NEWSLETTER

AUSTRALIAN PLANTS SOCIETY MITCHELL GROUP INC.

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July 2021

Volume 8, Issue 6

July news...!

Hello welcome to our July issue…

Firstly, I extend an extra special thank you to our members & friends who provided contributions to this newsletter. Thereby helping me fill these pages in the absence of a June meeting report. Your support & effort is very much appreciated.

This issue has a focus on introduced invasive species. Understanding & controlling weedy species plays a vital part in managing our gardens, revegetation works, rehabilitation & management of reserves & bushland. I do hope you enjoy the thought provoking read from page 3 (Many thanks Gerry).

Winter is half way through and a recently planted *Acacia beckleri* is putting on its first show of flowers here in Pyalong (pictured above right). Other new Acacia in the garden are showing a profusion of buds, which, I am eagerly looking forward to seeing burst in coming months. What native species are flowering in your garden or about to flower? Feel free to share a picture or two.

Acacia beckleri Barrier Range Wattle
Photo: J Petts

The August newsletter will be due for issue on or within a few days of Monday August 9th. Contributions remain very greatly appreciated. If you can help out with items of interest please send them in by August 2nd. Email to: wattlegum@southernphone.com.au

I look to forward hearing from as many members & friends as possible, & seeing you at gathering, fingers crossed, sometime soon.

In the meantime, enjoy watching bud burst in your gardens.
Cheers until next time, Jeanine

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A weed to watch out for...

This young seedling with its sunshine yellow flowers is one to watch out for. For those that don't recognise it, this is *Ulex europaeus* AKA Gorse or Furze (pictured at right), a declared Weed of National Significance.

Ulex europaeus
Photo: Jan Harrison

The pictured specimen was spotted recently, along a Kilmore walking trail. Remember, 1 year's seed = 7 years weed, and this species seeds can remain viable for 25 years. So if you see any of these in your travels, do deal with them if you can. Chemical control is only recommended while the plant is actively growing. While manual/mechanical control can be undertaken year round. Just remember this is a spikey beastie, so be sure to wear protective clothing.

Mitchell Diary Dates..

- **In line with ongoing Covid-19 advice, restrictions may apply or affect APS related events. If in doubt, please contact us (see contacts list on page 1 .)**
  Please note: Meetings will be held under the requirements of our Covid Safe facility Plan; Please read the plan (from page 18) prior to attending
- **Sunday July 25th 2pm Garden Visit - To the Ryan garden in Hidden Valley. An RSVP is required for this event. Contact Norbert: Ph 0428 180 651 or Email: njr3089@gmail.com**
- **Monday Aug 16th 7:30pm Meeting - Guest Speaker: Chris Clark. Topic - Alpine Flora**
- **Monday Sept 20th 7:30pm Meeting - Guest speaker: Melissa Stagg - Topic: Euroa Arb, seed collecting & small garden design.**
- **Saturday Oct 16th APS Mitchell Spring Expo & Plant Sale.**

Gardens for Wildlife News...

By Jeanine Petts

Hackelia suaveolens
Image: https://vicflora.rbg.vic.gov.au/flora/taxon/31a7fe7b-4781-4821-8fb5-dac5813482ed#&gid=1&pid=9
Karunajeewa, N.G.

While picking up my winter 2021 revegetation/garden order from Western Plains Flora recently, I was offered & accepted some *Hackelia suaveolens* (Syn. *Cynoglossum suaveolens*) AKA Sweet Hound's-tongue (I will donate a couple for group plant raffle prizes). I hadn't come across this species before, and find it an interesting little plant that's not widely found in general nursery cultivation.

From a Garden's for Wildlife perspective, *Hackelia suaveolens* is moth pollinated, harbours caterpillars that in turn attract insectivorous birds, so makes for a desirable species.

It is an upright perennial that grows to 20-60cm high x 50cm wide, which, is endemic across much of Victoria, found in moist sites in open forests and woodlands. Highly scented, small, white flowers with yellow centres are borne most of the year, with main flushes during spring and summer. Best suited to a full sun or partly shaded position in moist, well-drained soil. A little summer moisture will extend flowering. It is an ideal plant for containers, very useful on embankments or wherever a soil binder is needed, and would make a lovely contrasting companion to one of the long flowering, mauve-pink flowered *Brachyscome* species.

MEETINGS ARE HELD ON THE 3rd MONDAY OF THE MONTH (February to November) unless otherwise advised

Commencing 7:30 pm in the John Taylor Room, Kilmore Library, Sydney Street, Kilmore Vic 3764

Entry $2.00 Gold Coin

Guest Speaker

Door Prizes

Plant Sales

Use of the APS Mitchell free Library

Supper & Chat

VISITORS VERY WELCOME

Members & Visitors are encouraged to bring along exhibits for our "Show & Tell" Flower Specimen Table

Please label plants

July Garden Visit - Sunday 25th 2pm...

In keeping with our practice of holding a day time gathering during July, we will be resuming meetings with a visit to the garden of Norbert & Kaye Ryan, in Hidden Valley on:

Sunday July 25th at 2pm.

Brachyscome multifida Cut-leaf Daisy.
Photo: Norbert Ryan

We hope to also celebrate the release of Russell Wait's new Eremophila book & have copies available for collection on the day.

As visitor numbers may be limited by Covid restrictions, an RSVP is required for all those wishing to attend.

Please RSVP to Norbert: Ph: 0428 180 651 or Email: **njr3089@gmail.com**

Address and further details will be provided following receiving an RSVP.

Memberships...

It's that time of year again...MEMBERSHIP RENEWAL FEES WERE DUE JULY 1st.

Please find a 21/22 membership form on page 17. Remember, a completed form needs to be submitted each year, & can be sent in via email. For all membership enquiries & information, please contact Christine Cram: Phone 0458 238 270 or Email to the attention of the Membership Officer: **mitchell@apsvic.org.au**
Membership information, contact information, and current **membership form** can also be found at our website: **http://www.apsmitchell.org.au/membership/**

Thesis on introduced Iridaceae ...

By Gerry (Wun Ho) Email: maybebotany@protonmail.com

It is surely difficult for an environmentally mindful person to think fondly of invasive species, or to find them engaging in any way. While is it almost a truism that invasive species affect native species negatively by taking up resources, and by altering habitats. However, they can be of instructive value, as invasive species are success stories on survival and persistence in strange lands and environments.

