



Crowea exalata ssp magnifolia
(Image by Maria Hitchcock)

Australian Plants Society Armidale & District Group

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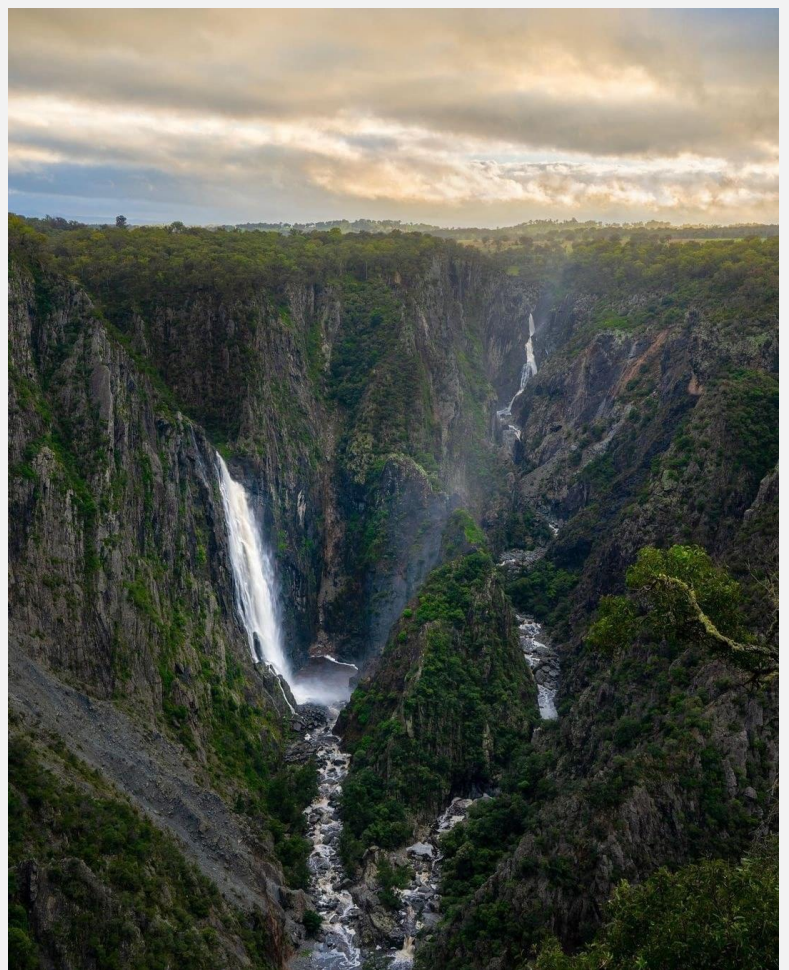
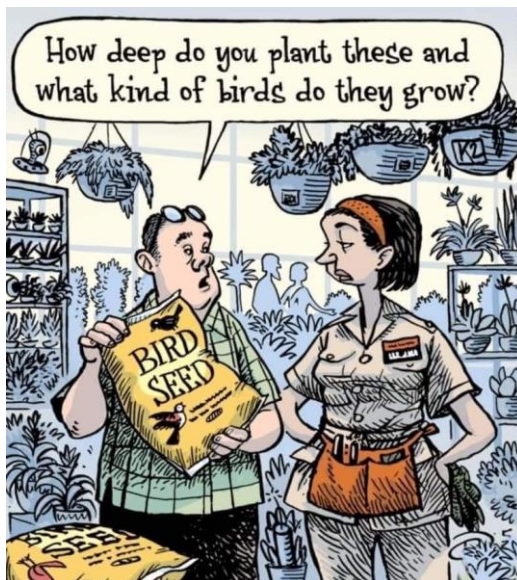
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Autumn Edition 2022

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Wollomombi and Chandler Waterfalls flowing into the gorge below. This makes sense of the meaning of the Aboriginal name Wollomombi – meeting of the waters. If you haven't visited recently, the facilities have been much upgraded.

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From the Editor – John Nevin

This edition of the newsletter is somewhat late, and I apologise for that. I have been pre-occupied with the Annual Armidale Eisteddfod that has made a comeback after two years interrupted by the COVID-19 pandemic. Thank God for the science of immunisation and vaccines, as we are now getting back to a more normal way of life, and learning to interact with each other again.

The season has been very wet. We had record rainfall last year and it has kept coming. The bottom of our five acre block has been so wet we have been unable to get onto it and keep it tidy. In the rest of the yard, the weeds have proliferated (as has all plant growth) and I have faced a losing task in keeping things under control. Now that the cooler months have arrived and the rain held off somewhat, I am starting to catch up on the backlog. Winter is the time when I usually carry out infrastructure work as I am not distracted by other tasks such as mowing and weeding.

Most of the activities of our group have been outdoor, such as Arboretum working bees and garden visits. After all the lockdowns people have been happy to get out again and attendances have been good. The St Peters Open Gardens is on again and we have an entry for a native garden for the event on the first weekend in November. This is an opportunity to showcase native plants for gardens and to run a sale of plants that may be hard for no members to otherwise obtain through the commercial nurseries (although this is improving). For those of you that have not been to an APS Conference, I would recommend that you look at the Kiama Conference coming up in spring. These usually combine interesting talks with garden visits and other sites of botanical interest, such as National Parks and Botanic Gardens. It is a great opportunity to socialise and network, meeting other plant enthusiasts that you have read about in newsletters or read their books. The weeklong conference is bookended by tours to many areas of NSW, such as the Pilliga, Sydney Sandstone, Lord Howe Island. You are shown the pick of those plant areas by expert guides and are stimulated by the presence of others on the tours who are also native plant enthusiasts, many of whom, are from interstate. So give it a go.

Barbara and I hope to get to the Fred Rogers weekend in Melbourne in October which has pea plants as the topic. Again, this is combined with talks, garden visits and plant sales. Victoria is a tiny state by comparison with NSW and their activities are well organised and patronised. Again, socialising and networking with like-minded people is a great benefit. We hope to visit friends and many of the fine nurseries of Victoria while down there.

Office Bearers 2022

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Some Deaths in our Group

by John Nevin



Kath Wray OAM 12/9/1928 -20/4/2022

Kath was a long standing member of our group and a Life Member of APS NSW. This honour was bestowed on her in recognition of her work in getting the Tree Group off the ground and establishing the Citizens Wildlife Corridor Network. She came to Armidale when Prof Beadle was appointed as foundation Professor of Botany at UNE. Beadle brought several of his staff from Sydney with him, including John Williams.

