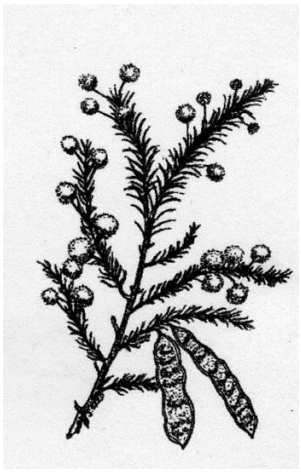

*Acacia brunioides*

Australian Native Plants Society (Australia) Inc.

# ACACIA STUDY GROUP NEWSLETTER

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# From The Leader

Dear Members

Last October I was fortunate to be able to attend the F J C Rogers Seminar, held in Horsham, Victoria, on the subject of *Goodeniaceae*. It was good to catch up with a number of members of the Acacia Study Group on this weekend, in fact there were members present from Victoria, New South Wales, Queensland and South Australia. One of the interesting things that we learned at the Seminar was that a number of species in the *Goodeniaceae* family can be readily propagated from leaf cuttings – using just a single leaf. Upon coming home from the Seminar, I tried this, successfully, with some *Goodenia* and *Scaevola* cuttings. This prompted me to wonder whether any Acacias can be propagated in the same way?

We also had the opportunity around Horsham to visit a number of gardens. One Acacia that impressed me was a prostrate form of *A. ligulata*. This seems to make a great garden plant and would be well suited to dry conditions.

I have been asked whether our Study Group has any field trips planned for the future. The answer to this question is, currently, no, but this prompts the question as to whether there is interest among members in a field trip (and, importantly, if there are any volunteers to organise and lead a trip). A couple of suggestions that have been put forward in relation to field trip locations have been Tasmania, and south west Queensland (in particular, the Bush Heritage property, Cravens Peak Reserve). This latter option would require serious 4WD. Please let me have any comments, expressions of interest etc.

Note that on pages 11 and 12 of this newsletter, there is an updated list of species held in our Study Group seed bank. Our thanks to Victoria Tanner who continues to look after our seed bank and provide this ongoing service to members.

Bill Aitchison

**Note: If you wish to view or download previous Study Group Newsletters, they are available on the Study Group website.**

**The address is:**

**http://anpsa.org.au/acaciaSG**

# From Members and Readers

In our previous newsletter No. 142, **John Boevink (Port Sorell, Tas)** noted that last year his germination results with Acacias were largely OK, but he then experienced difficulty in getting the seedlings to grow on. He asked for suggestions as to how to improve the survival rate.

Thank you to **Eleanor Handreck (APS SA Region)** for providing the following comment:

"If, for his acacias, John used mix that was suitable for banksias and hakeas – which require low-phosphorus mix – his problems would be due to insufficient phosphorus. All native plants except the *Proteaceae* need some phosphorus."

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**Jane Fountain** comments that members of Native Plants Queensland were delighted by the wattles at Girraween on 22 September 2018 when they had their Queensland State Conference ('Yabba') at Warwick. She notes that everything was so dry and they'd had a lot of frost over winter, but there were a couple of perfect *A. fimbriata* at the campground and others sprinkled through the bush.

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***Acacia cyclops*** **Photo: V Tanner**

**Victoria Tanner** has been doing some travelling, both overseas and in Australia. One country that she visited when overseas was Slovenia. Whilst in the capital, Ljubljana, she visited a small, but old, botanic garden, established in 1810. She was interested to find there an *Acacia cyclops* (see Victoria's photo above), growing in a pot.

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**Judy Clark (East Sussex, UK)** has written about the early flowering of several of the wattles in her garden, which she says is a bit unusual:

"The first to flower was *A. retinodes* which I noticed had a few flowers on 17th December. I can't really say it's early because my plant hasn't flowered before, but I read that it's a summer flowering species. There are more buds to come, so maybe it is one that's a bit intermittent?

Next, just before Christmas, I noticed that buds on *A. dealbata* (I think subsp. *dealbata*) and *A. baileyana* had started to open. Soon after Christmas the purple leaved *A. baileyana* also started to flower. Despite the weather being cold for the past fortnight (maxima mostly 5 - 9°C, but not below 0 at night) the buds have continued to open. I've noticed buds in December in the past (and even earlier) but none of them have previously flowered before February at the earliest.

*A. siculiformis* has also been in flower for a couple of weeks, tiny flowers, but it's the first time it's flowered for me.

The first 10 days of December were warm for the time of year, maximum temperatures between about 11 and 13°C and nights relatively warm but since then it got colder, a maximum of 9°C up to December 19th, then four warm days with maxima of 14, 11.1, 11 and 11.8°C. We also had over 80ml of rain between 6th and 22nd December. Since then it's been colder during the day and at night, as indicated above. In Australia, this would be equivalent to these species starting to flower in late June and early July.

I don't know if the weather is relevant, but the early flowering of my plants has got me wondering what triggers flowering in acacias. And is flowering triggered in the same way for all species?"

Judy has also provided the following paragraph, part of a longer article about Australasian trees in London that was written by her friend **Dr Owen Johnson** for the most recent issue of the newsletter of the Australasian Plant Society in the UK.

