



**Fees for 2020/2021 are now due.**

APS Vic has decided that they will waive fees, for 2020/21, for members who are suffering financial hardship due to Covid-19.

**Application should be made via each District Group.**

If this applies to you, would you please complete the form on page 8 of this newsletter and Norm will make application on your behalf.

**\*\*\*\*\*Would all members please complete the form, regardless of how you pay so we have your current details\*\*\*\*\***

**NOT FROM THE SPECIMEN TABLE – 2**

**By John Thompson**

This is the second of the articles on plants that you are unlikely to see from me on the specimen table. These are plants that flower either too briefly or at the times of the year we don't have meetings or are just too unwieldy to bring in.

This month features the group of three plants in the genus *Davidsonia* or Davidson's Plums.

The genus *Davidsonia* consists of three species, *D. pruriens*, *D. jerseyana* and *D. johnsonii*. The first two of the aforementioned are the most common in cultivation. *D. jerseyana* is featured in both photos below. They are small to medium sized trees that grow in sub-tropical and tropical rainforest in northern NSW, southeast Queensland and northeast Queensland.

*Davidsonia pruriens* grows in tropical rainforest in northeast Queensland from Cardwell to Cooktown and inland to near Atherton. At 12 -18m in height it is the tallest of the three species and can be differentiated from *D. jerseyana* by its inflorescences that are up to 30cm long and panicle-like c.f. *D. jerseyana* - condensed inflorescences that are racemose generally less than 20cm in length. Flowers have been recorded throughout the year but mainly in mid to late summer with fruit ripening March to early May.

*Davidsonia jerseyana* is a slender, small tree to 6 - 10 metres in height. It grows in sub-tropical rainforests in northeast NSW. Flowers occur from October to January with fruit ripening from December to March. It is listed as an endangered species occurring in only one gazetted reserve. Other smaller populations are along minor roadsides and due to disturbances may not be viable in the longer term.

*Davidsonia johnsonii* is a spreading, suckering, small tree to 5 -10 metres in height. It grows undisturbed in sub-tropical rainforest or on margins of wet sclerophyll rainforest in northeast NSW and southeast Queensland.



3.

Flowers occur in October - November with fruit ripening February - April. It also is listed as an endangered species occurring in only one gazetted reserve, Snows Gully Nature Reserve in NSW. Other populations occur on private property.

This species is unusual in that it flowers regularly and prolifically but no pollen has been detected in the mature anthers and ovules are often absent yet it produces abundant fruit but no seed has been found. Field studies reveal that it relies on root suckering for reproduction but that does not account for the scattered species distribution over 120 kms. It has been theorised that aboriginal people were involved in the spread of this species or that very occasionally fertile seeds are formed and dispersed. My plant has flowered but not set fruit.

*Davidsonia* is named after John Ewen Davidson, a pioneer sugar cane planter, which is ironic considering the industry he helped found is responsible for much of the clearing of the tropical and sub-tropical rainforest where this genus grows.

All three species grow well in a well-drained soil in a semi-sheltered position. Supplementary watering is recommended during dry spells.

My *D. jerseyana* and *D. johnsonii* are tall enough now for their foliage to be in full sun during summer. Apart from some leaf scorch at the height of the drought they are growing well. The root zone is well protected and extra watering is provided over summer. Possums and possibly rats will eat the fruit when ripe so the tree needs to be checked regularly and fruit harvested to avoid predation.



*D. jerseyana* and *D. pruriens* can both be readily propagated from fresh seed that germinates freely without needing pretreatment. Seedlings can be potted on in a few weeks after germination and will take about 3 - 5 years to begin flowering. Often the first flowering will not set fruit but yield will increase year by year. *D. johnsonii* can be propagated by cuttings or root suckers.

All three species are very rewarding to grow and when mature will provide ample fruit from which a delicious jam can be made. *D. jerseyana* and *D. pruriens* both have slender growth habits so can be easily interspersed with other plants. They also make excellent plants for large containers.

