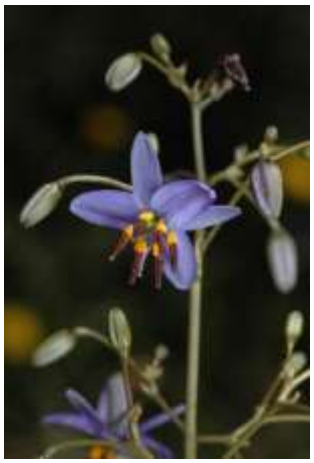
Dianella admixta



AUSTRALIAN PLANTS SOCIETY

SOUTH EAST MELBOURNE REGION INC.

A00131128P

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Email: aps.se.melb@gmail.com

Or semelb@apsvic.org.au

NOVEMBER NEWSLETTER 2020

Meetings are held on the first Tuesday of each month, February to December except November.

The venue is the Hughesdale Community Hall, Cnr Poath and Kangaroo Roads, Hughesdale (MEL 69 C7)

Visitors are always very welcome

COMMITTEE:

PRESIDENT:	John Thompson thomme@netspace.net.au
SECRETARY:	Helen Appleby
TREASURER:	Norm Seaton normarjs@bigpond.com
PUBLIC OFFICER:	Helen Appleby
NEWSLETTER EDITOR:	Marj Seaton normarjs@bigpond.com
APS VIC DELEGATE	Marj Seaton
COMMITTEE:	Amanda Louden amandalouden@icloud.com

Please forward any newsletter contributions, comments or photos to Marj at 36 Voumard Street, Oakleigh South 3167 or to the email address above.

********Note: Deadline for the DECEMBER newsletter is NOVEMBER 24th********

Once again we have to thank Ray and Eva, and Betty for the photos taken in their gardens during springtime. As a result there is a lovely collection of flower photos for your enjoyment this month.
We are hopeful of having a December meeting, our AGM if it comes to pass. We await Dan Andrews' pleasure!

RAINFALL RECORDS for 2020

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Oakleigh South	**98**	**90.5**	**77**	**167.5**	**70.5**	**44.4**	**33.9**	**84**	**46.8**				**712.6**
Highett	**114**	**76**	**63**	**136.7**	**56**	**44.3**	**33.5**	**64**	**48.7**				**636.2**
Hampton	**119**	**75**	**57**	**132**	**48**	**32**	**23**	**60**					**546**
Cranbourne South	**99**	**64**	**72**	**167**	**89**	**49**	**44**	**93**	**81**				**758**
Caulfield Sth	**127**	**70.5**	**62.5**	**148**	**58**	**33**	**19**	**62**	**38**				**618**
Elsternwick	**120**	**86**	**67.5**	**141.5**	**74**	**38**	**25.9**	66.5	**46.2**				**665.6**

2021 Quarterly Meeting

Previously it was announced that we would join with APS Waverley in holding the 2021 Quarterly Meeting of APS Victoria.

Since then we have had a heartfelt plea from APS Grampians that they be able to have the gathering instead, as they are celebrating their 40th anniversary next year.

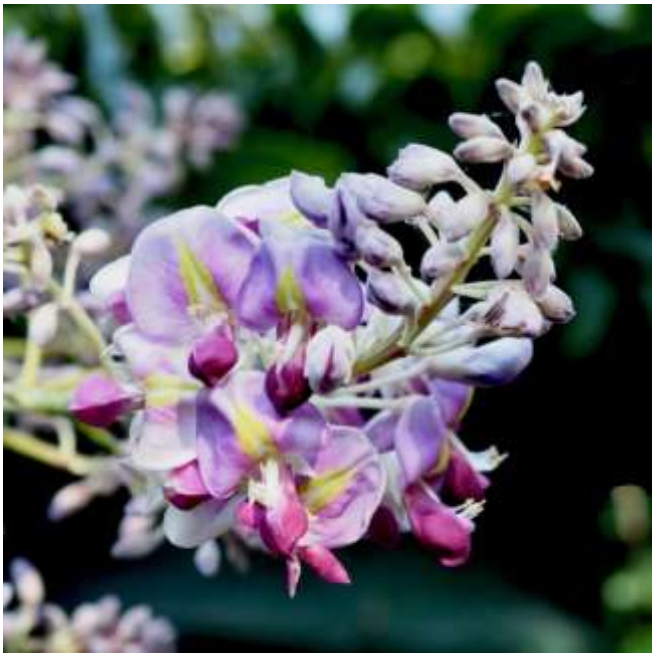
The Committee has been in contact with Waverley and we have all agreed to allow Grampians to host next year's meeting instead of us. Perhaps a disappointment to some, a relief to others?