"*Acacia dealbata* is a popular and successful flowering tree in gardens across London. The Blackwood *A. melanoxylon* would need a more humid climate to grow really big, but a happy tree in Lewisham's Old Mill Gardens was 13m tall by 2013. Another is in the Lewisham Community Garden in Besson Street, New Cross, a site planted in the 1990s with an ambitious range of borderline plants; other interesting *Acacia* here include trees of *A. pataczekii* and *A. riceana*. *A. longifolia* is doing well in a

few public gardens in the City of Westminster, such as the Hanover Square garden where it was 5.5m tall in 2017. The lovely *A. obliquinervia* has been planted as a tall-standard street tree around Herne Hill but I am not sure that any survive. A good young *A. retinodes* was 6m tall in a front garden in The Broadway, Hanwell, in 2012. Rather conspicuous for its absence in London gardens, as far as we know so far, is the glamorous but less hardy *A. baileyana*."

# *Acacia lineata* – can you help?

A group of artists at the RBG Melbourne is involved in a project to paint those acacias that are rare and vulnerable in Victoria. The project is being carried out in collaboration with the National Herbarium at RBG. One of the problems is that acacias can be identified only when they flower and/or fruit, but some artists would like to paint the juvenile leaves, provided that they can be sure of the species. In particular, **Roslyn Glow** has been allocated *A. lineata*, but has not yet found a specimen young enough to show juvenile leaves. There is enough time to grow a quick maturing species to adult form, but Roslyn lives in a high-rise apartment, so it is a bit difficult to grow one from seed. If you can help with this, please contact her at rpglow@bigpond.net.au.

# Wattle Tick Scale

**by Bill Aitchison**

I am sure that many Study Group members will be familiar with Wattle Tick Scale, these scales being quite distinctive in appearance. In our Study Group Newsletter No. 86, **Thais Eisen** described them as being about 7mm long, whitish or brown and globular in shape. This scale feeds only on wattles. It has the scientific name *Cryptes baccatus*, and until now has been the only species in the Australian endemic genus *Cryptes*.

***Cryptes baccatus*** **Photo: Peter Clark natureshare.org.au**

In my own garden, we have a large number of wattles but have only found this scale on two plants, being *Acacia cognata* 'Bower Beauty' and *A. dictyoneura*.

Recently, a new endemic Australian species has been described, this being *Cryptes utzoni*. This new species was found on the stem of *Acacia aneura* at Yeo Lake Nature Reserve in the Great Victoria Desert in Western Australia.

***Cryptes utzoni*** **Photo Lyn Cook**
**(The above photo was taken of a newly discovered population of *C. utzoni* on the Plenty Highway, west of Gemtree, in the NT. They were on *A. aneura* and *A. kempeana*).**

The species epithet *utzoni* honours the Danish architect Jern Utzon, who designed the Sydney Opera House. It was thought that the arching white shells of the Sydney Opera House were similar to the adult females of *C. utzoni* and their tests. Jern Utzon died in 2008 at the age of 90, but no doubt he would have been delighted to know that he had been honoured in this way!

As part of the recent work that was undertaken, various specimens of *C. baccatus* were examined, and it was noted that there were significant differences between populations in Queensland and those from New South Wales/ACT. It was suggested that further investigation is warranted to determine whether *C. baccatus* in fact represents a species complex.

**In this regard, Lyn Cook from the University of Queensland School of Biological Sciences would be very interested to receive reports from Study Group members of sightings of wattle tick scale, in particular where they are seen and the species of Acacia that they are on (photos would be good, and particular sightings may then be followed up). Lyn's email address is l.cook@uq.edu.au. Lyn notes that *Cryptes* tends to be seasonal – large numbers then a crash, but some old dead females tend to stay attached to the plant for a year or so.**

**Reference:**
Lin, Y.-P., Takumasa, K., Gullan, P.J. & Cook, L.G. (2018) A newly recognised species of Cryptes from Western Australia Zootaxa, 4508 (1), 101–114. https://doi.org/10.11646/zootaxa.4508.1.6

# *Acacia mitchellii*

**by Warren and Gloria Sheather**

***This is part of a series of articles by Warren and Gloria Sheather on interesting species in our Study Group Seed Bank.***

*Acacia mitchellii* is another interesting wattle that appears in the Seed Bank List.

*A. mitchellii* is a low and spreading to erect shrub reaching a maximum of height of two metres. The specimens we have observed in Victoria and NSW were considerably shorter than this. Small tightly clustered, bipinnate foliage gives plants a feathery appearance.

***Acacia mitchellii*, Brisbane Ranges, Vic** **Photo C Clarke**

Flower heads are globular composed of 30-45 individual flowers. Their colour appears to be variable. Many decades ago we came across this species growing around Mackenzie Falls in the Grampians National Park, Victoria. The flowers, on these plants, were bright yellow. Fast forward many years and we encountered *A. mitchellii* in the Serpentine Nature Reserve, on the Northern Tablelands of NSW. These plants had pale yellow flowers. The flowering period is usually in spring and summer. Sporadic blooms may appear at other times.

Flattish pods are straight or curved, sometimes constricted between the seeds.

*A. mitchellii* has a wide distribution across western and central Victoria with isolated populations on the Northern Tablelands of NSW and around Mt Gambier in South Australia.

*A. mitchellii* is a handsome small wattle with attractive foliage and flowers particularly forms from Victoria.

Propagate from seed that has been soaked in boiling water. Cutting propagation may be possible. We have found that cuttings from wattles with small bipinnate foliage often produce roots readily. *A. leptoclada, A. drummondii* and *A. guinetii* are examples.

# *Acacia paradoxa*

**by Warren and Gloria Sheather**

***This is part of a continuing series of articles on wattles of the Northern Tablelands of NSW*.**

*Acacia paradoxa* is another of the 60 or so wattles that occur on the Northern Tablelands of NSW.

