner stamens and much longer and twisted outer stamens which lack anthers (staminodes)



Eucalyptus gardneri subsp. *gardneri* Gardner's Blue Mallet MYRTACEAE WA 1958 Lignotuber absent. Flowers pale lemon. Named after Charles Austin Gardner (1896-1970).