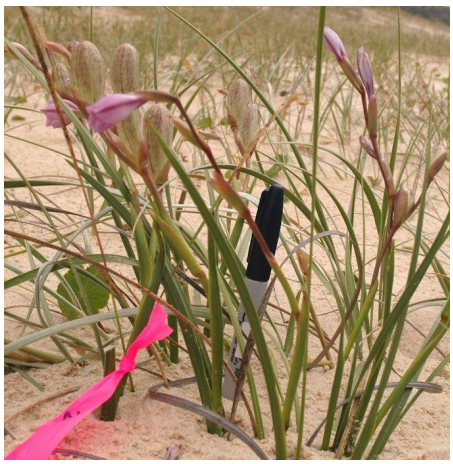
The true number of introduced plant species in Australia may, and most likely, will never be known. While some of these species were purposely introduced by humans for horticulture or other uses, others might have arrived as passengers of trade (such as agrestal weeds) or dispersal via physical or biotic agents (such as wind or migrating birds). Many would not survive the journey to the new and potentially hostile habitat, and their short lived presence was likely to go unrecorded.

The species that do survive may be fortunate in finding a similar climate and soil or be highly tolerant of habitat change. It is the latter group of plants that can inform biological conservation in this age of rapid climate change: How can we ensure that native species continue to thrive under environmental change, when we know that terrestrial plants are first and foremost constrained by climate? In other words, how can we make them more resilient and "invasive"?

This article describes the PhD research project on introduced Iridaceae (the Iris family) that I worked on as a postgraduate at La Trobe University. It is not intended to be a jargon-laden exposition, and I strive to give a qualitative rather than a quantitative account of my findings (that is, no *p* values and equations!).
I encourage anyone who is interested in the full account to write to me for the repository link to the thesis (Email: maybebotany@protonmail.com).

First, I feel it is imperative that I set out the terminology used to describe the stages of a biological invasion event, as different authorities use different frameworks to delineate the process. The framework I used has four components: Transportation, establishment, naturalisation and invasion. The species in question is first transported from its native range to a target or adventive range. If it is able to survive to adulthood—even as a single individual—it is said to have established in its adventive range. The species next achieves naturalisation if it is able to reproduce successfully, and finally becomes invasive proper when the population has attained abundance and geographical spread. The cut-off

Fig. 1a-c. Habit, underground storage organs and propagules of *Gladiolus* spp:



1a. Late-flowering *Gladiolus gueinzii* flowering with unripe capsules on a dune in Bermagui, New South Wales 20 November 2011.
Photo: Gerry (Wun Ho)

1b. Exposed cormels of *G. gueinzii* in Narooma, New South Wales. These cormels are buoyant and are dispersive structures.
Photo: HankyHelper reproduced under a Creative Commons licence (CC BY-NC-ND 2.0; creativecommons.org/licenses/by-nc- nd/2.0/).

1c. *Gladiolus tristis* (Marsh Afrikaner) flowering in Potilla, Victoria on 5 October 2013.
Photo: Gerry (Wun Ho)

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Thesis on introduced Iridaceae continued...

(Continued from page 3)

point for invasiveness depends on the authority in question. This is problematic as management action is often dictated by a species' progression along the invasion spectrum. Here, I will mainly use "naturalised" to avoid ambiguity. With this out of the way, we can now delve into the thesis proper.

The central hypothesis and study species

During long-distance migration from its native range, a species undergoes biological and ecological changes, such that its adventive population is distinctive from the native one. For example, typically a subset of the original population may be transported, leading to a reduction in genetic diversity (number of genetic types) in the new population that can diminish adaptation to new environments. Plant migration may also proceed with the loss of natural pollinators, resulting in reproductive failure in the new population. How can such species become naturalised?

The monocot family Iridaceae (1900 species in 65 genera) is particularly diverse in temperate (southern) Africa, although its origin is Gondwanian — keen gardeners will recognise *Libertia, Orthrosanthus* and *Patersonia* — members of the family that have remained in Australia following the breakup of the Gondwana supercontinent.

Two key developments occurred in the family in Africa: The evolution of a geophytic life form, and the formation of specialised pollinator systems. The former evolved as a response to the temperate African climate of hot dry summers and cool wet winters; geophytes take advantage of the benign climate in winter and spring to grow and reproduce, while storing resources in an underground storage organ, which, may be a bulb, corm or rhizome. They aestivate (die back) during the inclement summer and autumn months, relying on the stored resources to survive and to reshoot with the onset of winter rain. In addition, many cormous Iridaceae are capable of growing offsets on the main corm. These offsets (known as cormels, and sometimes referred to as cormils) are clonal propagules, each of which can detach and form new plantlets.

Many Iridaceae in Africa have also evolved relationships with specialist pollinators, such that a species may only be pollinated by one or a set of circumscribed pollinators. For example, *Gladiolus tristis* has a long floral tube with

Fig. 1d-f. Habit, underground storage organs and propagules of *Gladiolus* spp continued:

1d. Corms of *G. tristis* excavated mid-October 2012.
Photo: Gerry (Wun Ho)

1e. *Gladiolus undulatus* (Wavy Gladiolus) flowering along the Glenelg Highway in western Victoria, 29 December 2013.
Photo: Gerry (Wun Ho)

1f. Profuse cormel production in *G. undulatus*. Corms were excavated mid-February 2013.
Photo: Gerry (Wun Ho)

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Thesis on introduced Iridaceae continued...

(Continued from page 4)

basal nectary that can only be reached by long-tongued hawk moths, while *G. undulatus* with a similar floral morphology attracts long-tongued flies. Both species were recorded in Australia towards the end of the 19th century, although their exact date and source of introduction were unknown. What is known is that their natural pollinators are absent in Australia, and there is anecdotal evidence that both species do not set seed here, and it is thought that naturalisation took place via clonal reproduction.

It is easy to imagine how dispersal can be retarded by bulkier cormels compared to seeds, which, are natural dispersive structures. Additionally, it can be thought that clonal reproduction offers short-range advantages and long-range disadvantages. The short-range advantage arises as clonal reproduction does not generate new genetic variability (genotypes), which, may be poorly adapted to the local environment. Conversely, the long-range disadvantage is realised when environmental conditions inevitably change with distance — the "first law of geography" — which, now confers a cost to population expansion because there is now insufficient genetic variability to facilitate adaptation to new conditions. Therefore, strictly clonal populations are expected to "hit a brick wall" and stop expanding beyond a certain point.