*A. paradoxa* was previously known as *A. armata* and is commonly known as Kangaroo Thorn or Hedge Wattle.

*A. paradoxa* is a spreading prickly shrub reaching a height of 3 metres with a similar spread. The 3 centimetre long phyllodes are elliptical with wavy margins. Accompanying the phyllodes, along the stems, is a barrage of stiff spines. Two spines are present at the base of each phyllode. Bright yellow flowers are held in globular clusters. The flowers are held on peduncles that hold them above the spines.

During spring, each stem is covered by the bright yellow flowers. Outside of the flowering period *A. paradoxa* is a rather nondescript, prickly shrub. In spring plants glow and become an eye-catching, flowering shrub in bushland and gardens.

The species name is from the Greek *paradoxos* which means strange or contrary to expectations. This may refer to the "Jekyll and Hyde" appearance of the species, depending on the season.

***Acacia paradoxa*** **Photo W & G Sheather**

*A. paradoxa,* once established, has low water requirements and is frost tolerant. The Kangaroo Thorn is a useful hedge plant.

The Kangaroo Thorn is widely distributed and is found in Queensland, NSW, Victoria, South Australia, Western Australia and is naturalized in Tasmania.

*A. paradoxa* was introduced into the United Kingdom in 1803. During the 17th century the species was featured in a number of botanical publications. At this time "Fortified Wattle" (an apt name) and "Bird-shaped Wattle" were two common names. Apparently, the latter name referred to the shape of the phyllodes.

Propagate from seed that should be soaked in boiling water before sowing.

# *Acacia undoolyana*

**Victoria Tanner** has provided a photo of *Acacia undoolyana* that she took in the East MacDonnell Ranges in central Australia (a day drive from Alice Springs). The interpretive signage at the site explains the following:

"**Looking after a rare plant**

The only known stands of Undoolya Wattle (*Acacia undoolyana*) are in a small area of the East MacDonnell Ranges, including here at N'Dhala Gorge (Iriwentye). Hot wildfires are thought to be the main cause of its rarity. The potential for Undoolya Wattle to become rarer means that it is nationally listed as threatened.

First collected by a botanist here at N'Dhala Gorge in 1966, Undoolya Wattle is also known as Sickle-leaf Wattle or Hayes Wattle. It has curved (sickle shaped) leaf-like phyllodes, which have a distinctive silvery sheen.

The bark is dark brown and rough.

The average height of a mature tree is about 6 metres but some reach as high as 12 metres. It is mostly found on steep rocky hills, favouring south facing slopes, which tend to be protected from wildfires.

The flower spikes are rod shaped and do not always produce seeds. They probably do so only in very wet years. Unreliable seed production is another reason that Undoolya Wattle is rare."

Victoria notes that this wattle was not in flower when she was there, but they did have nice bark.

This species was described in 1988 (see reference below). It was noted there that the species is only known from 3 populations in the East Macdonnell Ranges, with the main population being on the Undoolya pastoral lease, managed over the previous 80 years by the Hayes family (hence the derivation of the species name, and also the common name Hayes Wattle).

**Reference:**

Leach, G., Latz, P., & Soos, A. (1988). *Acacia undoolyana*: A New Species from Central Australia. *Journal of the Adelaide Botanic Garden, 11*(1), 55-58

***Acacia undoolyana*** **Photo V Tanner**

# *Acacia purpureopetala*

Over a period of six years, two researchers in north Queensland, **Simon Gleed** and **Donald Franklin**, have examined 24 patches of *A. putpureopetala* (Purple-flowered Wattle), and the result of this research is a paper recently published in the North Queensland Naturalist.

In this paper, the authors provide a morphological description of the species, notes on reproduction, an updated estimate of the total population, number of sub-populations and area occupied, and notes on site characteristics. The article is freely available at www.nqnat.org.

This species is recognized as being very distinct and unique among Australian wattles in having pink to mauve flowers. Interestingly, the authors have observed that this species is somewhat unusual among wattles in addition to its flower colour. In particular, its phyllodes lack the nectaries present in many wattles. It is also one of only about 15% of

Australian wattle species whose seeds lack an aril, suggesting poor dispersal ability (arillate seeds in Acacia are strongly associated with dispersal by ants and birds). It also has a surprisingly poorly developed root system.

On a positive note, the recent investigations have shown an increase in the total estimated population of this species, a conservative estimate being just over 7000 adults in patches summing to 20.4 hectares. Its conservative assessment of Critically Endangered under Commonwealth legislation was based on an estimated total population of 500 individuals in 10 "populations" with an area of 8.6 hectares.

Despite this, the authors comment that the species remains extremely rare by any definition.

# Uromycladium

*Uromycladium* is a genus of gall forming rust fungi, of which the most well-known has been *U. tepperianum*. This has been reported as causing galls on the stems, phyllodes, inflorescences and pods of over 100 species of Acacia.

Severe cases of infection can lead to the death of host plants, and for this reason *U. tepperianum* was introduced as a biological control agent for the control of *Acacia saligna* in South Africa.

A recent study has concluded that *U. tepperianum* should be divided into 16 species which, with four exceptions, are host specific on a single species of Acacia.

