



Association of Societies for Growing Australian Plants

ACACIA STUDY GROUP NEWSLETTER

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From The Leader

Dear Members,

Late winter and spring are definitely a wattle lover's favourite time of year. Everything has sprung into glorious bloom. Personally, I was afraid I would miss some of the nicest flowers this year as I spent June and July in Germany visiting family.

The *Acacia longifolia* in my garden generally flower mid July. To my surprise when we came back nothing was flowering and then burst into bloom in August. I like to think that my babies just waited for me, but according to the general observation it seems that many of the early wattles were unusually late this year resulting in a mass display of many different varieties in August.

Now with the beginning of September we also have other species putting on a glorious show such as many of the *A. cognata* forms, *A. floribunda*, *A. howittii*, and of course our floral emblem *A. pycnantha* is as beautiful as ever. *A. boormanii* has been flowering since the first week in August and is still going strong. Also my *A. guinetii* is just finishing but the closely related *A. lasiocarpa* prostrate (picture below) is coming into its own now. Yes, I could go on and on...



So what did you do for 'Wattle Day'? According to the Wattle Day website (www.wattleday.asn.au) under the heading 'Activities', there were some great suggestions and one was to have a BBQ. Well this is what we did. We invited a number of guests, up to 20, and asked them to come dressed in yellow or bring a bunch of wattle. The BBQ started early, 3:00pm, so we could have lots of time to meander through the garden and enjoy the beautiful flowering wattles. It was an absolutely perfect spring day with not a cloud in sight and everyone enjoyed themselves and loved the change of coming to a BBQ with a theme. Let us know what you did or maybe will do next year.

Anyway, thank you for the overwhelming response to our newsletter and the many emails, questions, articles etc. Sorry if some won't be answered immediately but we will do our best to get through. A special welcome to our new members, and we appreciate all those who have paid membership fees promptly as it makes for smooth running of the study group.

Since the next few months are a great time to sow Acacia seed, the seed list has been updated and we will start sending out packets to members who have put in a request for seed in order of date etc. as long as available.

Esther Brueggemeier

Feature Plant – *Acacia guinetii*

On 22 May 1992, following a re-assessment of its rarity, *Acacia guinetii* was taken off the rare and endangered list and is now listed as category 4 which means while it is still rare it is not currently threatened.

It is a beautiful ornamental species naturally restricted to an area between Geraldton and Northampton, south-western WA and grows on rocky loam, lateritic gravelly soils and stony hills. In the newsletter no. 89 Dec. 2003, Thais Eisen had also mentioned this one as “a little gem”.

Interestingly, it is often described as a spreading to straggling or erect & spindly shrub, 0.3–2 m high and if anyone has seen it in the wild they would probably agree that it is nothing special to look at. But take the same plant and put it in a cultivated garden setting, keep it trimmed from an early age, it then transforms into a wonderfully compact, abundantly flowering shrub every year (see photo).



Even when flowers start to die, the effect is still amazing, as shown below.



Acacia guinetii seems to be quite hardy and tolerates light frost. The large yellow lolly flowers are displayed from June-September and even though it is from a small area on lateritic hills in heath, it seems to do well in many places as long as it has good drainage in a partial shade to full sun position.

Despite the multitude of flowers, the seeds are very hard to catch being unripe for a long time and then suddenly splitting open. The seeds are so tiny that they can't simply be picked up off the ground either. Therefore, my last experiment was with nearly ripe seeds. They didn't need

the hot water treatment and I had a 30% success rate, which isn't the world but worth the effort for this little beauty.

Tribute to Marion and John Simmons

In August last year, APS Maroondah Inc. and the National Herbarium of Victoria co-hosted a Conference known as the F J C Rogers Biennial Seminar on the subject of Australian wattles (acacia2006 - Knowing and Growing Australian Wattles), attended by about 250 APS members from around Australia including members of the Acacia Study Group, as well as Australian and overseas botanists.

At the Seminar Dinner, a special tribute was paid to Marion and John Simmons, by APS Victoria President Paul Kennedy. Marion and John have been long time members of the Acacia Study Group, and Marion was leader for 13 years. We thought it was appropriate to include in our Newsletter the tribute as presented by Paul Kennedy.

“Tonight we would like to recognise the achievements of two people for a life time of work with Australian plants and acacias in particular. I am referring to John and Marion Simmons, who have come from Tasmania to be at the Seminar. It is nothing new to John and Marion to be recognised for their achievements.

They are life members of the Australian Plants Society Tasmania.

At the 2004 ASGAP Conference in Tasmania, they were awarded the Australian Plants Award in the amateur category for their outstanding contribution over many years to the study and understanding of our native flora.

In the Australia Day Honours in 2004, each was awarded the Medal of the Order of Australia, this being given "for service to botany, particularly through the identification, documentation and promotion of Australian acacias".

In 2002, a life time of research was recognised when an acacia, *Acacia simmonsiana* was named after them.

All of the recognition that they have received has been well deserved.

Although living in Launceston, they originally joined the Victorian region of SGAP in 1962, following publicity of SGAP published in the magazine "People".

When the Society was established in Tasmania, they joined that and have been very active members.

They have been involved with many publications, including the two volume *Acacias of Australia*. Gathering the information for these magnificent reference books took many years, during which time they travelled many hundreds of thousands of kilometres all over Australia gathering specimens, with Marion sketching and noting location, habit and other details, and John applying his special expertise as a photographer.