Not from the Specimen Table – 6 - by John Thompson

This article is the sixth in a series featuring plants that are not often seen on the specimen table during the normal yearly meetings. As I write this article the Covid situation is much improved and fingers crossed we may be able to hold a December meeting.

This month's plant is Austrocallerya megasperma (syn. Callerya megasperma, Millettia megasperma, Wistaria megasperma) a vigorous woody climber from northern NSW and southeast Queensland. It grows in rainforest on the coast and coastal ranges. Ferdinand von Mueller upon describing the species placed it in the Wisteria family. Its common name is Native Wisteria.

The flowers are produced in large racemes up to 25cm long in spring. They are pale to medium purple in colour.



After flowering large pods form with 1 - 4 large seeds. Plants prefer a sunny or lightly shaded aspect with good drainage. The plants are very vigorous growers so any structure intended for them to climb on must be robust. Frequent pruning maybe needed to check its growth. Propagation is from seed or cuttings.

Austrocallerya are members of the Fabacae family commonly known as the legume, pea, or bean family, a large and economically important family of flowering plants. The group is the third largest land plant family, behind only the Orchidaceae and Asteraceae, with 730 genera and over 19,400 species.

There are three species of Austrocallerya, all found in Australia. The genus name is derived from Austro, southern and Callerya an existing genus named in honour of 19th century French missionary Joseph Callery, who travelled and collected botanical specimens in China. Callerya is a northern hemisphere genus. The species epithet megasperma refers to the large seeds.

Here are a couple of items which may be of interest to our members:

Famous Boab tree

Some of our members may have been to the Kimberley and seen the famous boab tree inscribed with the name of the ship "Mermaid", there is an interesting piece about its history in the ABC news section: https://www.abc.net.au/news/2020-10-08/boab-tree-bears-markings-of-phillip-parker-king/12734916

There is a follow up to the same article discussing how boabs came to Australia, given their similarity to African and Madagascan baobabs - there may not be a connection to Gondwana.

* * *

Australian stinging trees inject scorpion-like venom. The pain lasts for days

Authors: Irina Vetter (Australian Research Council Future Fellow, The University of Queensland)
Edward Kalani Gilding (Postdoctoral Research Officer, The University of Queensland)
Thomas Durek (Senior Research Fellow, The University of Queensland)

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Australian stinging trees inject scorpion-like venom. The pain lasts for days

Australia is home to some of the world's most dangerous wildlife. Anyone who spends time outdoors in eastern Australia is wise to keep an eye out for snakes, spiders, swooping birds, crocodiles, deadly cone snails and tiny toxic jellyfish.

But what not everybody knows is that even some of the trees will get you.

Our research on the venom of Australian stinging trees, found in the country's northeast, shows these dangerous plants can inject unwary wanderers with chemicals much like those found in the stings of scorpions, spiders and cone snails.

The stinging trees

In the forests of eastern Australia there are a handful of nettle trees so noxious that signs are commonly placed where humans trample through their habitat. These trees are called gympie-gympie in the language of the Indigenous Gubbi Gubbi people, and *Dendrocnide* in botanical Latin (meaning "tree stinger").