Two of the newly named species have been named in honour of well-known Acacia botanists, Bruce Maslin and Dan Murphy. *Uromycladium maslinii* has a number of WA Acacia species as its host (*A. acuminata*, *A. latior*, *A. incognita*, *A. resinimarginea*, *A. gibbosa*, *A. coolgardiensis*. *A. yorkrakinensis*. *A. sibina*, *A. patagiata, A. cyclops* and *A. burkitii*), and *U. murphyi* has a number of eastern Australian species as host (*A. dealbata*, *A. elata*, *A. decurrens*, *A. mearnsii*, *A. rubida* and *A. penninervis*).

**Reference**:
Doungsa-ard C, McTaggart AR, Geering ADW, Shivas RG 2018. Diversity of gall-forming rusts (*Uromycladium*, *Pucciniales*) on *Acacia* in Australia Persoonia 40: 221-238.

# The Lens of Acacia Seeds

It is well known that most Acacia seeds have a hard, water impenetrable seed coat that requires treatment in order to break this physical dormancy.

It is probably not so well known that, in practice, these treatments only affect a minute part of the seed coat, the lens. In our Study Group Newsletter No. 110 (September 2010), **Tony Cavanagh** discussed the structure and germination of Acacia seeds (based on his work many years earlier), and referred there to the importance of the lens. Tony commented as follows:

"As its name implies, the lens is convex in shape and for many years, while its presence was noted by seed anatomists, its function was unknown. In our original work, we eventually tracked down some foreign-language papers (including one from South Africa in Afrikaans) which suggested that the lens could be a point of weakness in the seed coat. It ruptured under the stresses caused by hot water treatment or dry heat and thus allowed water entry to the seed and the germination process to begin. It wasn't hard to verify this. We treated a batch of 50 or so large seeds with boiling water (large seeds were chosen purely for ease of handling) and split them into two batches. One group received no further treatment, in the other we covered the whole of the hilum area with either Vaseline gel or Araldite glue, the purpose being to stop water access to the lens area. Both groups were germinated on moist filter paper in an incubator under controlled conditions. The results were astoundingly conclusive – almost no germination for those with the hilum/lens covered, over 90% for the uncovered group. So that was another mystery solved."

Some research has recently been carried out by researchers at Charles Sturt University, Wagga Wagga, NSW, in relation to the structure of the lens in seeds of 51 Australian Acacia species, and its implications for imbibition and germination.

Of the 51 species examined, the average seed mass per species ranged from 3.1mg (*A. drummondii*) to 257.9mg (*A. dunnii*).

The research revealed that on the basis of the 51 investigated species, a lens was present in all Australian acacias, although non-functional in two soft seeded species. In 88% of the species tested, the unpopped lens area was a minute proportion of the seed surface area (average 0.10%). In the hard-seeded species, the morphology of the popped lens varied widely, from a simple mound to complete detachment.

Although the lens is so small and thus easily overlooked, it can have a profound influence on imbibition and germination.

**Reference**:
Burrows GE, Alden R and Robinson WA (2018) The lens in focus – lens structure in seeds of 51 Australian *Acacia* species and its implications for imbibition and germination. *Australian Journal of Botany* 66, 398-412

# Acacias and Allergies

A recent (24 October 2018) article in RIOT ACT (a local ACT Community newspaper) titled "Why are we all

sneezing so much?" noted that this has been a surprisingly sneezy season for many Canberrans, but noted that "it's probably not the wattle".

It was reported in the article that, according to ANU researchers, the daily pollen counts for three common exotic trees (birches, pines and poplars) in Canberra for September and October showed a significant increase this year compared to last year.

The ANU's **Dr Simon Haberle** from the Canberra Pollen Monitoring Program was asked in the article as to why so many people believe that wattle triggers their sneezes. His response was that wattle blossom, while highly visible, is mostly not the culprit. "It's a big, showy, heavy pollen that's designed by Nature to attract birds and insects. You might rub it on your skin and get a reaction, but it falls immediately around the tree. It doesn't form a drifting cloud like the much smaller pollen from European trees. So people see the wattle blooming, but something else is probably making them sneeze."

Reference: https://the-riotact.com/why-are-we-all-sneezing-so-much/270698

Interestingly, in 2016 Dr Haberle was guest speaker at a meeting of the APS South East NSW Group, and his subject was "Gardens, Pollen and Respiratory Health: What we know, What we don't know and What we need to know about pollen and its impact on our daily lives".

A report of his talk, written by **John Knight**, appeared in the Group's Newsletter No. 123, October 2016.

The following is an extract from this report:

"Simon's research demonstrated the close correlation of the onset of hay fever with a dramatic increase in airborne pollen. From August to October non-native tree pollen increased from <50 grains per cubic metre to in excess of 400, whilst grass pollen showed a similar increase from October to December. These figures were obtained in Canberra, where a large collection of exotic trees were planted, and of course the capital is surrounded by grasslands. However, Simon pointed out that similar results are obtained from many areas in Australia, albeit total pollen count is somewhat less. It is interesting to note that weather services now include a likely airborne pollen count to warn people susceptible to allergies to be aware.

Pollen production by plants known to cause allergies makes for interesting reading.