Marion's qualifications as an art teacher proved very handy during these trips. At the time they were presented with the Australian Plants Award, it was noted that "*Acacias of Australia* volumes 1 and 2 are examples of excellence and show what can be achieved by people driven by a passion and an eye for beauty and who possess the necessary knowledge and skills and dedication to bring such work to fruition".

As well as writing books, they operated a book selling service known as Legana Books.

They have both given lectures about native plants to different organisations, including Field Naturalists Clubs, APS Groups and Garden Clubs, as well as running Adult Education classes, sometimes in their own lovely garden.

They have actively promoted Australian plants by opening their garden in the Australian Open Garden Scheme.

Marion was leader of the Acacia Study Group from 1977 to 1991.

We are all indebted to them for the fact that they have donated to the National Herbarium of Victoria their vast collection of specimens, drawings and slides - a fitting and perpetual repository for their dedicated research.

I believe that it is very fitting, at Acacia 2006, to congratulate and recognise John and Marion on a life time of achievements.”

Our thanks to Noel Kerrison from Tasmania for the following photo of Marion and John.



On behalf of all members of the Acacia Study Group, Esther Brueggemeier congratulates Marion and John for this well deserved tribute. Esther comments as follows:

“Last year at the Acacia Seminar I was privileged to spend time with Marion on the wattle tours. Sitting on the bus together we talked for ages about wattles (what else) while I was showing off some of my wattle pictures on my mobile phone. I’m especially happy that she loves the smell of the roots too. (Great minds think alike:-)”.

Feedback from Readers

Our thanks to those people who have provided feedback on the various articles included in our last Newsletter and other matters. Some of the comments received have been summarised below:

Acacias and Bees

The article prompted by Bob Luttrell’s question on acacias and bees attracted considerable interest.

Elizabeth George from WA comments that she found the newsletter most interesting, “particularly the article about leaf nectaries because I have observed similar structures on verticordias. Larger leaved species are also visited by nectar feeding birds as well as native and honey bees and various insects. Even tiny leaved species have nectaries that are visited by insects. I have observed this activity even when the plants are not in flower and find it intriguing.”

Marion Simmons also commented as follows:

“Very interested in the comments re leaf glands. We have found different species exuding a large globule of nectar on occasions but mostly not. Let’s hope Bob Luttrell continues with his photography and study of *A. bancroftii* and any other species he finds.”

Harry Franz from Queensland commented as follows:

“My favourite article was the one about native stingless bees and *Acacia bancroftii*. *A. bancroftii* can be found at Wondai near Kingaroy as well as further north. I remember finding it here about 1982 with the stunning large toothed leaves. My attempt at growing it was unsuccessful when I lost my young plant due to wind damage.”

And Bob Luttrell, who raised the initial question, tells us that he has been doing some travelling overseas, including to Mexico which “was heavy with sightings of a whole range of stingless bees, conventional as well as 2 species that utilise material from animal droppings, a malodorous photographic topic but interesting just the same”. Bob also advises that “the bees were still working the wattle when we left home early May and it was just starting to think of flowering then so the nectar release is not linked to flowering, and honey bees, wasps and ants also heavy users”.

Acacias and Smells

We haven’t yet solved the scientific question as to the chemical composition of the smell of acacia roots.

Jeff Irons from the UK who raised this question comments that smell is very personal, and that he usually likes “chemical” smells, but not mexaptary ones – like *Acacia* roots. He notes that his wife cannot smell *Boronia heterophylla* and dislikes *Ozothamnus ericifolius* and *O. ledifolius*.

Marion Simmons comments that she loves the smell of *Acacia* roots and will be very interested to hear the final answer to the question as to what the smell is.. Marion was also reminded that she recently had to trim the branches of an old *Acacia verticillata* that were about 150mm in diameter. She notes that the smell was very strong, so it is not only acacia roots that smell.

Esther Brueggemeier notes that she has found exactly the same thing as Marion while sawing some thick branches of *Acacia longifolia*. She notes that the smell is like very strong garlic/leek and says she could almost eat it!!!

Acacias Surviving Drought and Frost

Brendon Stahl from Deans Marsh, Victoria notes that he has about 160 different varieties of acacia at his property, and he has not lost any due to the drought, but he has lost a few mature banksias.

Elizabeth George comments that the acacias in her garden continue to thrive despite the lack of rains – “their blooms, habit and foliage add colour all year round”.

Helen van Riet from Wangaratta, Victoria notes that she had some -5°C frosts at the end of June and then some -7°C frosts in August. She advises that most badly affected was a recent planting of *A. maxwellii*, although one planted the previous year should be OK.

Acacias overseas

Jeff Irons (UK) comments:

“Taken by my winter flowering *A. nano-dealbata* my neighbour bought a “Mimosa” from an offer in a newspaper. It was obviously not *A. dealbata*. A sudden frost in November 2005, when it was growing strongly defoliated the plant and killed some woody growth. It recovered and is now in full bloom. It keys out as *A. oshanesii*.”

When out shopping my wife and I came across a “continental market”. A French stall had some yellow flowered plants labeled *Acacia vestita*. They were *A. paradoxa*.”

Acacias at Kingaroy

Harry Franz has provided details regarding the acacias he is growing at Kingaroy, Queensland. He comments:

“We have only a few species growing including *Acacia maidenii*, *A. disparrima*, *A. melanoxydon*, *A. irrorata*, *A. decora* (Pretty Wattle), *A. harpophylla* (Brigalow), *A. pendula* (Weeping Myall), *A. amblygona*, *A. peuce* (Waddy Tree), *A. fasciculifera* (Rosewood) and *A. fimbriata*.”