Kath worked at the Teacher's College for 18 years and her funeral on 29/4 was like a Teacher's College reunion, with many now retired staff in attendance. In recent years, Kath has been in indifferent health and was in Autumn Lodge Nursing Home where she died. Hers was a life worth celebrating as she made a valuable and lasting contribution to the environment on the Northern Tablelands.



Wes Blackert passed away at home at his bush block at Invergowrie recently. Wes was born in Bowral to father and Methodist Minister Allan Blackert and mother Mavis Louisa Blackert (nee Gray). Wes was their second child after baby Alllan who had died in infancy. He was the older brother to Geoffrey, Joy and Ian.

Wes was a clever child, reading from an early age and winning a scholarship to boarding school. After boarding school Wes won a scholarship to the University of New England in Armidale. Although drawn to studies in literature he completed a Bachelor of Economics and won a further scholarship for further study at the London School of Economics before returning to teach economics at UNE.

During this time Wes contributed to research publications including on the Reserve Bank. He was a generous teacher and was much loved by staff and students at the university. He lived with partner artist Daphne Young until her death from a brain tumour in 1997. They built a house on a bush block at Invergowrie west of Armidale. He was fond of the bush and his garden reflected that. Wes was not one for formal gardens. A visit to his place was always a discovery for us, with possums in their customary Eucalypt hollows near the house. Wes travelled a lot with his trusty dogs all over the east coast and inland.

Following the death of the love of his life, Daphne Young, Wes became more reclusive, although he maintained his membership of APS and his interest in the Australian flora. His death was not expected and a private funeral was held to note his passing.

Arboretum Working Bee, Markets in the Mall, Report for March

by Patrick Laher

We concentrated on planting a total of 24 species in various locations, some in garden beds and others along a western path. We were fortunate again with the weather which was overcast but ideal for planting. As it is difficult to record the names of plants in all the different locations in the different beds, we will be burying a plant label with each plant. We shall use the cheap, but firm labels available from Bunnings. Members are asked to place them facing the path and pushed most of the way into the soil and then covered with mulch. I will label each using a permanent marker with the name of the plant and the month and year of planting. Penelope will send out a reminder about the labelling process the next time that we do plantings.

Colin Wilson grew and donated seven plants of *Eucalyptus perriniana* for planting at the Arboretum. Thanks to the following for their assistance at the working bee: Colin Wilson, Eric and Penelope Sinclair, Phil Rose, John Nevin, Deirdre Waters, Peter Shepherd and Geoff Derrin. Special thanks to Eric and Penelope who did a follow up spray and whipper snipping.

With the Sunday Markets, once again there were very few stallholders and members of the public. The weather was dry, but overcast, and we sold 16 plants which was pretty good under the conditions. Thanks to Colin Wilson, John Nevin and Phil Rose for their help.

Arboretum Plants in flower in June by Geoff Deerin



Templetonia retusa

This plant is known as Cockies Tongues or Coral Bush. It is in the family Fabaceae and grows in southern and southwest WA.

It grows up to two metres in height. It is a hardy plant that is tolerant of Armidale frosts and flowers for long periods. It responds to pruning.



Hakea petiolaris

This is a large shrub to small tree growing 2-9 metres in height. It flowers from late Autumn to Winter and the flowers are in globular clusters resembling sea urchins. The flowers start creamy coloured and the perianth darkens to red as they age. Seeds are woody pod retained on the plant. They tolerate moderate frost and like good drainage.



Grevillea 'Lady O'

Is a member of the Proteaceae family and a hybrid whose parents are *Grevillea victoriae* hybrid and *Grevillea rhyolitica*.

It was developed by Peter Ollerenshaw at Bywong Nursery and named after his mother. It is a hardy plant, tolerant of Armidale frosts but likes good drainage. It flowers for long periods and attracts honeyeater birds.



Banksia penicillata

This is a rare species that grows near rocky sandstone cliffs in a few locations in the Blue Mountains west of Sydney. It used to be a subspecies of *Banksia conferta*, but was raised to species status in its own right in 1996.

It grows to 4 m and does not have a lignotuber. It usually flowers from March to June and the seed follicles remain closed until burnt in a bushfire. The plant is killed by fire and regenerates from seed.

How long can plant seeds retain their viability? By John Nevin

Scientists have revived a plant from the Pleistocene epoch. This plant is 32,000 years old. The oldest plant ever to be regenerated has been grown from 32,000 year-old-seeds, beating the previous record holder by some 32,000 years. A Russian team discovered a seed cache of *Silene stenophylla*, a flowering plant native to Siberia that had been buried by an Ice Age squirrel near the banks of the Kolyma River. Radiocarbon dating confirmed that the seeds were 32,000 years old.



Armidale Show 2022 – Native Flower Exhibit by Penelope Sinclair

2022 Armidale Show – Native Flower Exhibit

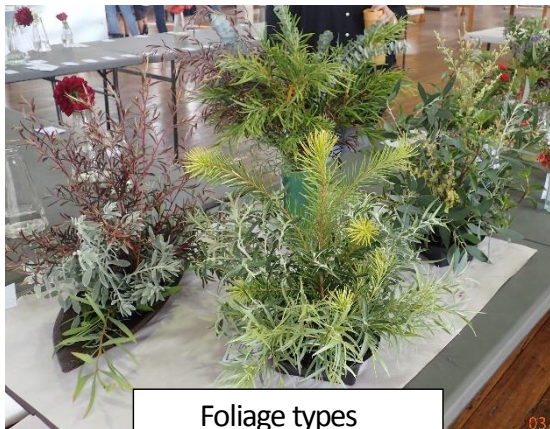
The Armidale Show was held on 4th-5th March. The pavilions always provide a lot of interesting exhibits though these, especially in the Cut Flowers Section, were very limited this year. The very wet days in late February and early March did not favour beautiful flower presentations.

It was good to see Australian native plants well represented. This is a great opportunity to bring some of our colourful/interesting species to the attention of gardening enthusiasts. Flowers must be grown in your own garden, but the foliage displays can include specimens from elsewhere and are only limited by your imagination.

Exhibits this year were provided by Pat Laher and Penelope Sinclair; hopefully next year more members will join in. APS Armidale donates a \$20 voucher from the Armidale Tree Group Nursery to the winner of the Championship prize.