July to September, Alder Alnus spp, peaking August,
August to January, Cypress pines, Cupressaceae, peaking September – October
August to May, She Oaks, Allocasuarina, peaking September – October
August to November, Pine Trees, Pinus spp, peaking September
August to November, Poplars, Populus spp, peaking September
August to November, Ash Trees, Fraxinus spp, peaking mid August to September
August to November, Birch Trees, Betula spp, peaking September to October
August to October, Elm Trees, Quercus spp, peaking September
August to November, Willows, Salix spp, peaking September
September to October, Plane Trees, Platanus spp, peaking September to October
September to December, Olive Trees, Olea spp, peaking October to November
September to November, Oak Trees, Quercus spp, peaking October
September to January, Paterson's Curse, Echium sp, peaking October to December
September to February, Grasses, Poaceae, peaking November and again in January
October to February, Dock, Sorrel, Rumex spp, peaking November to December
October to February, Plantain, Plantago spp, peaking November to January
November to March, Privet, Ligustrum spp, peaking December to January

These times are of course approximate, as they are dependent upon temperatures.

During question time Simon was asked to comment on the widely held belief that Wattles are to blame for at least some allergies. His table showed that Wattles, *Acacia* spp, produce pollen from July to February, peaking August to November, but the grains are too heavy to become part of the airborne pollen mix, and can therefore be exonerated as a culprit causing hay fever. Thank goodness for that!"

# Acacias and Methane Emissions

**By Bill Aitchison**

**John Boevink (Port Sorell, Tas)** recently drew attention to an article that appeared in the French Newspaper Le Monde on 7 October 2018. It was reported in the article that a doctoral student from Burkina Faso in West Africa, **Geneviève Zabré**, had won an international competition by demonstrating how Acacias can be used to reduce methane emissions produced by the digestion of sheep into the atmosphere. It was noted that methane accounts for about 15% of global warming, with ruminants alone emitting 3%.

An extract from the article appears below (translated to English).

The count has just begun, the Burkinabe researcher has three minutes to convince. "In the rumen of the sheep, as in all ruminants, are housed methanogenic bacteria at the origin of a gas which is released into the atmosphere when the sheep burp. A real time bomb for our planet. So, can we prevent the sheep from burping? Not easy! One solution exists: eliminate these bacteria by using our

medicinal plants, "explains the Ouagalaise, triggering laughter in the assembly of scientists and academics. The clock starts, a few "long minutes" later, public applause and sigh of relief.

Prove the virtues of African traditional pharmacopoeia, the idea came to her during her studies at the University of Ouagadougou, where she obtained a degree in chemistry-biology and a master's degree in plant protection and improvement. "Burkinabé breeders look after their animals thanks to plants. I wanted to test the qualities of *Acacia nilotica* and *A. raddiana*, called "gum Sahel", very abundant in the area of Dori, in the north of the country", she says.

The student is also interested in climate change and methods to reduce greenhouse gases. "Methane accounts for about 15% of global warming, ruminants alone emit 3%," she says. One day, one of her professors proposes to her to realize her thesis with the support of the National Institute of the agronomic research (INRA) and the Institute of research for the development (IRD), within the framework of a tripartite program France – Africa - Brazil on the fight against desertification in Africa. "I jumped at the chance and I went down," she recalls. She goes to work. For four years, the doctor does not count her hours between field studies in the north and analyses at the laboratory of animal physiology in the capital. In June, the young woman gets her thesis, entitled "Use of medicinal plants in the fight against methane emitted by ruminants: the case of sheep". She demonstrates the role of the acacia in combating the pollution of sheep farming. To eliminate the methanogenic bacteria, which she calls "small animals", producing methane in the digestive tract of sheep, "it's very simple, just harvest a few leaves of trees and add them to the animal feed. These medicinal plants contain secondary metabolisms, small chemical machines that suppress bacteria", summarizes Geneviève Zabré. "The problem of methane emissions will become critical," she says. Especially since there are many ruminants in Africa and that global warming will reduce the quality of feed for animals."

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The following are some of my thoughts and comments on this report.

- *Acacia nilotica* (now *Vachellia nilotica*) and *A. raddiana* (now *Vachellia tortilis* ssp. *raddiana*) are not Australian species (although *V. nilotica* is widely naturalised in Australia). But could there be Australian Acacia species that exhibit the same properties?
- The report of the recent research reminded me that in 2011, in our Newsletter No. 115, Study Group member **Matthew Alexandra** noted with interest the Australian Government scheme called the Carbon Farming Initiative that was designed to help farmers, forest growers and landholders earn income from reducing emissions like nitrous oxide and methane trough changes to agricultural and land management practices. Matthew suggested the establishment of wattle plantations may have qualified for funding under this Scheme.
- Inclusion of condensed tannins from bark of black wattle (*Acacia mearnsii*) in the diet of dairy cows has previously been shown to substantially reduce methane emissions (Grainger et al. 2009). However, milk yield and DMI were also reduced.
  Reference:
  Grainger C, Clarke T, Auldist MJ, Beauchemin KA, McGinn SM, Waghorn GC, Eckard RJ (2009) Potential use of *Acacia mearnsii* condensed tannins to reduce methane emissions and nitrogen excretion from grazing dairy cows. Canadian Journal of Animal Science 21, 19–38.

# Books

## Guidelines for the Translocation of Threatened Plants in Australia, 3rd edition

**Editors: L E Commander, D J Coates, L Broadhurst, C A Offord, R O Makinson, M Matthes**
**Published by Australian Network for Plant Conservation 2018**
**A pdf is free at nespthreatenedspecies.edu.au, or a print copy can be ordered.**

This recent publication provides guidelines for translocation programs for threatened plant species in Australia, both in relation to how to carry out a translocation and, in the first instance, to establish whether translocation is the appropriate solution in a particular situation.

Translocation may take the form of translocation of nursery grown plants, direct sowing of seed, whole plant translocation or soil seed bank translocation. It is noted that many past attempts to translocate plants have been unsuccessful, for various reasons.