Our garden is well draining deep red volcanic loam (slightly acid).

The *A. amblygona* is growing in a large pot – the potting mix has a high proportion of river sand. It flowered last year and is looking well at the moment. It is a ground cover or small shrub in stony soils locally. It is watered regularly in the pot and a little slow release fertilizer is used. It should flower again around August – September”.

A correction

In our last newsletter Doug White listed the acacias that he is growing. Doug advises that he wrote *Acacia pentadenia*, but this should have been *Acacia penninervis*.

Can You Help?

If you are able to help with either of the following requests, please advise Esther or Bill, and we will be able to put you into contact with the relevant people.

Acacia dallachiana

The Royal Botanic Gardens Melbourne is establishing a rare and endangered species bed. For this purpose they are trying to source some seeds of *Acacia dallachiana*, but so far without success, and have enquired whether any Acacia Study Group members may be able to help.

Paraserianthes toona

A Masters Student at the University of Melbourne who is doing a project on seedling development in *Paraserianthes* is trying to obtain some seeds of *Paraserianthes toona* (Mackay Cedar) which is native to Queensland and now known to be a very close relative of Australian Acacia.

If anyone can help with this request it will be greatly appreciated by the Student concerned.

In addition, would anyone be able to help with leaf material and/or seed of these taxa from Indonesia and Papua New Guinea:

Paraserianthes lophantha subspecies *montana*
Paraserianthes falcataria (= *Falcataria moluccana*)
Paraserianthes pullenii

Proceedings of Acacia2006 Scientific Day

Last year's FJC Rogers Seminar, Acacia 2006 - Knowing and Growing Australian Wattles included a Scientific Day held at Mueller Hall at the RBG Melbourne. The Scientific Day was titled The Science Behind Acacia, Current Research and Recent Discoveries. Subjects covered at the Scientific Day came under the headings of Evolution and diversity of Acacia, Interactions of Acacia with other organisms and Utilisation of Acacia.

The papers presented at the Scientific Day are shortly to be published in a special edition of *Muelleria* (the journal of the RBG Melbourne). Publication of this issue is expected in January.

If you would like a copy of this special edition of *Muelleria*, would you please advise Bill Aitchison (contact details at the top of this newsletter). The cost will be \$35.

If we sell sufficient copies, the Acacia Study Group will make a small profit from these sales.

Acacia peuce

Annie Didcott from Canberra has asked a question regarding *Acacia peuce* (the Waddy Tree). She advises that in the winter of 2005, she visited a lovely stand of this plant just outside Boulia, Queensland. She also visited two other less flourishing stands, one at the MacClark Conservation Reserve north of Old Andado Station and the other on the Bedourie road out of Birdsville.

She was so impressed with "this quite amazing and beautiful wattle" that she acquired some seeds of it, in the hope that she would be able to grow it on her large urban block in "dry, hot and cold old Canberra".

She advises that she managed to germinate some of the seed which, contrary to expectation, was not difficult. However, she has asked what conditions are required for the seedlings to flourish.

In a more recent note, Annie advises that between her and a friend, they had six seedlings that had all grown well, with their roots reaching the bottom of their pots almost as fast as they potted them on. Three of those seedlings are still in pots and doing well - and will probably be put into the ground after winter.

Of the other three seedlings, one that Annie planted in her garden died after about 4-6 weeks - which she puts down to not watering it sufficiently. The other two were planted in her friend's garden, and those two plants are still holding their own and stand about 15cm high.

Annie would welcome any advice as to how best to succeed with this species.

It is not a commonly grown plant in Melbourne, and the only ones that Esther and I are aware of are 2 plants growing at Maranoa Garden, which is a public native garden in Melbourne's eastern suburbs. One of these plants has been there for more than 20 years, and is a healthy looking quite upright shrub, about 1.5m high - obviously very slow growing. It is in a rockery area, in a sunny well drained position. However, the gardens staff advise us that, to the best of their knowledge, it has never yet flowered, in over 20 years. One theory that they gave to us as to its lack of flowering is that it is just not cold enough in Melbourne, or possibly there is too much humidity. Another possible explanation that we were given is that even though it is in a sunny position, it just does not get enough sun in Melbourne - noting that in the wild the plant occurs in absolutely open and full sun positions.

The second plant at Maranoa Garden was planted in 2004, is about a foot high, and can probably best be described as surviving but not much else.

What experiences have other Study Group members had with this plant?

Acacia leprosa

We have had two separate queries regarding the cultivation of *Acacia leprosa* and *A. leprosa* 'Scarlet Blaze'. As a result of this we are planning to include an item in the next newsletter on this species and cultivar.

To assist us in preparing this article, we would appreciate any input regarding the experience that Study Group members have had in growing these plants. For example, what conditions have you grown them in, how successful have they been, what watering regime have you used, what pruning have you done etc?

Acacia covenyi

Isobel Guldberg from Oberon, NSW has asked a question about pruning of *A. covenyi*.

"We have a very large *A. covenyi* in the garden which we have pruned up to now. This year it got too tall for us personally to prune. It has a good shape but got weighed down by snow and doesn't seem to be able to recover its uprightness. It is full of blossom but after flowering we will either have to remove it or prune it drastically. The ASGAP conference visitors to the garden will just have to edge around it.