Fig. 2a-b Habit, capsule and pollinators of *Watsonia meriana* varieties:

Fig 2a. *Watsonia meriana* var. *meriana* (Wild Watsonia) in Cape Clear, Victoria on 21 November 2012. A flowering scape has been bagged for seed collection to the left of the photo. Some capsules had already formed - See image Fig 2b. Pictured bellow.
Photos: Gerry (Wun Ho)

For my research project, I studied five Iridaceae taxa, three of which I will describe my findings in some detail. The reason is that the Marsh Afrikaner *G. tristis* is ecologically similar to the Wavy Gladiolus *G. undulatus,* and I will refer mainly to the latter from here on. I also worked on two *Watsonia* varieties: *W. meriana* var. *meriana* (Wild Watsonia) and *W. meriana* var. *bulbillifera* (Bulbil Watsonia). *W. meriana* is an intriguing species. While Wild Watsonia is sexual, with profuse seed set and little cormel production, Bulbil Watsonia is clonal, with no seed set and profuse bulbul production; the lack of fertility in Bulbil Watsonia is due to an extra set of chromosomes (triploidy). Lastly, I also studied *Gladiolus gueinzii,* a coastal gladiolus that I found to be capable of self-fertilisation; however, as it is nearly impossible to differentiate progenies from self-fertilisation versus cross-fertilisation without comprehensive genetic tests, I will not expound further on this species here.

Assuming that their mating systems did not undergo further evolution in their adventive range in Australia, I postulated that the sexual species (Wild Watsonia) would occupy a larger environmental space in Australia, while the clonal species (Wavy Gladiolus and Bulbil Watsonia) would experience a contraction in their environmental space, by dint of their lower genetic diversity (and therefore, lower adaptability).

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Thesis on introduced Iridaceae continued...

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Reproductive ecology

First, I sought to verify that the mating systems of the three taxa were consistent with those reported in their native range. To do this, I used manual hand pollination with a few treatments. To test for the capacity to self-fertilise, I enclosed a bud in mesh to exclude pollinators and pollen transfer, and quantified the fruit and seed set at the end of the flowering season. To test for cross-fertility, I applied both pollen collected within the population, and pollen collected from a distant population (to reduce pollen rejection due to self-incompatibility within a clonal, local population), after first removing the anthers during the bud stage to avoid admixture with self-pollen. I also performed pollinator visitation studies, where I observed a subset of a population for floral visitors and for signs of pollen transport.

The results were consistent with both anecdotal and native-range data. Both Wavy Gladiolus and Bulbil Watsonia were observed not to set seed. On the other hand, I found high seed production in Wild Watsonia for both cross-fertility treatments, and only one instance of seed set when self-pollen was applied (suggesting an issue with contamination).

Floral visitor observations explained why I noted a high level of natural seed set in Wild Watsonia in Victoria. While its native pollinators (sunbirds) are indeed absent here, I recorded many instances where pollinator services were rendered by New Holland Honeyeaters and European Honeybees. While both bird and bee also visited Bulbil Watsonia, its infertility (due to its triploid nature) resulted in no fruit set. In contrast, I failed to record any visitor to Wavy Gladiolus.

Fig. 2c-d Habit, capsule and pollinators of *Watsonia meriana* varieties:

Fig 2c. A New Holland honeyeater (*Phylidonyris novaehollandiae*) robbing nectar from *Watsonia meriana* var. *bulbillifera* (Bulbil Watsonia) in Chetwynd, western Victoria on 14 December 2013. This species does not always engage in nectar robbing — on other occasions, individuals were observed dipping their beak into the flower tube. Aerial cormels ("bulbils") can be seen on some scapes. Photo: Gerry (Wun Ho)

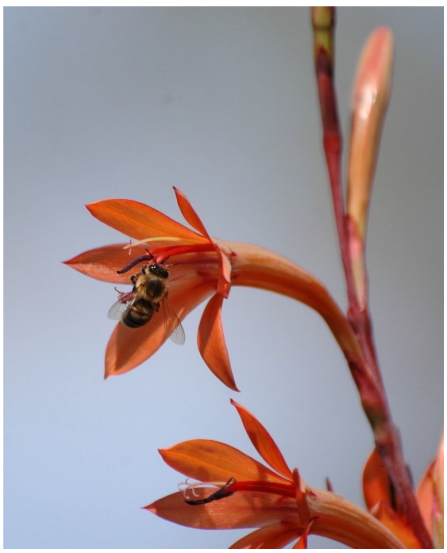

Fig 2d. A European honeybee (*Apis mellifera*) harvests pollen from *Watsonia meriana* var. *bulbillifera* in Chetwynd, Victoria (14 December 2013). Photo: Gerry (Wun Ho)

Ecological niche modelling

Next, I turned to ecological niche modelling to answer the question: How much of the native-range environmental space were the study species occupying in Australia? Based on my hypothesis, I expected Wavy Gladiolus and Bulbil Watsonia to only partially occupy their native-range environmental space, while Wild Watsonia would occupy a significantly greater proportion of its native-range environmental space, or even exceed it, as the genetic diversity engendered by sexual reproduction would lead to greater adaptability to new environments not found in Africa. Ecological niche modelling was performed with various tailored packages on the R statistical platform.

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Thesis on introduced Iridaceae continued...

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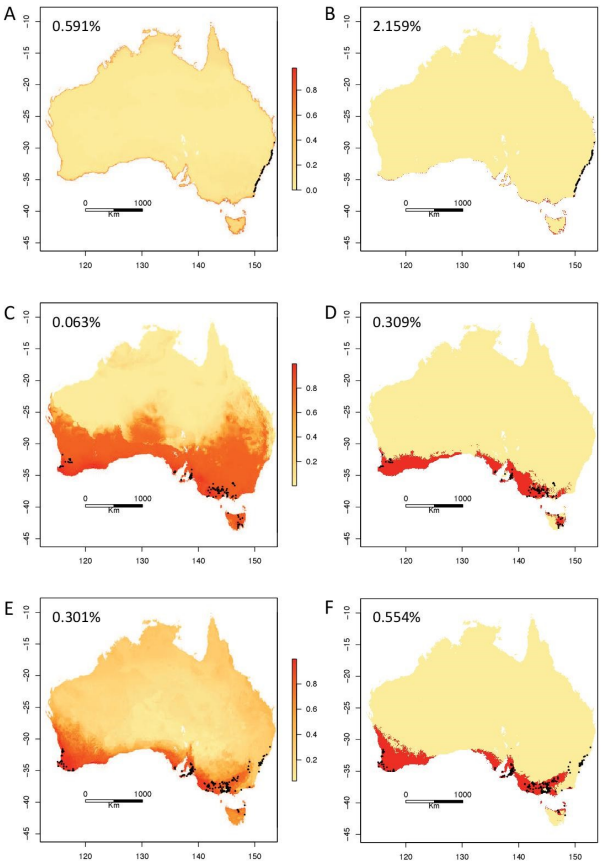
Results were in line with expectations, yet there were surprises. Generally, Wavy Gladiolus were observed to occupy an environmental space similar to that found in Africa, but there were some populations recorded in new spaces — judging by the proximity of location points around Sydney, the species appeared to have reproduced and naturalised. (Some incursion into new space was also inferred for Marsh Afrikaner, but to a lesser extent.)