The publication clearly does not relate solely to Acacias, but Acacias do feature in a number of the translocation examples referred to.

Some general comments are made in relation to Acacias. For example, it is noted that with Acacias it is generally easy to collect and store seed, and high germination rates can be obtained – these factors can therefore influence the type of translocation program. It is also noted that Acacias can be invasive in some habitats, and so consideration must be given to the likelihood that the species will become a weed in the new habitat or hybridise with related species.

A number of examples of translocation programs are referred to, and the following are some involving Acacias.

- *Acacia cretacea* – Study Group members may be aware that this is a rare and endangered species that **Sandra McKenzie** has taken a particular interest in (eg Newsletter No. 139). It is found in a small area near Cowell on Eyre Peninsula in South Australia. It is noted in the translocation guidelines that this is a situation where grazing damage has been caused by stock – there is often a need to protect translocated plants against grazing damage. It was also noted that plants translocated in a year of extremely high rainfall established successfully, whereas planting carried out in drier years failed to survive. There is an interesting photo included showing an *A. cretacea* planted at the base of a spinifex plant to discourage herbivores.

- *Acacia attenuata* and *A. baueri* – In Queensland, approximately 15 hectares of coastal heath was threatened by housing development, and in this area were five plant species listed as vulnerable or rare in Queensland (including these two Acacia species). The University of the Sunshine Coast was selected as an appropriate receiver site, and whole turves were translocated. In this case, the whole project was deemed to be successful.

- *Acacia cochlocarpa* ssp. *cochlocarpa* – In WA this was known from only five small populations, confined to narrow linear remnants along road and rail verges, and was listed as Threatened with a ranking of Critically Endangered. It was decided that the most effective action was the establishment of a translocate population in a new secure location, and initially two sites were selected n nature reserves. Initially direct seeding was used, but this was not successful and so subsequent plantings used seedlings. Whilst these plantings showed good survival, there was little recruitment. However, a management burn was carried out at one of the translocated sites, and this resulted in significant recruitment.

- Also in WA, *Acacia imitans* and *A. unguicola* have been the subject of translocation programs. These provide examples of the importance of protection from herbivores, and in some cases of watering during the initial establishment phase.

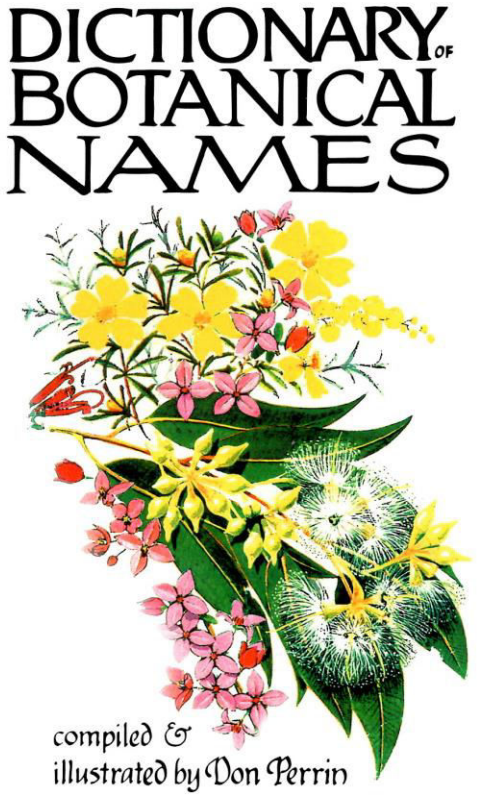
## Dictionary of Botanical Names, 2nd edition 2018
## By Don Perrin
## A5 size, soft cover, 218 pages, RRP $29.95

Don Perrin had been a member of the Acacia Study Group for a very long time, in fact since the 1960s, but sadly passed away in September 2017.

In 1988, he wrote and published a Dictionary of Botanical Terms, a reference book providing the meaning, derivation and application of Australian plant genus and species names.

In the period just prior to his death, Don compiled, illustrated and edited a significantly expanded edition of his Dictionary. Thanks to the efforts of his family, this 2nd edition has now been published. It includes about 1000 new entries.

This 2nd edition includes a foreword by well-known SGAP Queensland member, **Jan Sked**, and is dedicated by Don to the various national and state Societies for Australian Plants.




# Seed Bank

An updated list of species in our Seed Bank appears below.

Although we do purchase some seed from commercial sources, we also rely upon donations of seed. If you are able to help with any seed donations they would be very welcome (we would ask you to post any donations to Bill Aitchison, who will forward them on to our Seed Bank Curator, Victoria Tanner). It also helps enormously if you are able to clean, sort and label the seed correctly. Also, we

would like to have provenance information for all seed in the seed bank – so if you donate any seed, could you also provide any information you have in relation to provenance.

Our thanks to Ian Evans, Geoff Lay and Sandra McKenzie for recent donations of seed.

The procedure for requesting seed from the Seed Bank is as follows. Study Group members are entitled to lodge up to 3 orders per member per year, with 10 packets maximum in each order (negotiable). There is a charge of $4 in relation to each order, to cover the cost of a padded post bag and postage. The $4 may be paid in stamps or by direct credit to our Group's bank account. Requests for seed may be lodged in either of the following ways:

1. By email to our Study Group email address, acaciastudygroup@gmail.com (emails to this address go directly to both Victoria and Bill Aitchison). If you make a request by email, you will also need to make the necessary payment by one of the above methods. If you are paying by stamps, these should be mailed to Bill Aitchison, 13 Conos Court, Donvale, Vic 3111
2. By mail (enclosing stamps if required). These requests should be posted to Bill Aitchison (address as in the previous paragraph). Bill will then advise Victoria of the request.