A casual split-second touch on an arm by a leaf or stem is enough to induce pain for hours or days. In some cases the pain has been reported to last for weeks.

A gympie-gympie sting feels like fire at first, then subsides over hours to a pain reminiscent of having the affected body part caught in a slammed car door. A final stage called allodynia occurs for days after the sting, during which innocuous activities such as taking a shower or scratching the affected skin reignites the pain.

How do the trees cause pain?

Pain is an important sensation that tells us something is wrong or that something should be avoided. Pain also creates an enormous health burden with serious impacts on our quality of life and the economy, including secondary issues such as the opiate crisis.

To control pain better, we need to understand it better. One way is to study new ways to induce pain, which is what we wanted to accomplish by better defining the pain-causing mechanism of gympie-gympie trees.

How does these plants cause pain? It turns out they have quite a bit in common with venomous animals.

The plant is covered in hollow needle-like hairs called trichomes, which are strengthened with silica. Like common nettles, these hairs contain noxious substances, but they must have something extra to deliver so much pain.

Earlier research on the species *Dendrocnide moroides* identified a molecule called moroidin that was thought to cause pain. However, experiments to inject human subjects with moroidin failed to induce the distinct series of painful symptoms seen with a full *Dendrocnide* sting.

Finding the culprits

We studied the stinging hairs from the giant Australian stinging tree, *Dendrocnide excelsa*. Taking extracts from these hairs, we separated them out into their individual molecular constituents.

One of these isolated fractions caused significant pain responses when tested in the laboratory. We found it contains a small family of related mini-proteins significantly larger in size than moroidin.

We then analysed all the genes expressed in the gympie-gympie leaves to determine which gene could produce something with the size and fingerprint of our mystery toxin. As a result, we discovered molecules that can reproduce the pain response even when made synthetically in the lab and applied in isolation.

The genome of *Dendrocnide moroides* also turned out to contain similar genes encoding toxins. These *Dendrocnide* peptides have been christened gympietides.

Gympietides

The gympietides have an intricate three-dimensional structure that is kept stable by a network of links within the molecule that form a knotted shape. This makes it highly stable, meaning it likely stays intact for a long time once injected into the victim. Indeed, there are anecdotes reporting even 100-year-old stinging tree specimens kept in herbariums can still produce painful stings.

What was surprising was the 3D structure of these gympietides resembles the shape of well-studied toxins from spider and cone snail venom. This was a big clue as to how these toxins might be working, as similar venom peptides from scorpions, spiders, and cone snails are known to affect structures called ion channels in nerve cells, which are important mediators of pain.

Specifically, the gympietides interfere with an important pathway for conducting pain signals in the body, called voltage-gated sodium ion channels. In a cell affected by gympietides, these channels do not close normally, which means the cell has difficulty turning off the pain signal.

Better understanding may bring new treatments

The Australian stinging trees make a neurotoxin that resembles a venom in both its molecular structure and how it is deployed by injection. Taking these two things together, it would seem two very different evolutionary processes have converged on similar solutions to win the endgame of inflicting pain.

In the process, evolution has also presented us with an invaluable tool to understand how pain is caused. The precise mechanisms by which gympietides affect ion channels and nerve cells are currently under investigation. During that investigation, we may find new avenues to bring pain under control.

PLANNED DIARY FOR 2020

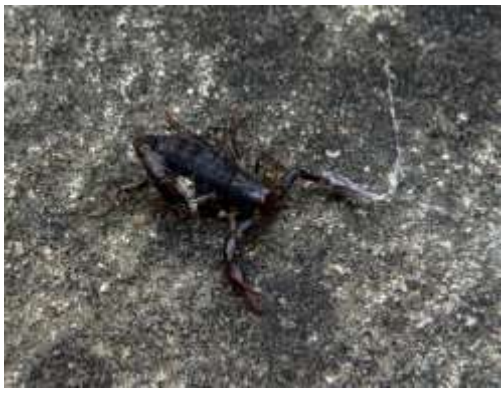
November 11 APS Vic Quarterly Meeting (am) and AGM (pm). Both expected to be by Zoom.
December 1 Alternative date for our AGM. Christmas wind-up, "Clear the Decks" plant sale, members' slides.