Remarkably, the tables were flipped for Watsonia. Where the sexual Wild Watsonia was nested within an environmental space equivalent to the African one, some populations of the clonal Bulbil Watsonia were discovered outside its expected space in Queensland, where the topographic wetness indices were higher than expected for the species. Furthermore, there were more records of Bulbil Watsonia than of Wild Watsonia, with greater geographical separation between edge populations.



Above: Fig 3. Potential distribution for *Gladiolus* spp. The left panels show the probability distribution (that is, the probability of finding the species for each pixel), and the right panels show the binary distribution, after a threshold is applied to the probability model, so that a pixel is predicted to contain the taxon in question (probability = 1) or not (probability = 0). A and B: *Gladiolus gueinzii*, C and D: *G. tristis* (Marsh Afrikaner) and E and F: *G. undulatus* (Wavy Gladiolus). Points in black represent presence records. The value at the top-left corner of each panel is the relative occupancy (probabilistic for the left panels and threshold for the right panels). Pixel dimensions are 2.5 × 2.5 arc seconds.

Spread modelling

Short of multiple instances of transportation of Wavy Gladiolus and Bulbil Watsonia giving rise to their present geographical distribution pattern, it is hard to imagine continental spread solely by cormels and bulbils. During my field work in Victoria, I noticed that naturalised Iridaceae were more often than not established along roads. Do humans play a role in their dispersal patterns?

To answer this question, I used a recent method that estimated the degree of human-aided dispersal by an expectation-maximisation (EM) algorithm. The algorithm assumed that natural and human-aided dispersal were quantified by different probability density functions. By comparing an actual geographical distribution of a species against its theoretical expected distribution, the EM algorithm was able to estimate human versus natural contributions.

The human contribution to Wavy Gladiolus and Bulbil Watsonia distribution patterns were less than 10%, with most of the dispersal occurring locally and naturally.

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Thesis on introduced Iridaceae continued...

(Continued from page 7)

Surprisingly, human-aided dispersal explained almost 14% of Wild Watsonia movement — which did not support the notion of seeds as natural dispersive structures.

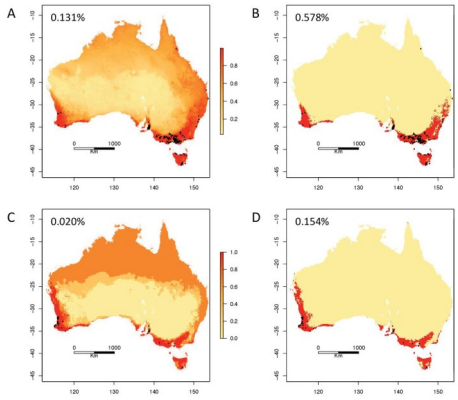
Implications

In conclusion, there was no evident support for my hypothesis: The clonal study species did not experience any contraction of environmental space in Australia, while the sexual species was shown not to have enlarged its environmental space as predicted.

There may be several reasons for these results. One, clonal species were more flexible than assumed in their environmental response—they were able to survive in unfamiliar climates such as Bulbil Watsonia in tropical Queensland—despite a theoretically lower rate of evolution (mainly via genetic mutation) compared to sexual species. Recent advances such as single nucleotide polymorphism (SNP) molecular markers can be used to identify candidate genes associated with local adaptation.

Two, there was insufficient time since the species' establishment to manifest their full capacity for invasion. Rather than a long-term study (ideally), invasion biologists can use transplant experiments, where populations are planted along a gradient (for example, cooler to warmer zones) and monitored. This method is not without risk: A population can escape and create a new invasion front. Not surprisingly, transplant experiments on non-native species are frowned upon by the biosecurity agencies in Australia. However, I argue that such experiments can provide much-needed timely information, and a protocol should be set up to facilitate and govern such experiments by non-government organisations.

Three, the distribution data in the native range failed to capture sufficient populations, and in particular, outlying populations. This affects niche modelling, as the model algorithm will be blind to the environmental conditions where a native species can actually thrive and underestimate its potential distribution elsewhere. There have been many calls to improve on the curation of our



Above: Fig 4. Potential distribution for *Watsonia meriana*. The left panels show the probability distribution (that is, the probability of finding the species per pixel), and the right panels show the binary distribution, after a threshold is applied to the probability model, so that a pixel is predicted to contain the taxon in question (probability = 1) or not (probability = 0). A and B: *Watsonia meriana* var. *bulbillifera* (Bulbil Watsonia), and C and D: *W. meriana* var. *meriana* (Wild Watsonia). Points in black represent presence records. The value at the top-left corner of each panel is the relative occupancy (probabilistic for the left panels and threshold for the right panels). Pixel dimensions are 2.5 × 2.5 arc

Fig. 5. Naturalised Iridaceae in Mitchell Shire. The Marsh Afrikaner occupies the central and eastern road reserves on the Hume Freeway, north of the Watson Street overpass in Wallan.
Photo: Gerry (Wun Ho)

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Thesis on introduced Iridaceae continued...

(Continued from page 8)

natural world. Citizen scientists and environmental groups can do much to fill this knowledge gap with smartphone apps (for example, iNaturalist).

One of my thesis reviewers commented my study on five taxa in Iridaceae was hardly a cause for generalisation to other introduced species. I agree. Several meta-analyses (that is, analyses combining many individual studies) conducted over the years have so far failed to identify a specific set of traits that engender invasiveness. Much needs to be done before we have a firm understanding of what makes a species invasive or not.

Despite this shortfall, I will conclude with some comments and recommendations on invasive species management and native species conservation in the light of my thesis. First, management action needs to be applied at the incipient stages of invasion, when a non-native population has just established or naturalised, or run the risk of further spread by humans (but see below). While local spread occurred naturally, long-distance movement of my study taxa were more strongly associated with human-aided dispersal.

Second, it should be recognised that a species' ecological behaviour will most likely change outside its native range, and predictions made from native-range data may be rendered superfluous. For example, a 1987 article in the *Journal of Ecology* postulated the invasiveness of *Gladiolus tristis* based on the species' profuse seed production in Africa. As I found, *G. tristis* (like the Wavy Gladiolus, *G. undulatus*) did not produce seed in Australia—invasive spread was achieved by natural and human-aided dispersal. Studies need to be made in both native and adventive ranges to achieve a fuller picture of an invasion event.