After judging

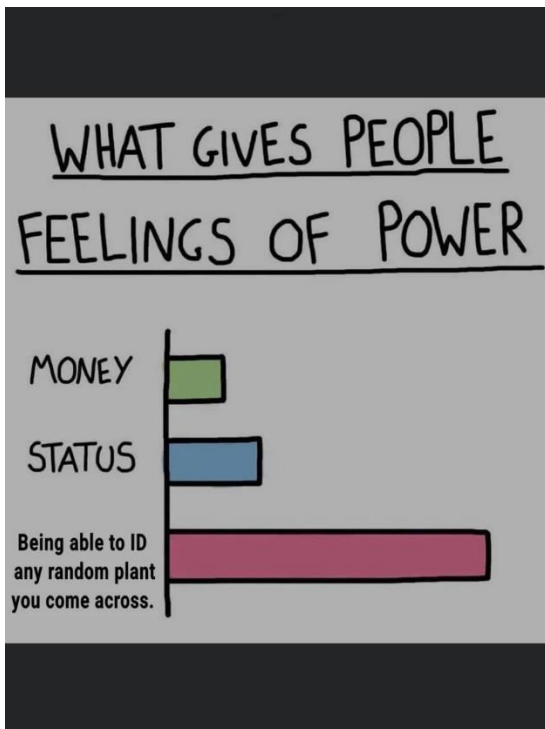


Foliage types



Correa spp.

Some funnies

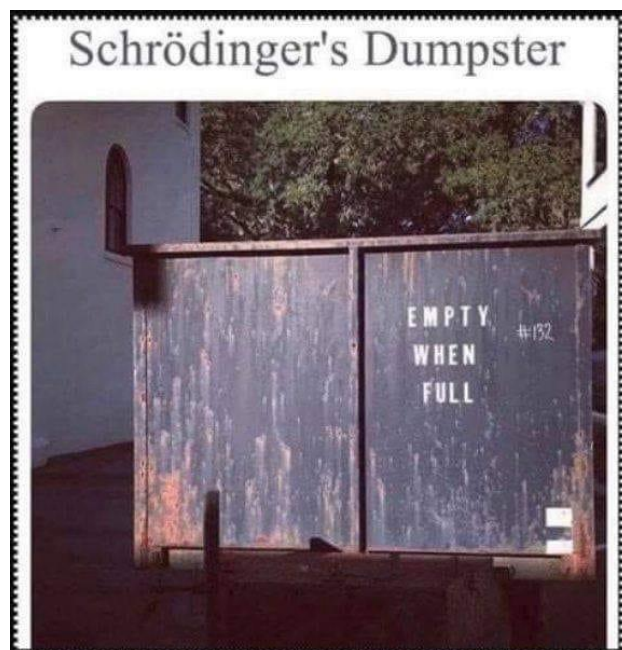


Is your entrance like this?

**Have you ever noticed that
all instruments searching
for intelligent life...**



**Are pointed away
from Earth**



The Judean Date Palm: Extinct Tree Resurrected from Ancient Seeds

From Ancient Origins



The ancient Judean date palm tree has been resurrected from ancient seeds

For thousands of years, the date palm was a staple crop. In the Kingdom of Judea it was a source of food, shelter, medicine, and shade. But the plant went extinct due to waves of conquest and intentional destruction. But now, after 2,000 years, the Judean date palm is back and the sweet ancient fruit has been harvested again.

Thick forests of the ancient date palms towering up to 80 feet (24 metres) covered the Jordan River valley from the Sea of Galilee in the north to the shores of the Dead Sea in the south. So valued was the tree that it became recognised as a symbol of good fortune in Judea. It is chronicled in the Bible, Quran, and ancient literature for its diverse powers. It has allegedly served both as an aphrodisiac and a contraceptive, and as a cure for a wide range of health issues including cancer, malaria and toothache.

However, its value was also the source of its demise and eventual extinction. The tree so defined the local economy that it became a prime resource for the invading Roman army to destroy. Once the Roman Empire took control of the kingdom in 70 A.D., the date palms were destroyed in an attempt to cripple the Jewish economy. The Romans eventually succeeded and by 500 A.D. the once plentiful date palm had almost completely disappeared, driven to extinction for the sake of conquest.

During the Byzantine and Arab periods (4th to 11th century A.D.) the Judean date palms were barely holding on and the continued waves of conquest and destruction meant that by the 19th century, no traces of these historic plantations remained.

But all was not lost, because in 1963, the late archaeologist Yigael Yadin began excavating Masada, a mountaintop fortress built over 2,000 years ago on the shore of the Dead Sea, where King Herod built a spectacular palace. Masada was the last stand of a small band of Jewish rebels who held out against three Roman legions for years before committing mass suicide in 73 A.D.

Buried beneath the rubble, Yadin unearthed a small stockpile of seeds stowed in a clay jar dating back 2,000 years. For the next four decades, the ancient seeds were kept in a drawer at Tel Aviv's Bar-Ilan University. But then, in 2005, botanical researcher Elaine Solowey decided to plant one and see what, if anything, would happen.

"I assumed the food in the seed would be no good after all that time. How could it?" said Solowey. She was soon proven wrong. After eight weeks, a small green shoot emerged from one seed, producing a sapling that no one had seen in centuries and at that time became the oldest known tree seed to germinate. The plant was nicknamed "Methuselah", after the longest-lived person in the Bible.



Morphology of six germinated ancient Judean date seeds before planting

The first leaves were plagued with white spots, which the researchers put down to insufficient nutrients, and it was thought that the plant would never survive. But as time progressed, the leaves began to look healthier. In 2011, the plant produced its first flowers and today, the living archaeological treasure continues to grow and thrive. As soon as the ancient Judean date palm had grown into a tree, Ms. Solowey used genetic testing on it to confirm if it was indeed male and thus incapable of producing fruit. Methuselah was male and for a long time researchers believed that this was the only Judean date palm that they would see.

But Dr. Sarah Sallon of the Hadassah Hospital in Jerusalem began to look for more Judean date palm seeds, and thirty of the ancient seeds were recovered from Qumran, the same location where the Dead Sea Scrolls were found in the desert. Between 2011 and 2014 Ms. Solowey planted the seeds and six more have sprouted over the years. Like Methuselah, they have all been given Biblical names. These plants are called Adam, Jonah, Uriel, Boaz, Judith and Hannah.

The age of the seeds range from some of the oldest germinated in the world – Methuselah, Hannah, and Adam – with a carbon date to the first to fourth centuries BC, to the mid-second century BC to mid-first century A.D. plants known as Judith and Boaz, to the youngest of the Judean date palms – Uriel and Jonah are the youngest (first to second centuries AD).

After six years of growth, Hannah flowered and researchers got excited at the possibility of resurrecting the Judean date palm after 2,000 years. Methuselah was chosen to be the father and the pollen from this plant was placed onto Hannah's flowers. The experiment worked and recently Hannah's fruit was

harvested for the first time. France's University of Montpellier conducted genetic testing on the Judean date and found that it shares some qualities with the Iraqi Zahidi date as well as other date varieties that were once grown in ancient Mesopotamia, Arabia and Pakistan.