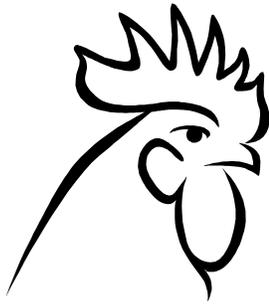
Having read about pruning natives in Australian Plants last edition we wonder if we can take it off fairly low and hope it recovers. Otherwise, as they say, there is room for another plant.

Can any of your members offer any advice?"

Esther comments as follows (following a phone conversation with Isobel):

"When you first said your *A. covenyi* was about 6m, I thought that was unusually large but after a bit of research it turns out that this species is quite variable. In some cultivation notes it is even said to reach 8m. Other than that it is extremely hardy, drought and frost tolerant and can cope with extreme conditions and soil types but does not like to be waterlogged.

As to pruning, you're in luck because this species loves being pruned and even makes an excellent dense hedge. Please, whatever you do, don't remove this beautiful bush but definitely give it a really good hard trim or, as we talked about, since it is so large, shape it up into a nice specimen tree."



Wattle we plant for Scavenging Chooks: Permaculture Poultry using Acacias

by Ian Simons, Helidon, Queensland

Planting a forest of perennial plants to provide food for the complete diet of resident scavenging chooks is a desirable goal. An important relevant matter is the instinctive food preferences of the birds in such a forest environment. An obvious component of the forest is native plants, including wattles (acacias).

A way of providing an adequate diet for chickens is to plant a food forest yielding the quality and quantity of food (seeds, fruits, insects, leaves) that the birds need. The aim is for the chickens to essentially live off the land.

Two of the hens in the film *The Chicken Run* expressed it rather neatly. Referring to the chicken dream paradise they were aiming to escape to, a chook playing a supporting role asked, "Who feeds us?"



The starring hen, named Ginger, responded, "We feed ourselves".

Given this requirement, how do we decide the types and number of plants for the chickens' food forest. Key determinants relate to

- what plants will survive in the particular growth environment
- what type and amount of food the flock needs
- when the plant food is actually available to the chickens (seasonality)

- what chickens prefer.

What plants will survive

Hardy, survivable species are important in any sustainable system. Indigenous, self-reproducing plants are ideal.

Local conditions are critical in determining what the forest will contain. Thus, in my location at Helidon, Gatton Shire, I consider including a plant if it is resistant to

- waterlogging
- frost
- drought
- heat.

In this context, wattle species are particularly promising.

What type and amount of food the flock needs

Scavenging flocks of chickens are ubiquitous throughout the developing world. Protein deficiency in the diets of these birds is common, probably the norm.

So, a principal aim becomes, to grow a food forest which provides a sufficiency of protein. In this respect, wattles come into their own. Wattle seeds typically have a very high protein content of 21-28%. (Note that laying pellets that you might purchase from a produce store would have a protein content of a mere 15%!)

Obviously, the forest must also contain plants whose yield contains other essential food elements

- fat
- carbohydrate
- fibre
- minerals, especially calcium carbonate (egg shell).

Such plants might include lillipillies, tuckeroos, mulberries, etc.

Given the amount of food required by the chooks, and considering the vagaries of nature, there is a need to over-plant. That is, to aim for a surfeit of food forest harvest.

Seasonality

There is the necessity to provide a continuity of supply of chook food throughout the year.

Wattle species and their numbers need to be selected with this criterion in mind.

What chickens prefer

Research has shown that given a range of available feedstuffs, chickens naturally select the correct components for a balanced diet.

It follows therefore, that given a surfeit of feed in a food forest, a flock of chickens will instinctively eat what they want, when they want.

Very little study seems to have been done on finding plants which yield types of food that chickens naturally prefer.

I have investigated this aspect.

A large flock of chooks was presented with the seeds of various wattle species at different times. Samples presented, were usually about 5g. Their eating response was recorded.

(It seems obvious that preference for wattle seeds presented is influenced by the type and amount of other feed available at the time. However, this is not seen as a major issue. This is because a standard type of commercial laying pellets was always available to the birds *ad lib.*)

The results of the tests are given in the following TABLE 1. The levels of preference are indicated. Four (4) levels are used

- not eaten
- ate reluctantly
- ate
- ate avidly.

TABLE 1: CHOOK SEED PREFERENCES

<i>Acacia aneura</i>	Ate avidly
<i>A baileyana</i>	Ate avidly
<i>A binerva</i>	Ate
<i>A colei</i>	Ate avidly
<i>A confluens</i>	Not eaten
<i>A coriacea</i>	Not eaten
<i>A craspedocarpa</i>	Not eaten
<i>A dealbata</i>	Ate avidly
<i>A deanii</i>	Ate
<i>A decurrens</i>	Ate avidly
<i>A drummondii</i>	Ate
<i>A elata</i>	Ate
<i>A falcata</i>	Ate
<i>A farnesiana</i>	Not eaten
<i>A fimbriata</i>	Ate avidly
<i>A holosericea</i>	Ate
<i>A ligulata</i>	Ate avidly
<i>A macradenia</i>	Ate reluctantly
<i>A neriifolia</i>	Ate
<i>A pendula</i>	Ate reluctantly
<i>A perangusta</i>	Ate
<i>A podalyriifolia</i>	Ate/ate avidly
<i>A pycnantha</i>	Ate avidly
<i>A rhodophloia</i>	Not eaten
<i>A salicina</i>	Not eaten
<i>A saligna</i>	Ate
<i>A simsii</i>	Ate/ate avidly
<i>A stenophylla</i>	Not eaten
<i>A vestita</i>	Not eaten
<i>A victoriae</i>	Ate reluctantly

Further Acacia species hold promise as likely chook tucker for various reasons. Species and reasons are listed in TABLE 2.