### iNaturalist

*Chris Clarke, President of APS Victoria, has provided the following information about this new project which might interest some of our members.*

iNaturalist is a citizen science community and data base. You may be aware of Natureshare - a site for observations of wild things in Victoria that was initiated by the late Russell Best - past APS Vic research officer. All Natureshare observations are now being migrated to iNaturalist. All the people who added observations of flora and fauna on Natureshare can easily have them transferred to iNaturalist – by setting up an iNaturalist log-in then e-mailing to have the transfer done. People who didn't use Natureshare can easily create a new log in at iNaturalist and start posting photos of wildflowers, birds, butterflies, insects, reptiles, fish, gastropods – whatever wild thing takes your fancy. It is easy to use and is a great way to learn more about our flora and record sightings from your trips. You can join the "Natureshare" project for your Victorian observations.

4.

Experts on iNaturalist will confirm your identification or add an ID if you have not. If you are confident of the species you can verify other people's identifications. You can add questions and comments and send messages to other users.

Ideally your photo will have the features needed to identify the plant – leaves, flowers, fruit etc. With plants – flowers and leaves really help. With fungi – the underside gills are important. I find it helps if your camera has GPS but you can pick the spot you saw things on the map yourself if you are sure – or use a phone photo with GPS.

Once verified your observations are uploaded to the Atlas of Living Australia and become an important part of our scientific record of all living things in Australia. So far there are over 1 million observations in Australia. A very important resource.

You can search iNaturalist by the map, the species, the person posting or just browse.

This is where to explore iNaturalist - <https://inaturalist.ala.org.au>

Here are the Natureshare project observations for Victoria -

<https://inaturalist.ala.org.au/projects/natureshare-victoria-australia>

If you join you might want to give a hand confirming the Natureshare IDs!

### **PLANNED DIARY FOR 2020**

The following events are scheduled but, because of COVID-19, are subject to government regulations and may not proceed.

<b>July 7</b>	<b>Meeting Cancelled</b>
<b>August 4</b>	AGM and John Thompson: “Historical Collectors other than Banks and Solander”
<b>September 1</b>	Dr Sandy Webb and Dr Marilyn Olliff: “The Jawbone Sanctuary”
<b>October 6</b>	Marg and Ivan Margitta: “South Western Australia”
<b>November</b>	Possibly Kuranga nursery and café, but we may need to change this because of space difficulties.
<b>December 1</b>	Christmas wind-up, “Clear the Decks” plant sale and members’ slides. Alternative date for AGM

### **Plant Sales and Shows 2020**

<b>July 25, 26</b>	Cranbourne Gardens Friends Winter Plant Sale, 10am – 4pm <b>Cancelled</b>
<b>September 5,6</b>	Open Garden Scheme. Bill Aitchison and Sue Guymer, 13 Conos Crt, Donvale
<b>September 12,13</b>	APS Yarra Yarra Plant Expo. Eltham Community Hall, 801 Main Rd, Eltham, 10 – 4
<b>October 24,25</b>	FJC Rogers Seminar “Mint bushes and Allied Genera”. Saturday at Eltham community Hall.

### **NEXT MEETING**

Write-up: **Marj Seaton**

Supper: **None, by order of Monash Council**

### **PHOTO GALLERY**

A cluster of fungi at the Greenlink Nursery; *Acacia merinthophora* from Marj and Norm's garden



5.

From Ray - *Asroloma foliosum*



and *Leptosema aphyllum*



Betty has a favourite tree she sees on her walks (below and below right):



In flower in Amanda's garden:



Helen has this Alyogyne in Ormond:



Here's another article reprinted from "Beating Around the bush" republished for free, under Creative Commons licence.

The authors are: Steve Wylie (Molecular virology, virus ecology and evolution, metagenomics, symbiosis, Murdoch University). Jen McComb (Emeritus professor, Murdoch University) and Kevin Thiele (Adjunct Senior Lecturer, University of Western Australia)

In 1946, forestry officer Charles Hamilton found something unusual on a shrubby native pea plant growing in Mundaring, near Perth. The pea had strange knobs on its stems, which looked like odd (and very un-pea-like) flowers.