Plant Sales and Shows 2020
O**ctober 24,25** FJC Rogers Seminar "Mint bushes and Allied Genera".

PHOTO GALLERY

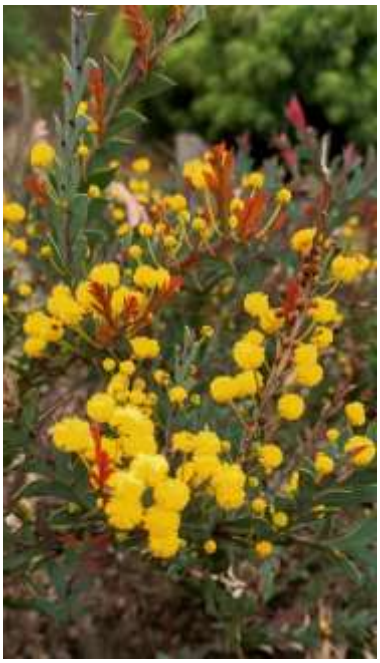
From Ray and Eva:
Firstly, some general pictures of their garden:

A wood scorpion (Ray was a bit trepidatious trying to take off more of the spider's web from this one)

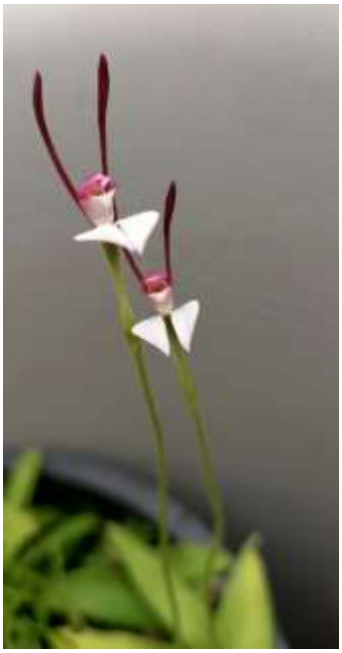


And lots of spring flowers:

Acacia glaucoptera – dwarf form



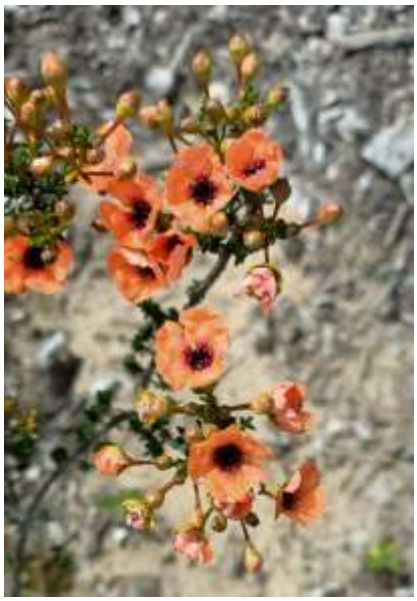
Leptoceris menziesii



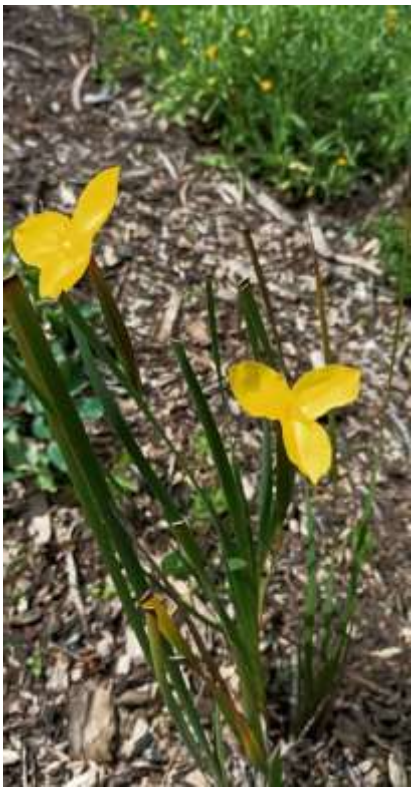
Conostylis candicans

Actinodium cunninghamii

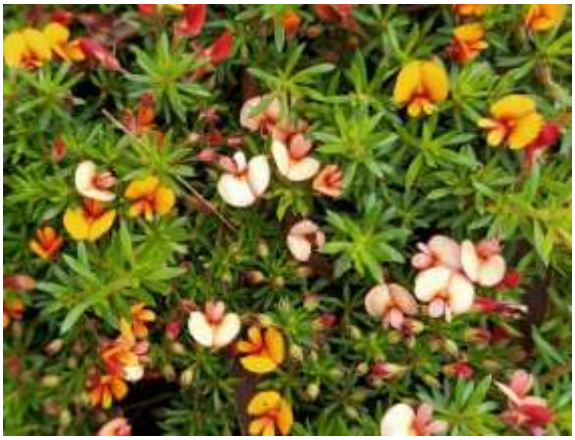
Pileanthus peduncularis



Patersonia umbrosa var xanthina



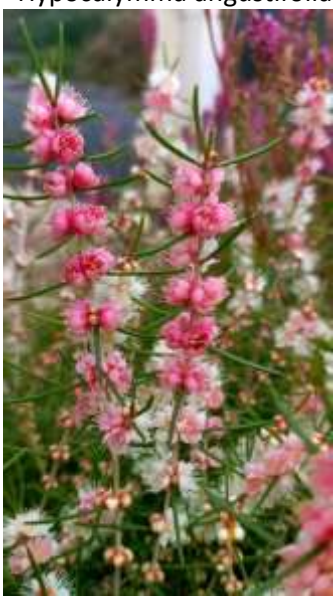
Pultenaea pedunculata



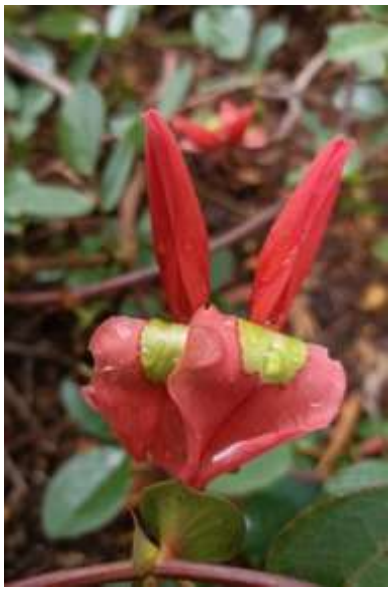
Lechenaultia biloba – hard to beat the colour of this one