Third, human aid is likely to be needed to help terrestrial plant species migrate in response to climate change, as many species (including my study species) experience dispersal limitation and are only capable of moving short distances per generation: For some, these steps are certainly insufficient to out-manoeuvre rapidly changing environmental conditions. I recently attended a webinar by Bush Heritage, where they described an experiment to plant warmer-climate gums from NSW in Nardoo Hills reserve to build climate resilience; such projects may become standard practice in future.

Fig. 6. Naturalised Iridaceae in Mitchell Shire. These Wavy Gladiolus in the reserve at the northern end of Baden Drive, Wandong, started reshooting from their corms in May, and will flower in December. Photo taken July 2021. Photo: Gerry (Wun Ho)

Fig. 7. Naturalised Iridaceae in Mitchell Shire. The Bulbil Watsonia thrives along the Wallan–Whittlesea Road near the Upper Plenty township. Scapes from the previous flowering season are visible in the photo, and the presence of remnant bulbils helps to identify Bulbil Watsonia from Wild Watsonia. This taxon is particularly conspicuous during its flowering period from October to December, with a mass display of salmon red flowers. Photo taken July 2021. Photo: Gerry (Wun Ho)

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Thesis on introduced Iridaceae continued...

(Continued from page 9)

While I am aghast at the impact of invasive species—I was a member of a bush crew recently clearing boneseed *Chrysanthemoides monilifera* in a corner of the You Yangs Regional Park, and believe me, there are a lot of them—I hesitate to recommend the culling of invasive plant species *prima facie.* As an illustration, consider the Iridaceae with centres of endemism around Cape Town in southern Africa. If we assume that they migrate poleward with increasing warming, it would not be far before further movement is restricted by the ocean. In this scenario, Australian populations could serve as a living repository for these species, on the provision that they are consistently monitored and do not cause any native species to become locally extinct in the long run. This requires global cooperation to conserve indigenous and manage introduced species—I will admit that this is certainly ambitious, but not impossible, if we put our minds to it.

Fig. 8. Local spread in action. The Bulbil Watsonia is the commonest Iridaceae in the Shire. Here, the taxon has naturalised on the Say G'day Trail in Wandong, and it has also been sighted in Broadford and Tallarook. There is no record of the Wild Watsonia in the Shire. Photo taken July 2021.
Photo: Gerry (Wun Ho)

Growing Eremophila Update...

Email from Christine at: eremophilabook@gmail.com

Russell's new book, Growing Eremophila, is *officially at the printers*. I am hoping for a 4 week turnaround, possibly less. I could have them by the end of the month.

The final cost is still to be determined, but could be around $80 RRP. Postage has also yet to be calculated accurately. There could be discounts for postage for multiple books. I will keep you posted on this.

However, for your keen interest in this book, and for pre-registering, Russell is offering you a $5.00 discount on the price of the book. This will be available for anyone who registers their interest in the book by the end of this month only. Please pass this on.

To whet your appetite further, the details of the book are as follows:

- 504 pages
- Hard cover
- Full colour, quality photographs and paper
- 244 described species, approx. 95 subspecies, numerous hybrids and registered cultivars including information on:
- Natural habitat, Description, Propagation, Cultivation and other information in Author's notes
- Full section on propagation including detailed 'how-to' and photographs
- Brand new published information regarding *Calamphoreus* and *Diocirea*, resulting in the reassessment and recent taxonomic placement in the Eremophila genus

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Growing Eremophila Update continued...

(Continued from page 10)

- A unique table has been created as a quick reference guide for flower and leaf colour, bird-attracting feature, salt and frost tolerance
- Common name index
- Scientific name index
- and more...

We are looking for wholesalers. If you can assist, or know of anyone who may, please pass this email address and information to them, or provide me with their details so I may contact them.

If you have any further questions, please contact me.