When he showed these to government botanist Gardner, they were initially dismissed as "galls" (the plant equivalent of warts). However, a closer look quickly changed the story. Gardner realised he was holding a specimen of one of the world's most extraordinary flowering plants. In 1948, he described it as

*Pilostyles hamiltonii*.



### Botanical Aliens

To get a sense of Gardner's initial dismissal and later fascination, we need to describe Pilostyles. Most plants have a familiar structure of roots, stems, leaves and flowers, and grow in the ground. But a few plants abandon these to become parasites.

The strikingly beautiful Western Australian Christmas tree (*Nuytsia floribunda*), for example, looks like a normal tree, but it has specialist root structures that tap into the roots of other plants.

Pilostyles has taken parasitism to another level as an "endoparasite": it lives inside its host. Unlike almost all other plants, Pilostyles has abandoned stems, leaves and roots. When not flowering, it lives inside its host, as pale threads of cells within the host's roots and stems, from which it acquires all its nutrients. Only when flowering is Pilostyles visible externally, the flowers erupting from the stems of its host like a weird botanical alien.

Three species of Pilostyles occur in Australia, all of them in Western Australia. Each has a specific host. *Pilostyles hamiltonii* only grows in plants in the genus *Daviesia*, *P. collina* in the poison-pea genus *Gastrolobium*, and *P. coccoidea* – described only a few years ago – in *Jacksonia*. Another seven species occur outside Australia, and they also infect shrubby relatives of peas.

Three Pilostyles flowers are about the size of a match head. They appear on stems after its host has finished its own flowering. Thus, the host plant seems to flower twice in a year, but with completely different flowers.

### Curious creatures

Much mystery surrounds Pilostyles. Unlike its host plant, Pilostyles plants are either male or female, and the two sexes rarely, if ever, colonise the same host plant. They seem to be able to recognise a host that is already occupied by another Pilostyles plant. The pollen from a male flower must find its way to a female flower located on another host plant.

### Pilostyles

Botanical name: *Pilostyles hamiltonii*, *coccoidea* and *collina*  
Family: Apodanthaceae

Pilostyles are **endoparasites**: they live entirely within other plants. They pirate both nutrients and genes from their hosts.



Pilostyles fruit



Pilostyles flowers

Pilostyles are invisible until their flowers burst out of their host plant.

They live in the dark, and don't photosynthesise.

Although various insect species have been seen feeding on their flowers, it is uncertain which are effective pollinators and if *Pilostyles* has specialist pollinators. Its fruit rots quickly when it falls to the ground. The tiny seeds are less than 1mm long, and each has an embryo of only eight cells and a very small amount of stored food. How the seeds are distributed, and how they recognise their host species amongst all the other plant species growing nearby is unknown. Other parasitic plants recognise root exudations from their hosts, but this is not proven for *Pilostyles*.

Because *Pilostyles* lives in the dark and doesn't photosynthesise, it has no apparent need for chloroplasts, the cell structures that synthesise sugars from carbon dioxide, water and sunlight and give other plants their green colouration.

Chloroplasts have their own genomes because they are thought to originate from free-living cyanobacteria that themselves parasitised other cells to become the first plants.

Surprisingly, *Pilostyles* still retains remnant chloroplasts with tiny genomes that contain only five or six active genes. These are the smallest chloroplast genomes ever described. In comparison, the chloroplast genome of wheat encodes about 230 genes.

Several genes in the *Pilostyles* nuclear genome closely resemble genes of its host, suggestive that the parasite is not only pirating nutrients from its host, but also its genes. This phenomenon is called horizontal gene transfer, and it is relatively common amongst plants that are parasites.

*Pilostyles* was once regarded as being closely related to an equally bizarre plant, the famous giant-flowered *Rafflesia* from South-east Asia, which grows as an endoparasite inside a tropical vine. (Also known as the "corpse flower", the only visible part is the enormous flower that smells like rotting meat.)