We would like to maintain some data on your results in propagating seed from the Seed Bank. We would therefore ask if you could provide a report on your results, recording information on species, number of seeds sown, number germinated and days after sowing.

# Study Group Membership

**Acacia Study Group membership for 2017/18 is as follows:**

**$7 (newsletter sent by email)**
**$10 (hardcopy of newsletter posted in Australia)**
**$20 (hardcopy of newsletter posted overseas)**

**Subscriptions may be sent to:**
**Bill Aitchison, 13 Conos Court, Donvale, Victoria 3111**

**Subscriptions may also be paid directly to our Account at the Bendigo Bank. Account details are:**
**Account Name: ASGAP Acacia Study Group**
**BSB: 633-000**
**Account Number: 130786973**

**If you pay directly to the Bank Account, please advise us by email (acaciastudygroup@gmail.com).**

| ANPSA ACACIA STUDY GROUP FINANCIAL BALANCE SHEET 2017-18 | | | |
|---|---|---|---|
| **INCOME** | **Balance at 1.7.17** | | $693.93 |
| | Members' subs | $703.00 | |
| | Donations | $64.00 | |
| | Other Income | $83.00 | |
| | Total Income | $850.00 | $850.00 |
| | | | |
| **EXPENSES** | Stationery | $9.50 | |
| | Printing | $390.00 | |
| | Photocopying | $180.70 | |
| | Postage | $244.00 | |
| | Seeds | $38.95 | |
| | Total Expenses | $863.25 | -$863.25 |
| | | | |
| **BALANCE** | **Balance at 30.6.18** | | $680.68 |

# ACACIA STUDY GROUP SEED BANK LIST

## (current at December 2018)

acanthoclada
acinacea
acradenia
acuaria
acuminata
adenophora
adoxa ssp adoxa
adsurgens
adunca
aestivalis
alata ssp alata
alata ssp tetrantha
alcockii
alleniana
amblygona
amoena
ampliceps
anaticeps
anceps
ancistrocarpa
aneura
angusta
anthochaera
aphylla
applanata
aprepta
aptaneura
argyraea
argyrophylla
arida
arrecta
aspera
assimilis
assimilis
ssp atroviridis
atkinsiana
attenuata
aulacocarpa
aulacophylla
auriculiformis
ausfeldii
axillaris
baileyana
baileyana prostrate
baileyana purple
bancroftiorum
barakulensis
barattensis
barringtonensis
baxteri
beauverdiana
beckleri
betchei
bidwillii
binervata
binervia
bivenosa
blakei
blakelyi
blayana
boormanii
brachybotrya
brachystachya
brassii
brevifolia
browniana
browniana
ssp browniiana
ssp intermedia
ssp endlicheri
brownii
(ulicifolia ssp
browneii)
brumalis
brunioides
burbidgee
burkittii
burrowii
buxifolia
bynoeana
caerulescens
caesiella
calamifolia
calantha
camptoclada
cardiophylla
caroleae
celastrifolia
chamaeleon
cheelii
chinchillensis
chisholmii
chrysella
chrysocephala
cincinnata
clunies-rossiae
cochlearis
cognata
colei
colletioides
complanata
concurrens
conferta
consobrina
continua
coolgardiensis
coolgardiensis
ssp effusa
coriacea
courtii
covenyi
cowleana
craspedocarpa
crassa
crassicarpa
crassiuscula
cretacea
cretata
cultriformis
cupularis
curranii
curvata
curvinervia
cuthbertsonii
cyclops
cyperophylla
dallachiana
dawsonii
dealbata
deanei ssp deanei
ssp paucijuga
debilis
declinata
decora
decurrens
deficiens
deflexa
delphina
demissa
dempsteri
denticulosa
dentifera
desertorum
dictyoneura
dictyophleba
dielsii
dietrichiana
difficilis
difformis
dimidiata
diphylla
disparrima
divergens
dodonaeifolia
donaldsonii
doratoxylon
drepanocarpa
drummondii dwarf
drummondii
ssp drummondii
ssp elegans
ssp affinis
ssp candolleana
dunnii
elata
elongata
empelioclada
enervia
ssp explicata
enterocarpa
ephedroides
eremophila
eremophila
ssp variabilis
ericifolia
erinacea
eriopoda
estrophiolata
euthycarpa
everistii
excelsa
exilis
exocarpoides
extensa
falcata
falciformis
farinosa
fasciculifera
fauntleroyi
filicifolia
filifolia
fimbriata
flavescens
flexifolia
flocktoniae
floribunda
fragilis
frigescens
gemina
genistifolia
genistifolia
prstrate
gilbertii
gillii
gittinsii
gladiiformis
glaucescens
glaucissima
glaucocarpa
glaucoptera
gnidium
gonocarpa
gonoclada
gonophylla
gracilifolia
gracillima
grandifolia
granitica
grasbyi
guinetii
hakeoides
halliana
hamersleyensis
hamiltoniana
hammondii
handonis
harveyi
hastulata
havilandiorum
helicophylla
hemignosta
hemiteles
hemiteles
(Goldfields form)
hemiteles
(Wheatbelt form)
hemsleyi
heterochroa
heteroclita
heteroneura
hexaneura
hispidula
Holland's Rock
holosericiea
holotricha
horridula
howittii
hubbardiana
huegelii
hyaloneura
hystrix
Idiomorpha
imbricata
implexa
inaequilatera
inaequiloba
incurva
ingramii
inophloia
intricata
irrorata
iteaphylla
ixiophylla
ixodes
jamesiana
jennerae
jensenii
jibberdingensis
johnsonii
jonesii
jucunda
julifera
juncifolia
kempeana
kettlewelliae
kybeanensis
laccata
lamprocarpa
lanigera
lanuginosa
laracina
ssp laracina
lasiocalyx
lasiocarpa
ssp bracteolata
ssp lasiocarpa
ssp sedifolia
lateritocola
latescens
latipes
latisepala
lauta
legnota
leichhardtii
leiocalyx
leioderma
leiophylla
leprosa
leptalea
leptocarpa
leptoclada
leptoloba
leptoneura
leptopetala
leptospermoides
leptostachya
leucoclada
ssp argentifolia
ssp leucoclada
ligulata
ligulata prostrate
ligulata narrow leaf
ligustrina
limbata
limbata prostrate
linearifolia
lineata
lineolata ssp lineolata
linifolia
littorea
loderi
longifolia
longifolia
ssp longifolia
longiphyllodinea
longispicata
longissima
longispinea
loxophylla
lucasii
lysiphloia
mabellae
macdonnellensis
macnuttiana
macradenia
maidenii
maitlandii
mangium
marramamba
masliniana
mearnsii
megacephala
megacephala
prostrate
megalantha
meiosperma
melanoxylon
melliodora
melvillei