The Judean dates harvested from Hannah have a light brown skin, fibrous and chewy honey-coloured flesh, and is less sweet than the popular Medjool date.

Solowey has nurtured more than 100 rare or near-extinct species back to life as part of a ten year project to study plants and herbs used as ancient cures. She has grown plants and herbs used in Tibetan, Chinese, and biblical medicine, as well as traditional folk remedies from other cultures to see whether their effectiveness can be scientifically proved. Now that the Judean date palm has been brought back to life and its fruit has been harvested, researchers finally have the opportunity to study if the ancient medicinal claims are true.



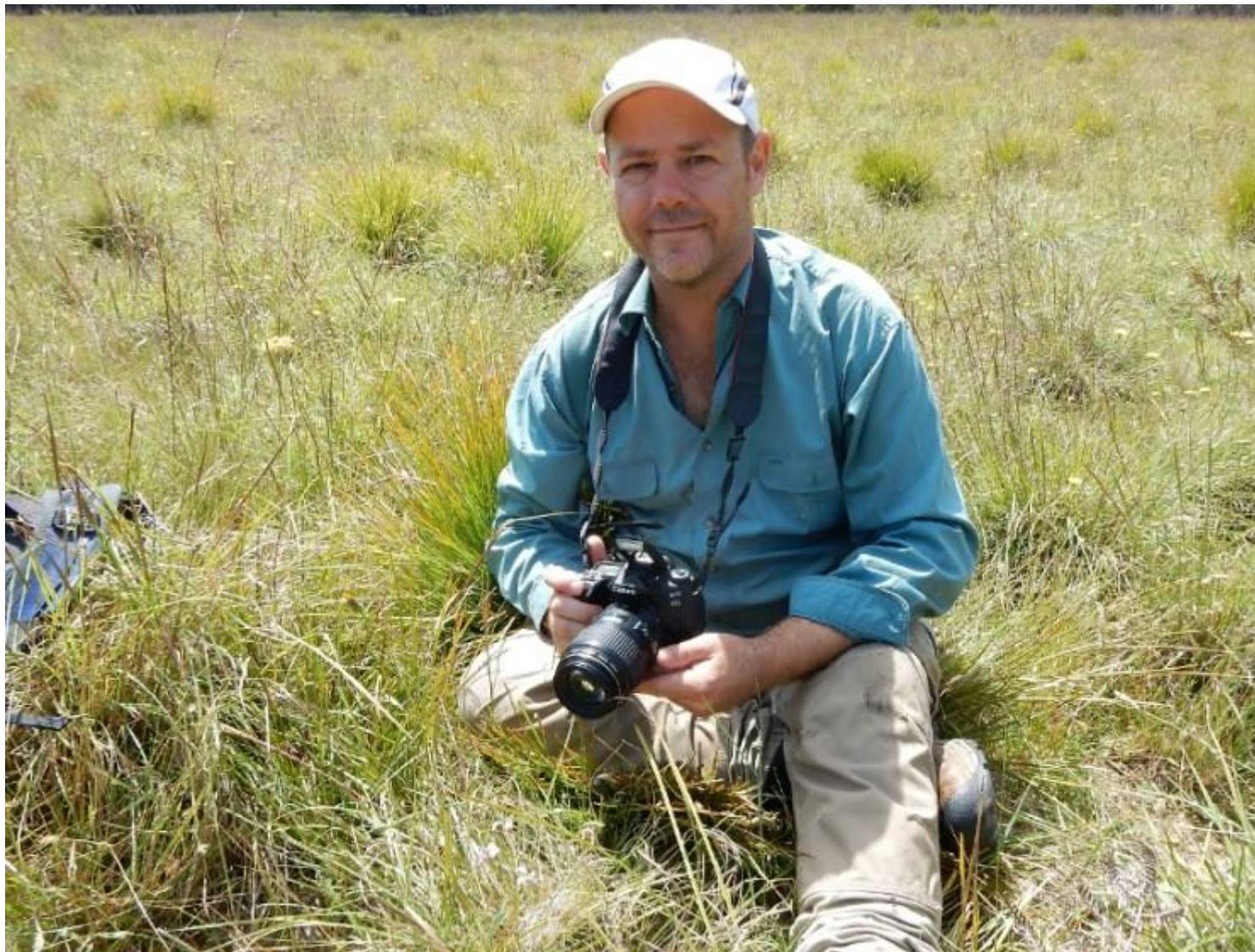
Harvested dates grown on the ancient Judean date palm.

Editor

Will we see the Tasmanian tiger brought back to life as our knowledge of the sciences evolves? Perhaps Jurassic Park is not as fanciful as we originally thought.

Wild about Native Orchids: Q&A with Lachlan Copeland (from CSIRO Publishing January 24th)

Botanist, photographer and orchid enthusiast Dr Lachlan Copeland reveals the surprising diversity and extraordinary beauty of Australia's native orchids.



Lachlan Copeland loves getting out into the bush to find and photograph native orchids. (Photo: Adam Fawcett)

Many of us know orchids as elegant houseplants or showstopper potted plants in your garden, but did you know that Australia is home to around 1900 species of wild orchids – 30 per cent of which can be found in New South Wales and the Australian Capital Territory. And in the last five years there have been more than 20 orchid species newly described from this region alone.

To help us delve into the beautiful and sometimes bizarre world of orchids, we asked Lachlan Copeland, co-author of [Guide to Native Orchids of NSW and ACT](#), to tell us more about Australia's stunning and surprising native orchids.

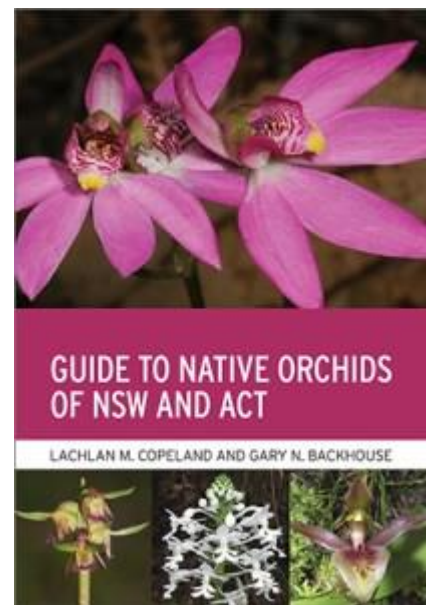
How did your interest in orchids begin?

I first took an interest in orchids in the mid 1990s as I loved getting into the bush and observing and photographing all living things. I scored my first job as a botanist in 1996 and have been lucky enough to work on orchids for much of the past 25 years. All plants are of interest to me, but native orchids have always been my favourite, and probably always will be. I often get asked “why orchids” and to be honest I can’t even give a straight answer... it’s something that’s now just ingrained in me, I guess. The cool thing is that I know I’m in good company as there are so many other wonderful orchid enthusiasts who also share my passion.