At that time, taxonomists classified plants according to overall resemblance, and *Pilostyles* and *Rafflesia* resemble one another – in both being endoparasites. However, DNA extracted from *Pilostyles* flowers shows that resemblance is deceiving. *Pilostyles* is, in fact, more closely related to pumpkins than it is to *Rafflesia*.

The ancestor of today's *Pilostyles* rejected life as a green plant living in sunlight, instead worming its way into the body of another plant. Over evolutionary time, *Pilostyles* has survived ice ages and tectonic plate movements and now exists as ten described species living on five continents. The mysterious *Pilostyles* reminds us of the incredible tenacity and adaptability of life.

**AUSTRALIAN PLANTS SOCIETY**

South East Melbourne Region Inc A00131128P

**APPLICATION FOR MEMBERSHIP/RENEWAL**

Financial Year 1 July 2020 - 30 June 2021

	APS SE Melbourne	APS Victoria	TOTAL	Optional annual subscription to Australian Plants magazine (4 issues)	Total with Optional subscription
<b>A Single</b>	\$10	\$35	\$45	\$15	\$60
<b>B Household</b>	\$15	\$40	\$55	\$15	\$70
<b>C Student Full Time, under 16</b>	\$5	\$26	\$31	\$15	\$46
<b>D Member of another group</b>	\$5		\$5	\$15	\$20

- Membership includes subscription to the APS Vic magazine Growing Australian (4 issues per year).
- If you are already a member of APS Vic, pay only the South East Melbourne fee for your first year. After that, pay both fees to APS South East Melbourne Region direct
- If you pay your APS Vic membership through another group, sign on with us as **D**.
- You may pay for 2 or 3 years in advance. Simply multiply your chosen annual total by the number of years
- New subscription paid after February 1<sup>st</sup> runs automatically until June 30<sup>th</sup> of the following year.

- .....
- I wish to apply for a fee waiver for APS Victoria for the forthcoming year.
- I wish to join/rejoin the Australian Plants Society as (circle one) **A B C D**
- I wish to join for (circle one) **1 2 3** years
- I agree to be bound by the Rules and Bylaws of the Society
- I wish to subscribe to Australian Plants Magazine also

Amount due \$ .....

Signed .....Date.....

Title(s) ..... First Name(s) .....

Surname(s) .....

Postal Address .....

Email .....Phone.....

Membership paid at other APS Group .....

**PAYMENT METHOD (Tick one)**

- Direct bank deposit (CBA) with email notification to APS South East Melbourne  
BSB 063 209 Account No. 1002 6413 Include your surname as a reference

**OR**

- Cheque for APS South East Melbourne Region posted to Treasurer, APS South East Melbourne  
36 Voumard Street, Oakleigh South VIC 3167

**OR**

- Pay by cash or cheque and deliver by hand to the Treasurer at our next meeting

**ANNUAL GENERAL MEETING 2020**

For APS South East Melbourne Region Inc A00131128P

Notice is hereby given that the AGM for APS South East Melbourne Region Inc will be held at **8pm on Tuesday 4<sup>th</sup> August 2020** at the Hughesdale Community Hall, corner of Poath and Kangaroo Roads, Hughesdale.

- Agenda items:
1. Presentation of Reports by the President, Secretary and Treasurer
  2. Election of Office Bearers for 2020/2021.

The following positions are declared vacant: Leader, Secretary, Treasurer, Committee Members (3), Newsletter Editor.

If you are able to nominate for one of the above positions, please complete the form below. Nominations can also be made at the meeting.

The AGM will be followed by our regular monthly meeting at which John will deliver a presentation on “Historical Collectors other than Banks and Solander”

**NOMINATIONS FOR POSITIONS**

**I wish to nominate**

.....

**For the position of**

.....

**Nominator:** ..... (Name and signature)

**Secunder:** ..... (Name and signature)

**Date:** .....