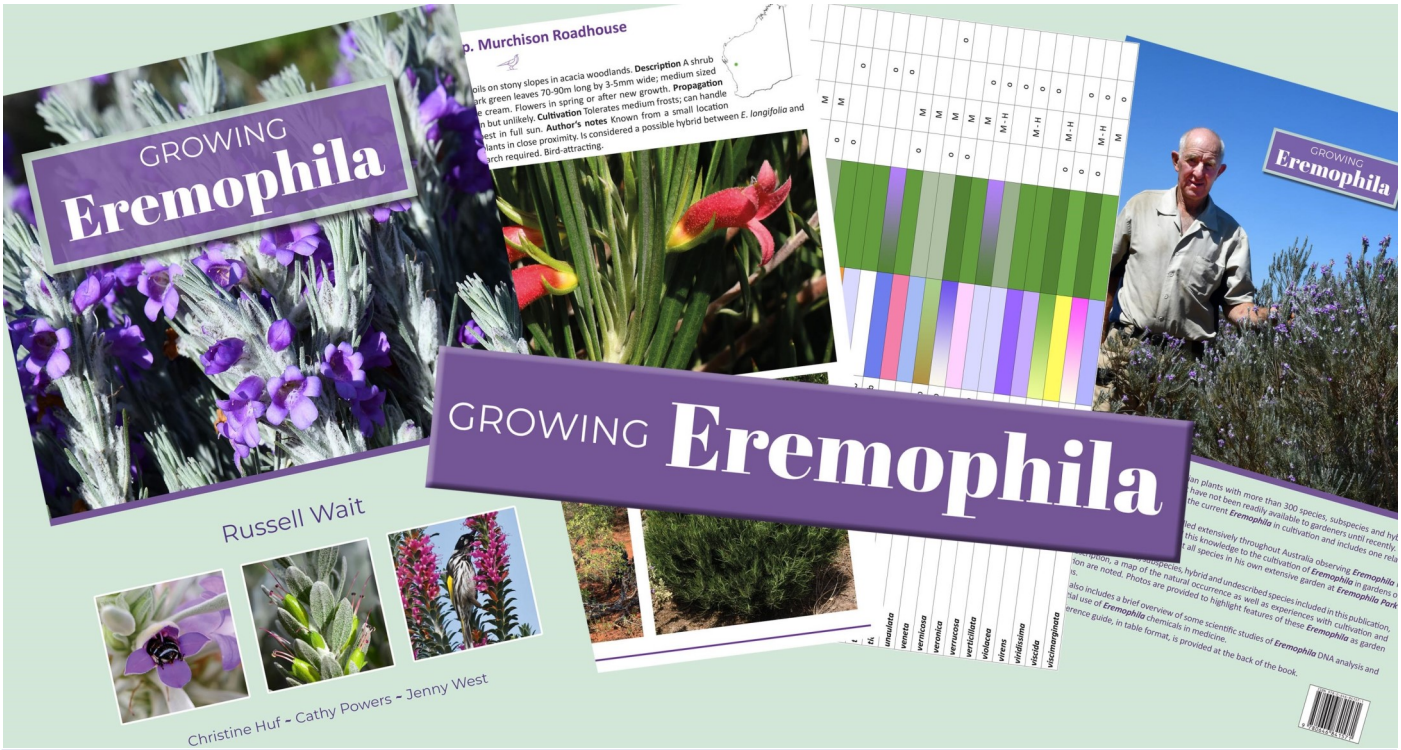
Cheers,

Christine **eremophilabook@gmail.com**

APS Mitchell members please note: Any Mitchell members who have already placed an order/expression of interest via email to eremophilabook@gmail.com are advised to contact Russell directly by emailing: russwait@bigpond.com. - both to let Russell know you are an APS Mitchell member, and/or to request collecting your copy from Norbert, or at an APS Mitchell meeting.

Collecting your book will mean a saving on postage costs of approximately $15.00.

Norbert can be contacted by email at njr3089@gmail.com or mobile phone: 0428 180 651. Pick up from Norbert is recommended for APS Mitchell members who would like their copy at first opportunity.



Mapping Hero Trees in Heathcote region...

BioLinks info shared by Liz Spillane

If you have old trees of significant size and would like to participate in the Central Victorian BioLinks project, which, records the location of these trees, then please follow the link attached. They are interested in the location of the trees in Central Victoria, not just the Heathcote area. There is provision on the link to vary the location.

You can map where your tree/s are or you can provide the information by email, see details by clicking on the link below. This is a great project aiming to protect the wonderful old trees that have managed to survive.

https://biolinksalliance.org.au/hero-tree

News about Audas Spider and Brilliant Sun orchids...

Shared by Paul Piko

The following news from Australian Network for Plant Conservation was shared via a Twitter post recently:

https://twitter.com/ANPlantC/status/1414011559345463296

Since 2017 the ANPC has been working with the @RBG_Victoria Friends of the Grampians Gariwerd and the @ANOSVictoria on 2 orchid conservation projects in Victoria culminating in the reintroduction of 50 Audas Spider-orchid & 400 Brilliant Sun Orchid seedlings in June! N. Reiter (see image below).

To read further information on work with the Audas Spider and Brilliant Sun orchids click on the following links to more detailed ANPC articles below:

https://www.anpc.asn.au/audas_spider-orchid/ - Saving the threatened Audas Spider-orchid (*Caladenia audasii*) from extinction.

https://www.anpc.asn.au/brilliant_sun-orchid/ - Saving the Brilliant Sun Orchid (*Thelymitra mackibbinii*) from extinction.

APS Mitchell Spring Plant Expo…

APS MITCHELL

Annual Spring Plant Expo & Sale

October 16th, 2021

9am - 3pm

Kilmore Memorial Hall

14 Sydney Street, Kilmore

Native Plant & Flower Displays

Gardens for Wildlife
Native Plants & Book Sales
APS Victoria - Books
Joan & Peter Broughton, Ironstone Park - Unusual Native Plants
La Trobe indigenous plant nursery - Indigenous tube stocks
Goldfields Revegetation indigenous and non - indigenous tube stock
Valley of a Thousand Hills David Laurie indigenous and non - indigenous tube stock
Neil's Plants
Russell Wait - Eremophila
Brian & Lorraine Weir - Grevillea Standards & Correa

Entry $2.00 (Children free) - Door Prizes - Raffle

Website www.apsmitchell.org.au

Contact aps.mitchell@gmail.com

Reminders, A P S Victoria Diary Dates & Other Events

Thank you

- **For the various contributions of articles, answering pesky questions, event information, photos, feedback, proof-reading, researching & providing other information as needed and general support...**

A BIG THANK YOU TO:
Christine Cram,
Miriam Ford,
Jan Harrison,
Gerry (Wun Ho),
Ian Julian,
Barbara Mau,
Paul Piko,
Norbert Ryan,
Liz Spillane,
Russell Wait.

A P S VIC DIARY DATES...

In line with ongoing advice on COVID-19 (coronavirus), restrictions may apply or effect APS-related events .

APS Victoria will endeavour to keep event status updated on the APS Victoria website: https://apsvic.org.au/events/

Or check with the event organiser.

September 4 - Open Garden Victoria. Bill Aitchison & Sue Guymer garden, Donvale. 10am-4:30pm both days. Bookings must be made online. Entry $10 per adult. Further details at www.opengardensvictoria.org.au

September 4 & 5 - APS Wilson Park (Berwick) Plant Sale Wilson Botanic Park Berwick 668 Princes Hwy, Berwick VIC 3806, Berwick.

September 11 & 12 - APS Yarra Yarra Australian Plants Expo, Eltham Community & Reception Centre, 903 Main Rd, Eltham. 10 am - 4 pm.

September 18 & 19 - APS Bendigo Plant Show at Kangaroo Flat Primary School, 60 - 80 Olympic Parade, Kangaroo Flat, Bendigo 9:30am - 4pm both days. $3 entry.

September 25 & 26 - APS Grampians Group host APS Victoria COM Meeting 10am and the APS Victoria AGM at 2.00pm. Pomonal Hall, Ararat-Halls Gap Rd, Pomonal. There will also be an evening meal and celebration of the Grampians Group's 40th birthday, with a special presentation. The following week is organised for native plant and nature lovers with Grampians walks, open gardens and activities, culminating in the Pomonal Flower Show on October 2 & 3. More details and registration details will be sent to district group secretaries soon.

(Continued on page 16)

Committee & Contact Information

AUSTRALIAN PLANTS SOCIETY, MITCHELL GROUP INC.
PO Box 541, Kilmore, Victoria, 3764 **No. A0054306V**
Email: mitchell@apsvic.org.au
Website: www.apsmitchell.org.au

	Committee Members	
President:	Norbert Ryan	0428 180 651
Vice President:	Dawn McCormack	
Secretary:	Ian Julian	0438 270 248
Email: secretary@apsmitchell.org.au		
Treasurer/Memberships:	Christine Cram	0458 238 270
Committee:	Bill Barker, Jeanine Petts, Victoria Morris.	
Group Librarian:	Volunteer position open	
Plant Sales:	Volunteer position open	
Newsletter Editor:	Jeanine Petts	0409 029 603

Gardens for Wildlife Coordinator: Gerry Ho Email: g4w@apsmitchell.org.au

Newsletter contributions:
Contributions should be sent to Jeanine Petts
Email: wattlegum@southernphone.com.au
Post: PO Box 381, Pyalong Vic 3521

For inclusion in the next Newsletter please forward contributions prior to the first Monday of each month.