What inspired you to write *Guide to Native Orchids of NSW and ACT*?

I was lucky enough to start learning about orchids at the same time as the last comprehensive book came out in 1996. It was a beautiful little field guide by Tony Bishop and I learnt a great deal from it. After 25 years of further research though, and countless name changes and new species, I could see a real need to publish a new, totally up-to-date book that would appeal to both amateur wildflower enthusiasts and professional botanists alike. All naturalists crave comprehensive field guides with good photos and distribution maps and current knowledge. Other states have some excellent orchid field guides so NSW was long overdue.

It was also thanks to my good friend Gary Backhouse, who first suggested we team up to write the book. Gary has an excellent eye for detail and has produced fantastic books about orchids from elsewhere, so I knew working closely with him would ultimately lead to a good product.



What is so special about the native orchids of NSW and ACT? Are there any particularly fascinating species?

Where do I start? We have such a diverse range of orchids including some of the world's tiniest species to some large epiphytes weighing many kilograms. We are fortunate to be in a cross-over zone where we have an amazing diversity of spectacular ground orchids in temperate zones as well as a good diversity of epiphytes in wetter, subtropical areas. The north-eastern corner of NSW has some amazing epiphytes on trees and lithophytes on rocks. I feel the need to show off and also point out that NSW has more native orchids than any other state in Australia, something we NSW locals should be proud of.

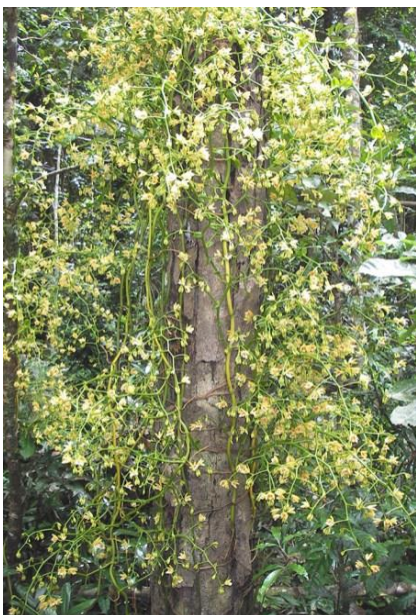
We have two amazing underground orchids that spend their entire life cycle in the soil and leaf litter and these *Rhizanthella* species are world-famous amongst orchid enthusiasts. NSW also has two climbing orchids, one of which can reach 10 metres tall in a single year's growth. *Pseudovanilla foliata* has a large number of big showy flowers and really is one of the most spectacular orchids in Australia. Many of our spider orchids and leek orchids are not only attractive but are poorly known and rarely seen. Some of them may only flower the year after a fire, so enthusiasts might only get a chance to see them once in a decade



Left - Barrington Tops Underground Orchid (*Rhizanthella speciosa*)

Below Left – Giant Climbing Orchids (*Pseudovanilla foliata*) can grow more than ten metres tall up tree trunks and can weigh many kilograms.

Below Right – The flower of the Giant Climbing Orchid (*Pseudovanilla foliata*)



What's your most memorable orchid find?

I've travelled far and wide in search of orchids, but strangely enough my most memorable orchid discovery happened on my own property, not more than 80 metres from my bedroom window! I'm fortunate enough to have an extremely rare orchid that appears to only grow on my place in an area of less than 100 square metres. After three years of surveys, it's still known from fewer than 50 plants. *Danhatchia copelandii* is very distinctive and mysterious and to have such a wonderful orchid only on my place is a privilege and something that I take great pride in. Seeing some of Lord Howe Island's endemic orchids has also been a highlight and these are technically in NSW, but nothing beats having some cool orchids in your own rainforest patch.



Copeland's Danhatchia (*Danhatchia copelandii*) is an extremely rare orchid that so far has only been found on Lachlan Copeland's property.

Do you have any concerns about conservation?

I sure do. I've worked in the conservation of rare and threatened plants for over 20 years now and in that relatively short time-frame have seen many orchids disappear. They are threatened by land clearing, illegal poaching by collectors, habitat degradation by introduced weeds, overgrazing and trampling, frequent fires and a range of other things. I do what I can to help conserve them, but the truth is many of our plants and animals are in serious decline and in desperate need of further study. I hope that our book will help raise awareness of our native orchids but also stimulate further interest and research, both of which will be needed for their long-term conservation.





Above Left – Kiandra Leek Orchid (*Prasophyllum candidum*)

Above middle – Brown Butterfly Orchid (*Sarcochilus dilatatus*)

Above Right – Orange-blossom Orchid (*Sarcochilus falcatus*)

Left – Graceful Sun Orchid (*Thelymitra simulata*)

Can citizen scientists play a role in this field?

It's amazing how many new orchid species have been discovered in the past five years by amateur enthusiasts, casual bushwalkers and citizen scientists. Lots of folks now take quality photographs of native orchids and post them on social media and this helps professionals better understand the distribution and abundance of native orchids. We actually owe a great deal of our current knowledge to these citizen scientists who are so passionate about biodiversity and do their bit to help out. So, a BIG yes to that question.



Lachlan Copeland (L) and Gary Backhouse are the authors of Guide to Native Orchids of NSW and ACT

Dr Lachlan Copeland is a botanist specialising in the taxonomy and conservation of rare or threatened plants. Over 25 years, he has discovered several new orchid species and published more than 45 scientific papers relating to native orchids and other plants of conservation significance.

Like most orchid enthusiasts, he loves nothing more than getting out into the bush and finding and photographing native orchids in their natural habitat.

This comprehensive guide describes the 582 species of wild orchids that occur in NSW and the ACT and includes over 600 photographs, as well as distribution maps for almost all species.

The Swamp Foxtail's origin is hidden in its DNA by Roderick John Fensham

From The Conversation April 8, 2019

Swamp foxtail (*Cenchrus purpurascens*) is a delightful grass that forms a neat tussock up to a metre tall with a distinctive fluffy spikelet that resembles a fox's tail.

Foxtails are widely used in horticulture. The purple forms are particularly popular in ornamental gardens and some have even become invasive weeds.

The foxtail grasses are more commonly seen in these cultivated settings, which has led to much confusion about swamp foxtails' origins in Australia. The species is simultaneously an exotic weed from Asia, the dominant grass in an endangered Australian ecosystem and a rare native species in isolated desert springs.