TABLE 2: ACACIA SEEDS, LIKELY CHOOK TUCKER

<i>A ampliceps</i>	Unprocessed seeds can be eaten by humans.
<i>A celastrifolia</i>	Common bronzewing eats seed from the ground.
<i>A cyanophylla</i>	Seeds fed to chickens in experiments in Cyprus.
<i>A cyclops</i>	Seeds eaten by a variety of birds, including pigeon.
<i>A dentifera</i>	Important for seed eating birds.
<i>A floribunda</i>	Seed is bird dispersed.
<i>A implexa</i>	Pigeons feed on seeds.
<i>A lanigera</i>	Provides seeds for birds.
<i>A longifolia</i>	Stated as “chicken feed” in reference. Seed is bird dispersed. Emu food.
<i>A maidenii</i>	Seeds eaten by common bronzewing.
<i>A mearnsii</i>	Provides seeds for birds.
<i>A melanoxyton</i>	Seeds, possible chook food, according to letter from Tree Seed Centre.
<i>A prominens</i>	Seeds are very attractive to the two forms of bronzewing pigeon.
<i>A retinodes</i>	Provides seeds for birds.
<i>A sophorae</i>	Seed is bird dispersed.
<i>A tumida</i>	“Producing ... protein rich seeds for poultry feed,” in reference.

Conclusion

Wattles from TABLE 1, in the ‘ate avidly’ category are gradually being incorporated into the chooks’ food forest at Helidon.

Species from TABLE 2 are the next candidates for testing, with the view of including successful species in the forest.

Myrmecophilous Acacia

by Dr Wolf-Achim Roland, Solingen, Germany

The term myrmecophilous means “friendly to ants“. Greek: myrmex = ant; philos = friend . It describes plants, which offer advantages for ants. Among the hundreds of species there are some 24+ acacia s.l. species (s.l. = in the broad sense, before the split of genus acacia into 5 separate genera).

One considers the development of these specific acacia as a prime example for coevolution.

D.H. Janzen assumed, that at first there were inflated thorns, being opened by some insect and then discovered as housing by ants. The tree then retained the ants by offering more nectar from extrafloral glands and later fixed the inflation of the thorns in the genes. That is why acacia in greenhouses also develop “galls” – even if there are no ants.

D. Seigler states, that extrafloral glands are found in many plant families. They serve as a generalized defense. They attract many insects, including ants, which then started to use bigger spines as houses, triggering coevolution.

Myrmecophilous acacia are found in Eastern Africa and Mesoamerica. A good introduction is given at <http://waynesword.palomar.edu/acacia.htm>

They develop some to most of their stipular spines into inflated, globose, ovoid, fusiform or thick cylindrical armatures. Their spines look like galls or horns leading to species names like *A. bullockii*, Ant-galled acacia (= *A. pseudofistula*), *A. myrmecophila*, Spotted-galled acacia (= *A. burttii*), White swollen thorn acacia (= *A. bussei*), Black-galled acacia (*A. malacocephala*), Hairy-galled acacia (= *A. mbuluensis*), Bull`s Horn acacia (= *A. cornigera*) or Ant-galled acacia also called Whistling thorn acacia (= *A. drepanolobium*).



above: *A. collinsii* from Mexico with the “bull horns

The swollen thorns are genetically fixed. They are not randomly generated by the sting of an insect, like the galls produced by a wasp that injects her chemicals into a leaf, which then forms galls. Therefore the so-called gall-thorns are not real galls.

The fresh thorn is drilled open by an ant queen. Then it is carved out and she lays her eggs inside, starting a new colony: The acacia offers housings (also called domatia). At the node, next to the inflated spines, the fresh leaves develop. And they feature – like most bipinnate leaves of acacia - extrafloral nectaries, providing the ants with glucosides. (Remember the article on Acacias and bees in the June 2007 Newsletter). In Mesoamerica there can be up to 5 glands on the petiole, plus several more on the rachis, providing plenty of sweet nectar for the ants. There are additional “glands” at the apex of the new leaflets called Beltian Bodies, named after the British Natural Scientist Thomas Belt, who discovered them in Nicaragua in 1874. These are well developed yellow or orange sacs full of protein rich substances, and they are readily harvested by the ants.



above, and below: *A. cedilloi*, endemic in Quintana-Roo province, Mexico, showing young inflated thorns which embrace the twig. On top of the leaflets, the orange Beltian bodies can be seen.



The obligate mutualistic acacia-ants (*Pseudomyrmex* in Mesoamerica and *Crematogaster* in Africa) protect the plant in different ways: they fiercely attack browsing mammals, ravaging insects and epiphytic vines. They prevent any twig from neighbouring trees to touch their host – to prevent hostile ants from invading their tree. For the same reason they cut shoots of their tree that develop too far towards the canopy of neighbouring trees.

In fact, when I broke off white (older) inflated thorns from *A. collinsii*, the ants instantly climbed my arm and bit me.

Once the ants abandon the tree, the perforated hollow thorn may whistle in the wind. Hence names like: Whistling thorn (= *Acacia drepanolobium*), the Coastal whistling thorn (= *Acacia zansibarica*) or the White whistling thorn (= *Acacia seyal* var. *fistula*).