Local Nurseries open for business ...

Please remember to support our local native nurseries...

Valley of 1000 Hills Nursery (David & Helen Laurie)
Supplying indigenous tubes stocks.
150 Reid Rd, Reedy Creek.
Open Saturdays 10am to 5pm. Phone: 03 5784 9286

Ironstone Park (Peter & Joan Broughton)
Specialising in rare, unusual & hard to find native plants.
Lot 33 Paling Rd, Heathcote.
Open by appointment: The garden is looking fabulous with many unusual natives worth looking at. Call Pete on: 0419 878 950 if you would like an appointment or arrange to have plants dropped off.

Russell Wait - Eremophila specialist
Russell grows *Eremophila*, some standard *Grevillea*, and does occasionally have a small quantity of other species. Held in his garden is the Botanical Collection of Eremophila for Plant Trust: which, he has held for approximately 25 years.
11 Tranter Close, Riddells Creek.
Open by appointment: Visitors need to telephone first to arrange access. Mobile reception in the area is very poor, so the landline is the preferred & most reliable method of contact.
Telephone: 03 54287956 Mobile: 0428 388 211

Diary Dates & Other Events continued…

(Continued from page 15)

October 2 & 3 - APS Grampians Group Pomonal Native Flower Show, Pomonal Hall. 9am-5pm on Saturday, 9am-4pm on Sunday.

October 9 - APS Echuca Moama Native Flower Showcase, Echuca Masonic Lodge Hall, 426 High Street, Echuca. A huge flower display, plant sales, floral art, Native Bonsai, basket weaving and other displays and demonstrations. 9 am - 4 pm.

October 16 - APS Mitchell Annual Flower Expo and Sale, Memorial Hall, Kilmore.

October 23 & 24 - APS Ballarat Spring Flower Show. Robert Clark Centre, Ballarat Botanic Gardens, Gillies Street, Ballarat. 10 am – 4 pm.

November 13 & 14 - Garden DesignFest, Metro Melbourne & Mornington Peninsula. Further details at www.gardendesignfest.com.au

November 20 & 21 - Garden DesignFest, Regional Victoria: Ballarat, Euroa, Geelong and Macedon Area. Further details at www.gardendesignfest.com.au

2022

September 11 – 16, 2022 - ANPSA Biennial Conference 2022 – Kiama, New South Wales. Preliminary details of the Conference, pre- and post-Conference tours and the beautiful town of Kiama can be found on the APS (NSW) website:

https://austplants.com.au/ANPSA-Biennial-Conference-2022

September 26 to 30, 2022 - 7th Global Botanic Gardens Congress, Melbourne. *Influence and Action: Botanic Gardens as Agents of Change.* Includes a youth program for future gardens' leaders aged 18 to 24.

Fabulous Peas 2022

FJC Rogers Biennial Seminar

15th - 16th October 2022

Discover the extraordinary world of Australian pea plants.

Saturday York on Lilydale, Mount Evelyn

Speakers with expertise in identifying, growing and propagating peas. Learn about current research into propagation and growing-on techniques. Evening dinner and an entertaining speaker.

Plant sales of common and unusual pea species. Book sales. Displays. Raffle.

Sunday Coach tours to public and private native gardens which include a wide variety of pea species.

Art exhibition and sale featuring pea plants from 8th – 16th October at Karwarra Australian Botanic Garden. Plant sales.

Expressions of interest: fabulouspeas2022@gmail.com

https://apsvic.org.au/fjc-rogers-seminar- 2022/

Hosted: Australian Plants Society Maroondah Inc.

AUSTRALIAN PLANTS SOCIETY MITCHELL GROUP INC.

Email: mitchell@apsvic.org.au PO Box 541, Kilmore Victoria, 3764
Website: www.apsmitchell.org.au Inc# A0054306V

2021/22 MEMBERSHIP/RENEWAL FORM – July 1 to June 30

This is a combined membership form for APS Vic and APS Mitchell

Please use this form instead of the form sent out with the APS Victoria newsletter

For insurance purposes people who join APS Mitchell must also join APS Victoria Inc.

(Please tick whichever applies) **Application** ☐ **OR** **Renewal** ☐

Title:	**Mr / Mrs / Ms / Miss**
Surname/s:	
Given name/s:	
Postal Address:	
Town/Suburb:	
Postcode:	
Telephone:	
Email Address:	

(Please tick whichever applies)

Membership Type:		**Fees:** Note: Membership Year = July 1—June 30		
		APS Victoria	APS Mitchell	Total
☐	**Single**	$35.00	$10.00	**$45.00**
☐	**Couple/Family** (2 adults & 2 dependents)	$40.00	$12.00	**$52.00**
☐	**Student**	$26.00	$10.00	**$36.00**
☐	**Organisation**	$44.00	$10.00	**$54.00**
☐	**I have paid/pay my APS Vic membership when joining/renewing with another district group. Which Group? :** _____ **Include only applicable APS Mitchell Fee:**		¨ Single $10.00 ¨ Family $12.00 ¨ Student $10.00	
☐	**Optional Australian Plants Subscription**	**4 issues:**		**$15.00**
		Total Due:		**$**

☐ **I wish to apply for APS Vic/APS Mitchell COVID-19 financial hardship fee waiver.**

I/We agree I agree to be bound by the Rules and Bylaws of the Society.

Signed:	Date: / /

I agree to my name being included in a membership list circulated for members' private use: **Yes** ☐ **No** ☐

Payment by: (1) Bank Transfer to BSB 633-000 Account No. 159982271 (Bendigo Bank)

Please include your surname and post code as reference/transaction details

Or (2) Cheque made payable to: APS MITCHELL INC.

Posted to: APS Mitchell Treasurer, P O Box 541, Kilmore Vic 3764

Or (3) Pay via cash or cheque at an APS Mitchell monthly meeting (usually 3rd Monday of the month 7:30pm John Taylor Room, Kilmore Library, Sydney St Kilmore. See website for details)

MITCHELL SHIRE COUNCIL.
COVID-19 Community Facility Safe Plan

COVID Safe Plan For APS Mitchell Group Inc. Organisation

PURPOSE

Mitchell Shire Council requires a COVID-19 Safe plan for groups and organisations who wish to return using Council owned or managed facilities. The following plan supports a safe approach for building use. Council welcomes the inclusion of any special guidance from your peak bodies and associations where this has been provided.