Swamp Foxtail

Botanical name: *Cenchrus purpurascens*

Family: *Poaceae*

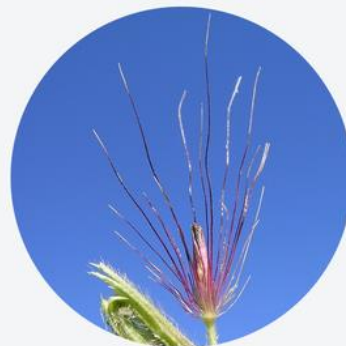
Height: up to 1m

Swamp foxtail, also known as fountain grass, came to Australia hundreds of thousands of years ago.

It first arrived in Queensland and was spread south by Europeans.



With its long plumes, resembling fox tails, it stands out in swamp lands and ornamental gardens.



Is it native?

It was uncertain for a while whether swamp foxtail is actually native to Australia. Although Europeans collected it near Sydney, it was possible the seeds had come with livestock on the early ships.

This theory was put to rest [by genetic studies](#) that found small populations have existed in inland Queensland for hundreds of thousands of years.

The species spread southward and was first recorded in Victoria in the 1970s.

European records

Robert Brown, the botanist who accompanied Matthew Flinders as he [circumnavigated the continent](#), made the the earliest European collections of the swamp foxtail near Sydney in 1802.

Despite the early date of the collections, it is feasible that the swamp foxtail was brought to Sydney within 14 years of settlement as a byproduct among grain or hay. However, while the species occurs naturally in Asia, the Javanese ports were not on the typical travelling route from Europe.

The intrepid adventurer Ludwig Leichardt later collected this species near the Gwydir River region. This collection provides more convincing evidence the swamp foxtail is [native to Australia](#). It seems unlikely that, in the early years of colonisation, the swamp foxtail had been transported overland with the squatters who were spreading out from their successful properties in the Hunter Valley.

The spread southward

The history of herbarium records, from collections in the late 1800s and early 1900s, suggests swamp foxtail might have been native to Queensland and New South Wales.

Collections south of these locations happened after 1940. The species was not recorded in Victoria until the 1970s. It seems almost certain the swamp foxtail spread southward during the 20th century, in some places as an undesirable weed.

Unusual and isolated habitats

[Aboriginal fire management](#) possibly maintained natural grassy openings among the northern NSW rainforests. The curious “grasses”, as they were named, are well documented on early survey plans of the Big Scrub country. Many a place name, Howards Grass Road and Lagoon Grass Road among them, bear testament to their existence.

The surveyors provided detailed recordings of the dominant grass on the valley floors: the “foxtail”. The swamp foxtail is now rather rare on the valley floors of the Richmond and the Tweed River valleys, replaced by crops on prime agricultural land. It managed to survive in a few locations west of Murwillumbah and on springs, but large expanses of the foxtail grasslands have succumbed to the plough.

A particularly unusual habitat for the swamp foxtail is the artesian springs that feed permanent wetlands in the semi-deserts of inland Queensland. The swamp foxtail occurs there in very local populations [separated by hundreds of kilometres](#).

This raises the question: is the swamp foxtail a recent arrival on these tiny, strange and isolated ecosystems, or are these ancient populations?

Genetic studies have provided conclusive evidence of an ancient origin. The oldest lineage is the population at Elizabeth Springs to the south of Boulia. Its molecular signature suggests this population has been [isolated for hundreds of thousands of years](#).

Where swamp foxtail does occur at springs, it is always accompanied by rare species that are seen only in those unusual wetlands



An extremely isolated population of the swamp foxtail at Elizabeth Springs in western Queensland

Crossing continents and climates

Swamp foxtail demonstrates the complexity of defining a species' origin. This species probably evolved in Asia, because this is where most of its relatives are found. It found its way to Australia, possibly through a migratory bird that dropped a seed in a desert spring.

It then had a second migration, either from the springs or from a repeat dispersal from Asia, and found a niche in the valley floors of subtropical landscapes. It was abundant in these moist and fertile habitats when Europeans colonised the continent in 1788.

Since then, the swamp foxtail has spread to temperate climates where it has become invasive and, in some situations, [a minor pest](#). Quite a journey.

The Swamp Foxtail is not loved by graziers as the seeds get stuck in wool and hair and tend to burrow into skin and ears causing troublesome abscesses - Editor

How I discovered the Dalveen Blue Box, a rare eucalypt species with a sweet, fruity smell

by Tim Collins

(From The Conversation May 24, 2019)

In 2002, I went on a bushwalk with plant taxonomist David Albrecht, and had a big surprise. He pointed to a plant I thought I knew, and said: “that’s probably a new species.”

A new species? How could it be that this plant had not already been scientifically described and named?

I was in for another surprise when I learnt there are [estimated to be](#) thousands of undescribed plant species in Australia. But just because one botanist says a plant is a new species, it doesn’t mean that everyone else automatically agrees.

As a researcher, I had the opportunity to study one of Australia’s most iconic plant groups – the eucalypts.



Herbarium records of an endangered eucalyptus species, the Northern Blue Box (*Eucalyptus magnificata*), showed populations from the Northern Tablelands in New South Wales scattered up to the Granite Belt in southern Queensland.

Dalveen Blue Box

Botanical name: *Eucalyptus dalveenica*
Family: *Myrtaceae*
Height: up to 15m

Dalveen Blue Box, is a newly described rare tree species from the Granite Belt in southern Queensland.

It has rough bark and broad leaves that have a sweet, fruity smell.



Since it was recognised as a distinct species the local community has planted seedlings at the local school and on private properties to protect this rare plant.

 The Conversation

 Beating around the bush

But on closer inspection, I discovered there were different ecosystems between populations. *E. magnificata*, for instance, is found on rims of gorges in Oxley Wild Rivers National Park, whereas *E. baueriana* is typically found on riverbanks and flood plains.

The question I wanted answered was: are all these populations really *E. magnificata* or have some been misidentified and represent other common species? Or, alternatively, are they new, undescribed rarer species?

So when my supervisors, Professor Jeremy Bruhl and Dr Rose Andrew, and I [visited the mystery trees](#) near Dalveen in southern Queensland, we knew immediately they were something exciting. They just looked different to everything else we'd seen.

Eucalyptus that smells sweet and fruity

To find out, I'd been sampling eucalyptus (collecting, pressing and drying specimens) and had spent the past two days with my supervisors. With our heads craned back, we stared through binoculars to search the tree canopy at dozens of sites on the Northern Tablelands looking for the buds and fruits that enable eucalypt identification.

Not only did these trees at Dalveen look unlike anything else we'd seen on the trip, they also had a different smell. When we crushed a leaf, the aroma was sweet, mild and fruity, quite unlike the familiar eucalyptus oil.