In Eastern Africa the acacia's part of the mutualism means providing nectar and housing in the inflated thorns to the ants.

In Mesoamerica the abundance of glands and the Beltian bodies offer additional incentives for the ants to colonize the acacias: Even in the dry season, the nectar from the glands is flowing and small leaves with fully developed Beltian bodies are produced to keep the ants on the plant.

In Mesoamerica, the thorns on the ant-acacias are sometimes even shorter than in the non-ant acacias, because the leaves are not protected against herbivores by thorns but by the ants.

Remains the question, why there are no Myrmecophilous Acacia in Australia.

Australian Acacia are related to Senegalias, which have no spines - but often prickles. They lack floral nectaries and carry petiolar glands on bipinnate leaves or glands at the margin of the phyllodes. Ants patrol these plants, harvest sugar and amino acids. They also apparently play a role in protecting the acacias by eating other small insects, insect eggs or fungal spores. As the housing opportunities are lacking, the ants are only part-time visitors. There is no strict mutualism, and therefore there are no "Myrmecophilous Acacia" in Australia.

More literature:

<http://fusion.sas.upenn.edu/caterpillar/index.cfm?lecture=1>

Najma Dharani

Field Guide to the Acacias of East Africa

2006, Struik Publishers, RSA

ISBN 1 77007174 1

J.E. Ebinger, D.S. Seigler

Ant-Acacia Hybrids of Mexico and Central America

Southwestern Naturalist 1982, Vol 37, pp 408-414

Frank M. Thomas

Unterricht Biologie 36/2005, pages 46-50 (In German)

Acacia chrysocephala

by Tony and Liz Cavanagh, Ocean Grove Vic

On 23 June, a number of APS members had the opportunity to visit Tony and Liz's garden at Ocean Grove on Victoria's south coast. It was a cold, overcast and gloomy morning, but the plant that attracted most attention was Acacia chrysocephala, its bright flowers standing out brilliantly. Tony and Liz have prepared the following article on this plant and have provided the photograph.

This small, attractive wattle was named by Western Australian botanist Bruce Maslin in 1978. It replaced several older names such as *A. biflora* and several of its varieties as well as Bentham's name *triangularis*. We obtained our original plant from Gwenda Macdonald in the early 1980s when she operated a small nursery in Melbourne. She recommended it then as an excellent small spreading plant and it has proved to be just that. Our original plant died last year I believe from the effects of many years of drought but with a life of around 25 years, who can complain. I can't remember for sure but I think that Gwenda told us that she had propagated it from cuttings, possibly because seed was hard to come by, and I remember being very impressed as we knew that Acacias weren't easy to grow from cuttings.



Well they still aren't and this particular plant I would categorise as "very difficult". It reminds me so much of many of the dryandras, with woody stems and very little soft growth so that it is usually difficult to find suitable material. Over the years, we have tried various times of the year but mostly the cuttings just sat in their pots and eventually died. The few that rooted had small, weak roots and often did not thrive when potted on - I don't think that we got more than a couple of garden plants over the 25 years. Fortunately, we had more luck when we took cuttings in early January, 2004, right in the middle of summer. Two had rooted by April, the rest were reset in the cutting medium and eventually by perhaps August we had five plants for the garden. We kept them in pots until autumn 2005 when they were planted out around the

garden. During the continuing drought we lost one due to dryness but the rest have survived, being looked after by washing machine water as required. We have not tried to purchase seed and I think that our plant occasionally set seed. However, it didn't appear fertile and we could never germinate it. I don't know if anyone else has experience with growing it from seed but it would be interesting to know of other's experiences.

Acacia chrysocephala for us grew to about 30cm high with a spread of about 1 metre. It was in a dry, part-shaded spot on a raised bed of clay-loam soil and seemed to be quite drought tolerant. It is a stiff, wiry little shrub with ribbed branchlets and small triangular phyllodes. Its flowers are its brightest feature, being small and globular but numerous along the branchlets (see picture) and a bright golden yellow. On a recent garden visit, many people commented how this plant almost "shone" on a very dull day and it was certainly a bright spot in the garden. If flowers for us from about June onwards, over several months and is certainly one of the small ornamental wattles that we would strongly recommend.

A Tale of Two Wattles

by Bill Aitchison

As noted in the last newsletter, we are keen to compile information relating to the experience that people have had in growing the wattles that they purchased at last year's Seminar, Acacia 2006. So far we have received reports from 11 people that relate to about 150 individual plants (and we would welcome any further reports). Two people who have provided reports are Helen van Riet and Brenda Moore, and the following tale relates to one of the plants that each of them bought at the Seminar.

Helen lives near Wangaratta in northern Victoria, and Brenda lives at Park Orchards, an outer eastern suburb of Melbourne. Both are long time members of the Australian Plants Society, both are very experienced gardeners and both purchased a number of wattles at last year's Seminar. Both planted these wattles in their gardens in the spring of 2006, shortly after the Seminar. One of the wattles that they both planted was *Acacia leptoclada* (a NSW species that is reported as preferring a well drained, part sun situation).

Helen reports that her plant has grown rapidly, to the extent that it has needed rock stabilisation for the roots. Brenda reports that her plant appeared healthy until recently but did not put on any growth, and in fact has recently died. This has prompted a question as to why one plant has succeeded so well whereas the other has done the opposite.