# ACACIA STUDY GROUP SEED BANK LIST 2018 (cont)

menzelii
merinthophora
merrallii
microbotrya
  var borealis
  var. microbotrya
microcarpa
mimica ssp angusta
mimula
mitchellii
moirii ssp dasycarpa
moirii ssp moirii
mollifolia
montana
monticola
mooreana
mountfordiae
mucronata
  ssp mucronata
  ssp longifolia
muelleriana
multispicata
murrayana
myrtifolia
myrtifolia
 ssp angusta WA
WA, Vic, SA, NSW
nana ssp nana
nanodealbata
nematophylla
neriifolia
nervosa
neurophylla
nigricans
nitidula
notabilis
nova-anglica
nuperrima
nuperrima
  ssp cassitera
nyssophylla
obliquinervia
obovata
obtecta
obtusata
obtusifolia
oldfieldii
olsenii
omalophylla
oncinocarpa
oncinophylla
oraria
orthocarpa
oshanesii
oswaldii
oxycedrus
oxyclada
pachyacra
pachycarpa
palustris
paniculata
paradoxa
parramattensis
parvipinnula
pataczekii
patagiata
pellita
pendula
penninervis
pentadenia
perangusta
phasmoides
phlebocarpa
phlebopetala
phlebophylla
pilligaensis
pinguifolia
platycarpa
plectocarpa
    ssp plectocarpa
    ssp tanumbirensis
podalyriifolia
poybotrya
polystachya
prainii
pravifolia
pravissima
prominens
pruinocarpa
pruinosa
ptychoclada
ptychophylla
pubicosta
pubifolia
pulchella
pulchella
  ssp pulchella
 'Kamballup dwarf'
  ssp goadbyi
  ssp glaberrima
pulviniformis
pustula
pycnantha
 (SA, NSW, VIC)
pycnostachya
pyrifolia
quadrilateralis
quadrimarginea
quadrisulcata
racospermoides
ramulosa
      var, ramulosa
      var. linophylla
redolens
redolens pr
resinimarginea
restiacea
retinodes
retinodes
  ssp uncifolia
  Blue leaf form
retivenia
rhetinocarpa
rhigiophylla
rhodophloia
riceana
rigens
rossei
rostellifera
rotundifolia
rothii
rubida
rupicola
sabulosa
saliciformis
salicina
saligna
schinoides
scirpifolia
sclerophylla
sclerophylla
  ssp teretiuscula
  ssp lissophylla
sclerosperma
semilunata
semirigida
semitrullata
sericophylla
sertiformis
sessilis
sessilispica
shirleyi
sibina
siculiformis
signata
silvestris
simsii
sophorae
sowdenii
  (papyrocarpa)
sparsiflora
spathulata
spathulifolia
spectabilis
sphacelata
spinescens
spinosissima
spongolitica
spondylophylla
sporadica
steedmanii
stereophylla
stenoptera
stipuligera
striatifolia
stricta
stowardii
suaveolens
subcaerulea
subflexuosa
sublanata
subulata
sulcata
sulcata
 ssp planoconvexa
subtilinervis
synchronicia
tenuinervis
tenuissima
teretifolia
terminalis
tetragonocarpa
tetragonophylla
tetraptera
tindaleae
toondulya
torringtonensis
torulosa
trachycarpa
trachyphloia
translucens
trigonophylla
trinervata
trineura
triptycha
triquetra
tropica
trulliformis
truncata
tumida
tumida
  ssp pilbarensis
tysonii
ulicifolia
ulicifolia
  ssp brownii
ulicina
umbellata
uncifera
uncifera x conferta
uncinata
uncinella
urophylla
validinervia
varia
  ssp parviflora
venulosa
verniciflua
verricula
verticillata
vestita
viscidula
victoriae
wanyu
wardellii
wattsiana
wilhelmiana
willdenowiana
williamsonii
xanthocarpa
xiphophylla
yorkrakinensis
  ssp acrita