Back at the university, I could compare the different collections. I examined and recorded differences in the size and shapes of the leaves, buds and fruits. I grew seedlings of my field collections and saw that seedling leaves were also consistently different.

And I extracted the mixture of aromatic chemicals in the leaf oils collected during fieldwork. Then, I used a chemistry laboratory technique, called Gas Chromatography Mass Spectrometry, to compare their concentrations with closely related species, such as *E. baueriana* and *E. polyanthemos*.

The results clearly explained why the leaves had a unique scent. That sweet and fruity aroma was due to larger molecules, called sesquiterpenes, which dominated the leaf-oil. There were only traces of the familiar-smelling cineole molecule common to most eucalypts.

A new species, or just an uninhibited sex romp?

Sequencing the DNA of the tree added another piece to the puzzle.

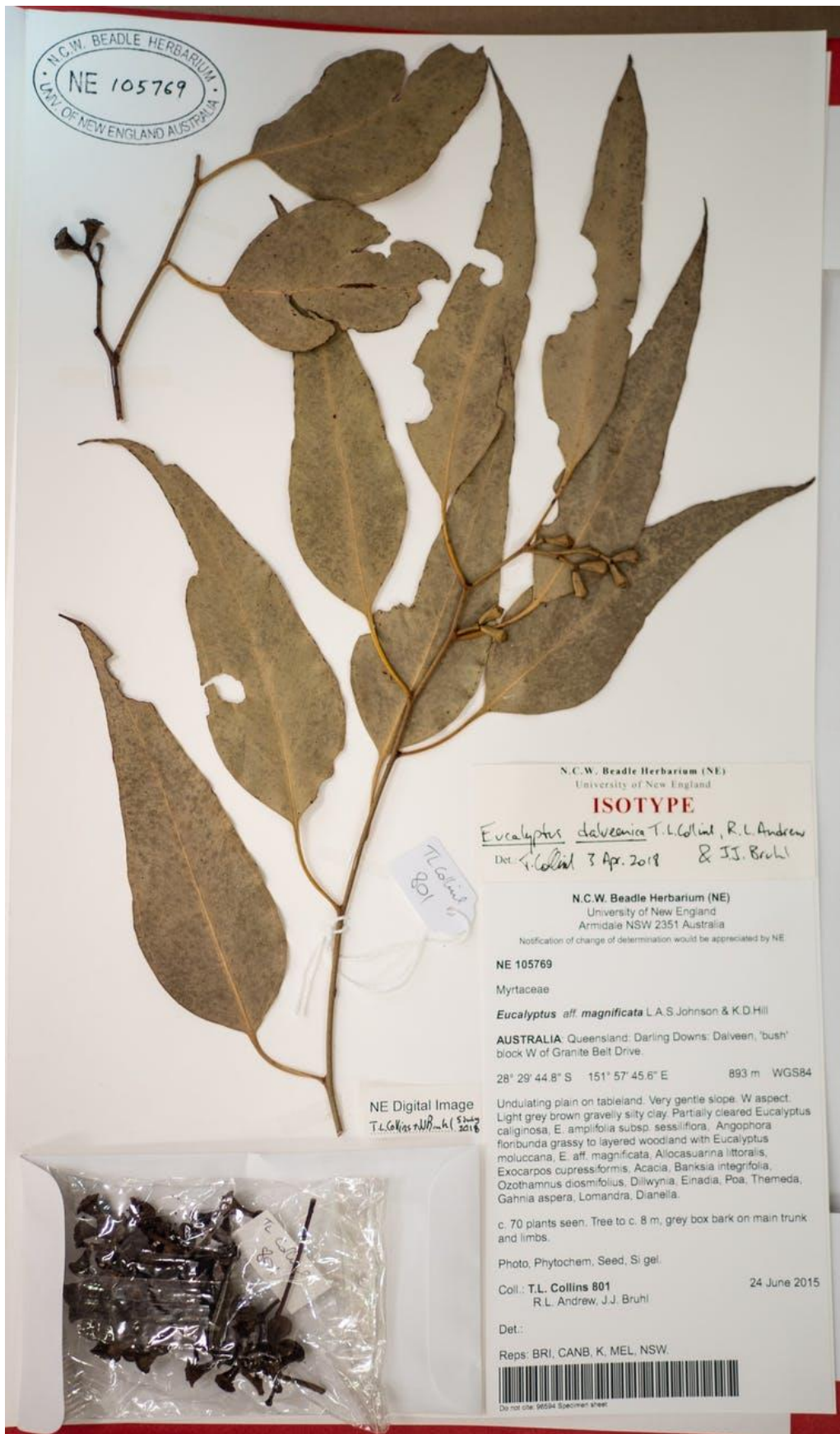
We had collected samples from all of the closely related common species. We had strong evidence from the shape of the leaves, fruits and flower buds suggesting the Dalveen trees were different. But the possibility remained that they were just hybrids.

Eucalyptus trees can be wickedly promiscuous and hybrid trees with similar characteristics are common. In some parts of eastern Australia, for instance, eucalypts naturally form hybrid swarms, the botanical equivalent of a wildly uninhibited sex romp!

But the DNA told us the trees from Dalveen were genetically distinct, and with no suggestion of shared ancestry.

Now, with three very different data sets all supporting the same conclusion, it became imperative we publish our findings and describe the new species, which we named *Eucalyptus dalveenica*, or the Dalveen Blue Box.

New species have to be named using a universal and internationally accepted naming system. Names and descriptions must be published, and a pressed and dried specimen must be nominated to be the representative that other collections can be compared to.



Most importantly, convincing evidence must be presented that persuades the botanical community the newly named species should be accepted.

But naming a new species is only the first step in knowing what it is. Importantly, naming tells us what it isn't. The trees at Dalveen are not *Eucalyptus magnificata*, nor do they belong to another more common species, *E. baueriana* or *E. conica*.

Eucalyptus dalveenica is a rare and endangered part of Australia's natural heritage. Taxonomic description of new species (classifying, describing and naming) provides the framework for ongoing accurate identification, species conservation and further study.

We are fortunate to live in a beautiful part of the world, with diverse and unique wildlife. Describing biodiversity and communicating new discoveries develops connections between people and their local environment, leading to a broader understanding of our home.

Dr. Tim Collins has recently published his PhD thesis findings on the paper daisies and this has resulted in many new species being described, many of which occur in the New England area. We will cover this in our next edition of the Armidale APS Newsletter. The Eucalyptus project was an introduction to his larger PhD project on the paper daisies.