Discussions with Helen and Brenda suggest three possible explanations, as follows:



Helen van Riet's wattle

Local Environmental Differences - Helen's plant is in deep sandy loam and she lives in a hot dry area. Her plant was given 1/2 level teaspoon Osmocote Native at planting time. Brenda has clay soil but adds gypsum. Some water crystals as well as a tiny amount of dynamic lifter were added at the time of planting, and Brenda describes her plant as having been in a well drained, part shaded position.

Watering - Helen's plant had minimum water over summer, to establish. There was little natural rainfall, and her plant was minimally watered with dam water or rain water (not town water, therefore no chlorine). Brenda's plant received some tap watering over summer. Helen comments that, in her view, the lack of any chlorine in the watering that her plant has had, is significant. In the same way that chlorine added to tap water kills off micro organisms, she believes that chlorine in tap water given to plants will kill off micro organisms that are important for the successful growth of plants. She is interested in whether any scientific research has been done on this subject. In relation to the amount of chlorine added to tap water, I note that on the Melbourne Water website, it states that "the amount of chlorine added is equivalent to less than half a teacup in an average-size backyard swimming pool".

Wattle Grow - Helen advises that after planting, she was given a quantity of "fantastic micro-organism helper stuff", of which she sprinkled a teaspoon around the base of her plant and scuffed it into the soil. Brenda did not do this. Helen is referring to Wattle Grow Granular Inoculant which is a Bradyrhizobium based inoculant designed to effectively form nitrogen fixing nodules on the roots of a wide range of acacia species. We have asked the Australian distributor of Wattle Grow for their comments on Helen's experience, and hope to include an article on this in the next newsletter.

Although this tale relates to only two plants, Helen reports that nearly all of the Seminar wattles that she planted have taken off and grown rapidly (one exception is *A. subflexuosa*), and Brenda reports that whilst most of hers

have survived and appear healthy, they are establishing very slowly.

Why is it so?

A mystery – red buds

We think that the wattle shown below may be *Acacia hakeoides*, but would be interested if anyone can explain why parts of the buds have turned a reddish colour. One suggestion is that it may have been caused by frost, but can anyone help?



Understanding Mulga

by Jordan E. Reid

Department of Environment and Conservation, WA

A new, three-year, multi-disciplinary project on Mulga in Western Australia commenced late in 2006. The project, which is titled Understanding Mulga, aims to understand and document the patterns of variation in W.A. species of Mulga (*Acacia aneura* and related species), and to provide a reliable means to identify them. The project is lead by Bruce Maslin from the Department of Environment and Conservation (DEC) in Perth. Other team members include Joe Miller (geneticist at Iowa State University), Rolf Rutishauser (anatomist at the University of Zurich, Switzerland) and three DEC staff, Margaret Byrne (geneticist), Jordan Reid (botanist) and Richard Fairman (technical assistance).

The name Mulga is most commonly applied to the large, woody, perennial, arid zone species *A. aneura* and its close relatives, but the name also denotes the vegetation type that is dominated by these species. As currently defined the 'core group' of Mulga comprises four species, *A. aneura* (containing 10 varieties), *A. ayersiana*, *A. minyura* and *A. paraneura*. Closely related to this 'core' group are a

number of other species such as *A. craspedocarpa* and *A. ramulosa* (containing two varieties) and many of these species will also be included in the study. Mulga occupies about 20% of arid Australia and is a 'keystone' group that dominates a large portion of the Western Australian rangelands.

Mulga communities are repositories of significant productivity and biodiversity, they are resource "hotspots" because of their ability to capture, retain and cycle precious sediments, nutrients and water. Mulga is the most economically significant acacia of the Arid Zone, primarily because it is an important source of fodder, especially during times of drought. Therefore, the effective management of Mulga is critically important for sustainable land use planning and natural resource management. Most Mulga entities are extremely variable, their taxonomic boundaries are vague, and identification of the different types is extremely difficult, both in the field and from herbarium material. To add further complication numerous hybrids exist, not only between species of the 'core group' of Mulga, but also with some species that are closely related to this core. The variation observed in Mulga occurs both within and between populations and up to 15 different Mulga entities have been recorded in one population near Meekatharra!!

The factors responsible for causing and maintaining this variation are poorly understood, with very little known about the genetic basis of this variation, the origin of the different forms of Mulga, or the ecological factors that allow them to coexist in complex mixed populations. Understanding this variation and being able to reliably identify the taxa is critically important because this will provide the necessary foundation upon which effective management, utilization and conservation rests.

The project aims to deliver many outcomes, some including: the production of a "Mulga Manual" that will comprehensively describe, discuss and illustrate the different Mulga entities; a simplified version of the Manual targeting non-specialist users; a user-friendly, electronic identification key enabling Mulga types to be easily and reliably named, and scientific publications describing new species of Mulga and detailing genetic systems operating within the group.

Progress so far and forthcoming activities:

Field studies – In 2006 three Mulga field studies were conducted in the Murchison/Ashburton and northeastern goldfields regions of W.A. by the Mulga team. This trip provided material for taxonomic and genetic study, seed for germination trials and a detailed photographic library of Mulga plants and populations. Currently the development of an itinerary for an extensive field study (October – November 2007) is in progress. This trip will focus on areas not visited in 2006.

Taxonomic studies – Specimens collected in 2006 and from earlier field studies (in 1999 and 2000) have been examined and a number of provisional taxonomic groups have been identified. This is a preliminary sort, using morphological attributes, and once verified these groups will form the basis for our studies. Verification of the taxonomic groupings, relating them (where possible) to previously named Mulga entities, preparing preliminary descriptions and constructing an electronic identification key is currently underway. This information will be presented on the web (<http://www.worldwidewattle.com>) as it comes to hand.