Prostanthera magnifica

Hypocalymma angustifolia



Kennedia beckxiana



Senna odorata

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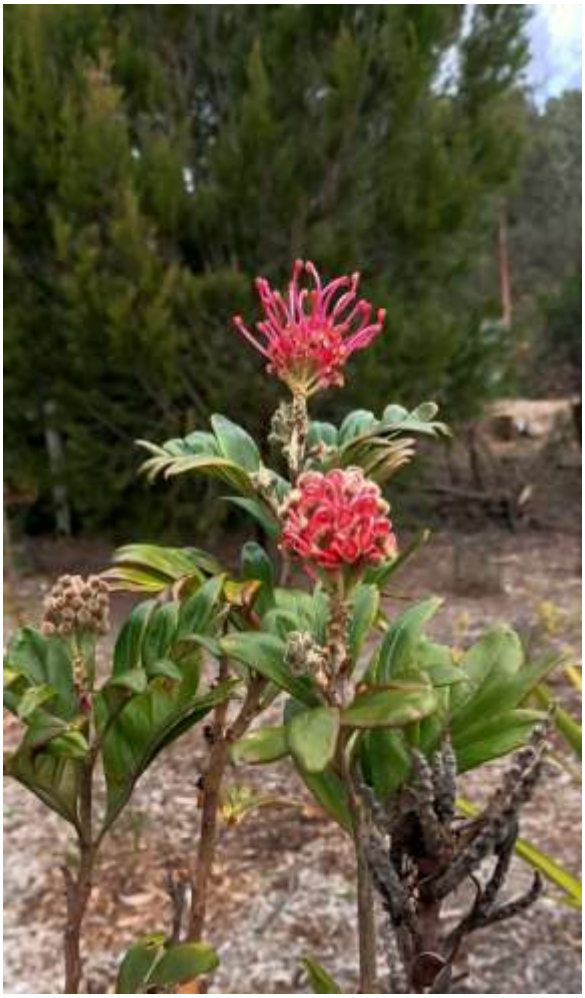
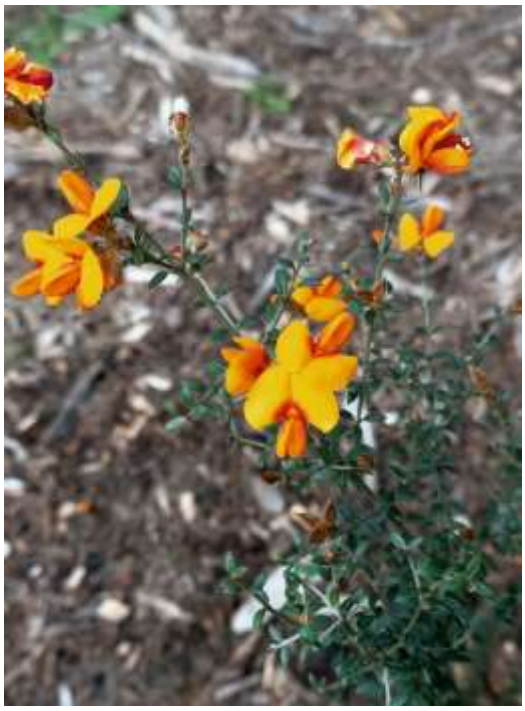
Grevillea banksii