Editor

Dave Hardin Garden Visit 21st May 2022

by Penelope Sinclair

Members and friends were fortunate with the weather during our visit to David's garden. It was cloudy and misty for a start but then it cleared up for a nice morning stroll through remnant bush and garden. David's home and garden of 15ac. is located to the east of Armidale on red trap soil and clay. The remaining natural vegetation is composed of stringy bark, red gum and yellow box Eucalyptus with an *Acacia filicifolia* understory. Difficult gardening conditions were made worse by the removal of topsoil for roadmaking prior to the area being divided up for house blocks. The area surrounding the home had largely been cleared of vegetation and when we previously visited about 4 years ago, there wasn't a blade of grass to be seen. But now a lawn is David's pride and joy!

A large and a smaller dam provide water for the garden and for firefighting, a must in areas such as this, and many large poly tanks supply house water. Much of the garden is placed away from the house with open areas in between. And like many working couples with teenage children, David is time poor and struggling to spend more time on his gardening passion. David grows as much as he can from seed and cuttings, and has a heated cutting frame and poly house to assist with propagation.

David is keen on plants from the Proteaceae family, and has several *Banksia integrifolia* plants and *Grevillea* species because they supply food to honeyeaters and possums during this cold time of year.

Much of the garden is still in its early growing stage. Some flowering plants that caught our eye were a grafted *Eremophila nivea*, *Banksia marginata* and *Kunzea baxteri*.

A mix of Asteraceae, *Dodonaea*, *Correa reflexa* and dwarf Eucs were in various beds.

We were surprised by a tall Wollemi Pine in a relatively small pot, which testifies to the hardiness of this species! Flowering on *Hakea Burrendong Beauty* though sparse, was eye catching. Covered in buds and about to flower was *Hakea multilineata*. We were also impressed by a local *Hibbertia* with very large flowers. *Hibbertia* can be difficult to strike, but those present would dearly like to get their hands on a plant or two of this one! David is desperately trying to get as many plants as he can into the ground to take advantage of these favourable growing conditions. We wish him success in his gardening passion.



Hardin Garden Visit adjacent bush



Hardin Garden Visit open areas being planted



Banksia marginata in full flower



Hakea Burrendong Beauty



Eremophila nivea that David is grafting onto *Myoporum parvifolium*



Kunzea baxteri



Correa decumbens hybrid with dense, ground hugging habit



David explaining his propagation system to the assembled throng.

Autumn Gum Moth – Destructive Pest of some Eucalypts

by Eric and Penelope Sinclair

Last year, and again this year, caterpillars of this moth (*Mnesampela privata* Geometridae) caused heavy damage to our *E. pulverulenta*. In early summer, the adult moth lays many egg rafts on the leaves – the young larvae feed in a swarm on the leaves and remove the leaf surface, eventually destroying them totally. As the larvae grow, there is heavy mortality from predation and parasitism and disease, even cannibalism. This is usual in such insects.

The larger larvae build characteristic shelters of folded leaves and hide in these during the day, emerging at night to feed. These shelters make it hard for birds and other natural enemies to attack the larvae. The shelters are also effective in protecting the pest from contact sprays. In winter, the survivors pupate in the ground to emerge again next autumn and repeat the cycle.

A similar tree that APS planted in the arboretum was totally defoliated this year as a sapling, but another of the same species and age planted nearby only suffered negligible damage.



Top left: Adult moth of *Mnesampela privata* Top right: Eggs on underside of leaf



Top left: Young larvae eating the leaf surface

Top right: Branchlet damaged by larvae



Top left: Shelter constructed by older larvae.

Top right: Large larvae found in the leaf shelter



Left: Sapling completely defoliated
 Right: Neighbouring sapling virtually undamaged.

A visit to Pangarinda Botanic Garden South Australia by Penelope Sinclair

In early May this year, Eric and I enjoyed a visit to Adelaide. We also made a 3 day visit to Coorong National Park, and the mouth of the Murray. Enroute, while travelling on the Princes Highway, we took a brief detour to visit the Pangarinda Botanic Garden, previously known as Pangarinda Arboretum. I found a reference to it on the website of the Australian Plants Society SA Region Inc. by going to their "Places to Visit" suggestions. The Garden is at Wellington East, near the Murray River, just over 100 Km from Adelaide.

In 1993 a group of locals decided they wished to beautify their area and 30 hectares of Crown land was set aside. The site is managed by the Coorong District Council and has been developed with the help of volunteers, local Business groups, and school children.

The area, initially weed infested and eroded sand drifts with a few remnant *Callitris* is now a fascinating bushland. The priority has been to grow species from the highly modified drier agricultural regions of southern mainland Australia.

One area has flora from regions of South Australia, especially the Murray mallee and Coorong. Most of these were not in flower; below are *Acacia iteaphylla* (right) and *Aloogyne hakeifolia* (left) which were obvious.



Another area showcases plants of sand plains and the arid inland of Western Australia. The Banksias, Eucalypts and Hakeas were spectacular.



Left: *Banksia morrei*

Right: *Banksia prionotes*



Left: *Banksia pulchella*



Right: *Eucalyptus* species



Left: *Eucalyptus macrocarpa*



Right: *Eucalyptus erythrocorys*

Biodiversity enhancement is aimed for, and with the exclusion of grazing, control of feral animals and plants, natural regeneration is taking place.

It was a great place to wander. Visit if you are in South Australia as I think any time of the year would be interesting. If you want to explore interesting areas of native vegetation in any area of your travels in Australia then I suggest checking the websites for local APS activities before you leave home.



Another view of *Eucalyptus erythrocorys* (left) and general view of Botanic Garden plantings.

For Your Diary.....

23rd July **Garden Visit to Walcha area** – 1802 Moona Plains Road. Meet for morning tea at 10am. Further information by email from Penelope.

24th July **Market in the Mall**

29th July **Arboretum Working Bee** 9am – 1 pm

5th August **Committee Meeting**

20th August **Garden Visit – TBA**

26th August **Arboretum Working Bee** 9am – 1 pm

28th August **Markets in the Mall**

4th September **Wattle Day Celebration – at the Wicklow Hotel at 12 md**

17th September **Garden visits** to that of Geof Leedham and three others. Meet 10am. Bring your own morning tea

25th September **Markets in the Mall**

30th September **Arboretum Working Bee** 9am – 1 pm

15th – 16th October **Mole Station Weekend**. Visit Mount Mackenzie and then visit the Fordyce garden on the Saturday and then Mole Station on the Sunday to pick up plants.

28th October **Arboretum Working Bee** 9am – 1 pm.

30th October **Markets in the Mall**

5th-6th November **St Peters Open Garden and plant sale**.

25th November **Arboretum Working Bee** 9am – 1pm

27th November **Markets in the Mall**

3rd December **AGM and Garden Visit** to Maria Hitchcock's garden

9th December **Planning Meeting** at Tree Group 2pm