SCOPE

This plan applies to all people entering the KILMORE LIBRARY JOHN TAYLOR ROOM building located at 12 SYDNEY STREET KILMORE in line with the easing of COVID-19 restrictions identified by the Department of Health and Humans Services.

PLAN

3.1 Pre-Return Risk Assessment

Prior to people attending the site a Risk Checklist must be completed identifying how the requirements for physical distancing and people density will be maintained. A checklist to enact the plan is attached in Appendix 1

3.2 Considering groups needs

Organisers will discuss potential vulnerabilities with all group members and encourage individual participants to consider their own risk and need to attend. The group may need to consider supporting different members depending on their circumstances. Circumstances may have changed post COVID-19, for example they may now have additional carer's responsibility or family members with specific health risks.

Social and physical vulnerabilities that might affect a person attending the facility include:

- Immune-compromised: may limit attendance or may require additional controls
- Social isolation: managing return to social settings may not be easy for some people
- Need to assist family with child minding or other activities

Our plan for managing our members is:

- Sending Covid-19 safe plan to all members with the meeting groups notice
- A copy of the Covid-19 Safe plan with the meeting registration book
- Limit numbers to current DHS prescribed restriction number's
- Update all members as circumstances change

Any person who is unwell should not enter the building. This includes presenting with cold or flu symptoms including fever, runny nose, coughing, sore throat, aches or diarrhea. People with symptoms will be asked to leave.

This plan has been communicated to all affected members of the group.

(Continued on page 19)

MITCHELL SHIRE COUNCIL.
COVID-19 Community Facility Safe Plan

(Continued from page 18)

3.3 Return to facilities

3.3.1 Physical distancing measures

Physical distancing measures mean that people from separate households must be more than 1.5 metres from each other. In addition, a minimum space of 2 metres x 2 metres is required for every person in any room they access.

Spaces (e.g. corridors) where there is a potential for people to come in contact with each other may exist in the building. It is acceptable that people walk past each other in these spaces as the amount of time they are together is minimal. However, they are not to stop in these spaces and, if possible, the movement of members should be managed so that people will not physically brush past each other in this space.

Rooms in the building and the maximum number of people allowed (subject to current restriction limits on total numbers):

Room Name	Size (width X depth)	Max people (width x depth/2)
John Taylor Room		Max 40 people

Signs will be placed into any room where the maximum occupancy is less than the maximum allowed into the entire facility to advise that people are to wait until the room is vacated.

Cleanliness

Cleaning arrangements for the building are to be documented.

On entry to the building it is advised that every person wash their hands with soap and water or carries hand sanitiser to apply at entry. Everyone should avoid touching their faces.

For this building, at the end of every session any equipment and all tables and chairs used by the members need to be cleaned by the meeting organiser using soap and water with washable or disposable cloths. Spray and wipe is also satisfactory for cleaning.

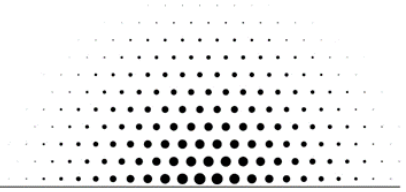
Chairs with soft covers will, where possible, not be used as these are difficult to wipe down.

Council clean as per schedule arranged with the Contracts Management Coordinator at Mitchell Shire Council. This this has been communicated to each building manager.

(Continued on page 20)

Covid Safe Meeting Plan...

MITCHELL SHIRE COUNCIL.
COVID-19 Community Facility Safe Plan



(Continued from page 19)

COVID-19 Infection
If a member is diagnosed with COVID-19, the following process will apply:

- Notify members who may have had contact with the person per DHHS guidance
- Ensure the privacy of the individual is maintained
- Seek assistance from Council contact
- Inform Council to arrange a deep clean of the building

3.6 Breach of the policy
Everyone will be treated with respect and it is expected that members will adhere to guidelines to physical distancing to help minimise the risk of COVID-19 being spread. Should someone test positive who attended a meeting space their privacy will be maintained, however Council will need to support a contact tracing regime to inform others.

3.7 Legal Sources of policy

- National COVID-19 Safe Workplace Principles
- NCCC COVIDSafe plan
- *Occupational Health and Safety Act 2004* (VIC)
- *Occupational Health and Safety Regulation 2017* (VIC)
- *Disability Discrimination Act 1992* (Cth)
- *Equal Opportunity Act 2010* (VIC)

Appendix 1 – Checklist (to be completed for each session and retained by user group)

Before activity

☐ Date and time of activity _____
☐ Activity type _____
☐ Rooms used (e.g. hall and kitchen) _____
☐ Responsible person name (must be present throughout activity)

The following available:

☐ Advice on COVID-19 available to everyone –
e.g. www.dhhs.vic.gov.au/staying-safe-covid-19
☐ Specific vulnerabilities determined and vulnerable group members encouraged to participate in other ways or to make arrangements with organisers for any special requirements to facilitate attendance
☐ Room sizes and number of people in each room signed

(Continued on page 21)

Covid Safe Meeting Plan...

MITCHELL SHIRE COUNCIL.

COVID-19 Community Facility Safe Plan

(Continued from page 20)

- ☐ Places where it will be difficult to maintain 1.5m spacing identified
- ☐ Signs for 1.5m and COVID-19 displayed
- ☐ Attendance sheet available and completed by all people entering facility
- ☐ Consideration for leaving doors open to allow access through doors without touching
- ☐ Advised patrons to hand wash/ hand sanitise as soon as they enter the building (consider leaving the outer toilet door propped open to avoid touching)
- ☐ Soap and water or disinfectant spray and disposable cloth (e.g. paper towel) available to clean surfaces touched
- ☐ Gloves available

Other risks to be managed (please list, use reverse of sheet if more space required)

During activity

- ☐ Encourage participants not to bring belongings into centre (less to contaminate and clean)
- ☐ All attendees have been asked if they are unwell or have a temperature
- ☐ All attendees have been asked to wash their hands upon entry
- ☐ All attendees have provided their contact information on attendance sheet
- ☐ All attendees have been informed about safe distancing (1.5m)
- ☐ All attendee have been advised of other risks to be managed (please see list, use reverse of sheet if more space required)

After activity

- ☐ All items used (including tables and chairs) washed with soap and water or sprayed and wiped with a disinfectant. This is the responsibility of the meeting organiser
- ☐ This form and the attendance sheet completed and stored in a centralised location (e.g. office) – to be made available upon request

Plan completed by:

Name	**Ian Julian**
Role	**Secretary APS Mitchell Group Inc.**
Contact Number	**0438 270 248**
Email	**apsmitchell@gmail.com**
Date	**28-01-2021**
Signature	*Ian Julian*