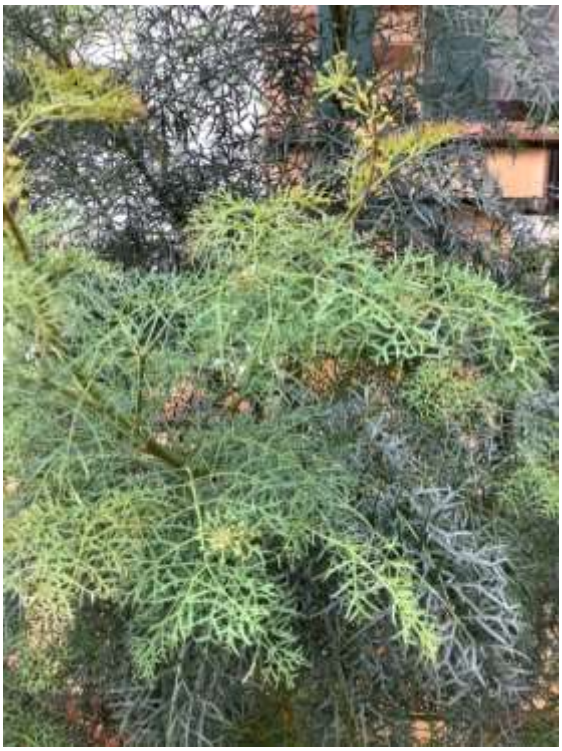
Mirbelia oxylobioides



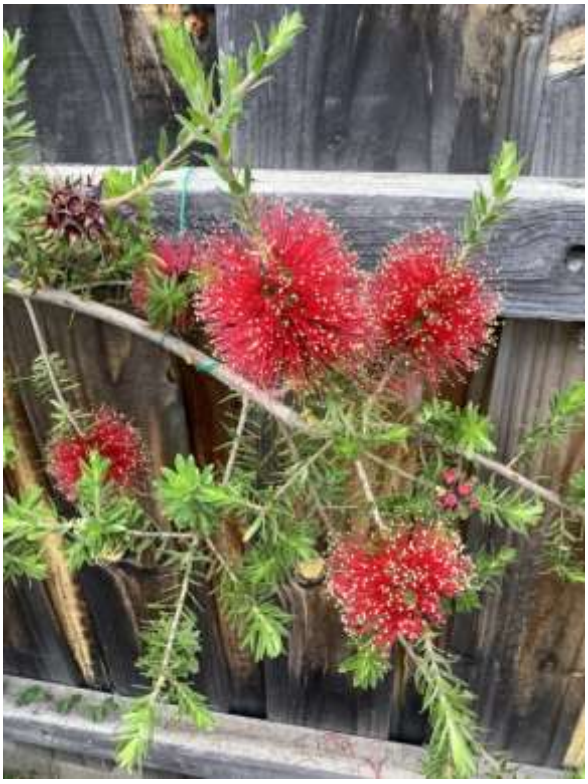
From Betty, three very attractive plants:

Eremophila mckinlayi

Polyscias sambucifolia ssp 2 (note the tiny flower buds t the top and bottom)

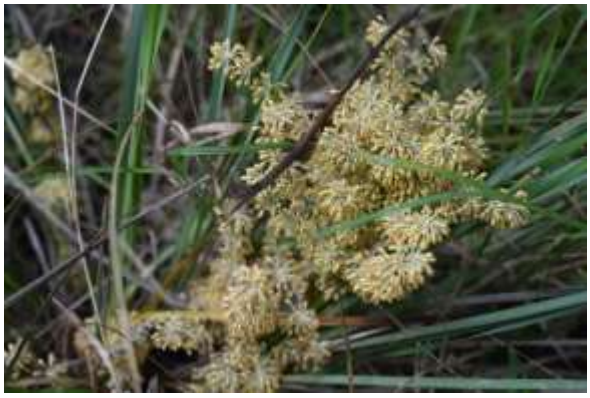


Kunzea baxteri



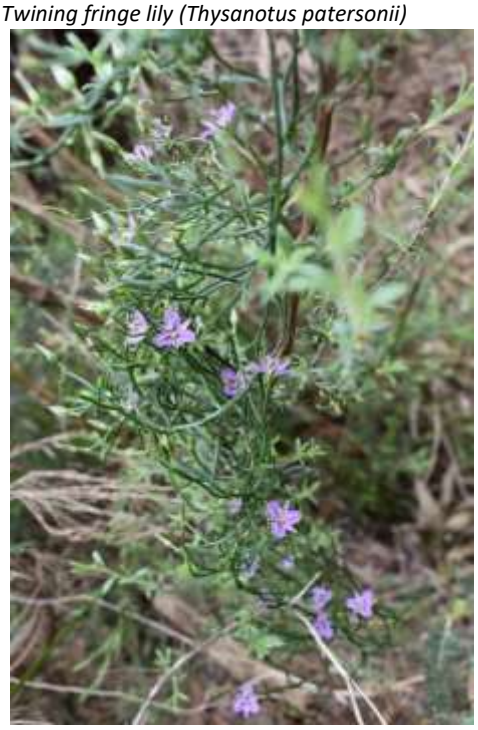
And finally, springtime at the Grange Reserve:
Austrostipa mollis with Wedding bush (Ricinocarpos pinifolius)

Lomandra multiflora



Wedding bush with its pink buds

Twining fringe lily (Thysanotus patersonii)



Milkmaids (Burchardia umbellata)