Genetic studies – DNA has been extracted from approximately 750 samples; these include 457 samples collected during the 2006 field study and 300 samples collected from earlier field studies (in 1999 and 2000). All samples are currently in America at the Iowa State University. Microsatellite libraries have been constructed and these libraries have been tested, from which 16 loci were developed. Data is being generated on four of the microsatellite loci for all samples, but these results have not yet been correlated with the taxonomic results. Sequence data for specific chloroplast regions have been generated for over 100 samples and are currently being compared to the taxonomic findings. Also the recent acquirement of a flow cytometry instrument will allow the DNA content of samples to be measured enabling crucial estimates of ploidy level to be made, complementing the microsatellite results. All this work will continue throughout 2007.

Complementary studies – To complement the taxonomic investigation several other studies are being conducted. Ontogeny. Germination trials have been conducted testing a number of different pre-treatment procedures and these results used to germinate seeds from over 100 plants. Monitoring of the seedling growth characteristics and their developmental sequence is underway.

Anatomy - Although this phase of the project is yet to commence, an anatomical investigation of pod and phyllode venation patterns will assist in the analysis of hybridization. For more information on the Understanding Mulga project please visit (<http://www.worldwidewattle.com/infogallery/projects/mulga.php>) and Joe Miller's website (<http://www.biology.uiowa.edu/newccg/jmiller/mulga.php>).

Some Membership Matters

Thanks to all those members who have renewed their membership of the Study Group. Also a special welcome to the following new members:

Russell Best, Riddells Creek, Victoria
Ron Calvert, Oxford Falls, NSW
Anna Kacanski, Keilor Downs, Victoria
Bill Hardin, Tamworth, NSW

Phil Hempel, Diamond Creek, Victoria
Georgina Lambert, Hillarys, WA
Dale and Wendy Nichols, Narangba, Queensland
Cathy and Ron Powers, Balliang, Victoria
Barbara and David Pye, Bullengarook, Victoria
Helen van Riet, Wangaratta, Victoria
Doug White, Longwood, Victoria

This newsletter is being sent to some previous members of the Study Group who have not yet renewed their membership. If you wish to renew your membership, we would appreciate it if you could forward your membership subscription. Alternatively, if you do not wish to renew your membership, could you let us know so that we can adjust our membership records.

We will include a complete membership list in a future newsletter.

The annual membership fee is as follows:
\$5 (newsletter sent by email)
\$8 (hardcopy of newsletter posted in Australia)
\$12 (hardcopy of newsletter posted overseas)

Subscriptions may be sent to:
ASGAP Acacia Study Group Leader
Esther Brueggemeier
28 Staton Crescent
Westlake, Victoria 3337

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 Esther by email (wildaboutwattle@iprimus.com.au)

Seed Bank

The Seed Bank, previously held by Thais Eisen, has now been transferred to Esther Brueggemeier, and requests for seed should be directed to Esther.

18 packets maximum in each order (negotiable). Limit of 3 orders per member per year.

Please include a 230 x 100mm stamped addressed envelope for orders of 12 or fewer packets where only a small number of seeds are required (6 or less per packet).

For orders of over 12 packets or where a larger number of seeds are required please include \$2 in stamps to cover the cost of a padded post bag and postage.

ACACIA STUDY GROUP SEED LIST SEPTEMBER 2007

acanthoclada, acinacea, acradenia, aculeatissima, acuminata, adenophora, adsurgens, adunca, aestivalis, aff beauverdiana, aff boormanii, aff coolgardiensis, aff desertorum, aff ericifolia, aff longifolia, aff microcarpa, aff multispicata, aff myrtifolia, alata, alcockii, alleniana, amblygona, amoena, amplex, anatriceps, anceps, ancistrocarpa, andrewsii, aneura, aneura var. macrocarpa, angusta, anthochaera, aphylla, applanata, aprepta, araneosa, argyrea, argyrophylla, arida, arrecta, ashbyae, aspera, assimilis, atkinsiana, attenuata, aulacophylla, auriculiformis, ausfeldii, axillaris
baeuerlenii, baileyana, baileyana aurea, baileyana prostrate, baileyana purpurea, bakeri, bancroftiorum, barattensis, barringtonensis, baxteri, beauverdiana, beckleri, betchei, bidwillii, biflora, binata, binervata, binervia, bivenosa, blakei, blakelyi, boormanii, brachybotrya, brachystachya, brevifolia, brassii, browniana, browniana var intermedia, brunioides, burkittii, burrowii, buxifolia, bynoeana caerulescens (Buchan Blue), caesiella, calamifolia, calantha, calyculata, cambagei, camptoclada, cana, cardiophylla, caroleae, celastrifolia, cheelii, chinchillensis, chisholmii, chrysellia, chrysocephala, cincinnata, citrinoviridis, clunies-rossiae, cochlearis, cognata, colei, colletioides, cometes, complanata, concurrens, conferta, continua, coolgardiensis, coriacea, coriacea var sericophylla, covenyi, cowleana, craspedocarpa, crassa, crassicarpa, crassiuscula, crassuloides, crenata, cultriformis, cupularis, curranii, curvata, curvinervia, cuthbertsonii, cyclops, cyperophylla dawsonii, dealbata, deanei, debilis, declinata prostrate, decora, decurrens, deficiens, deflexa, delphina, demissa, dempsteri, denticulosa, dentifera, dictyoneura, dictyophleba, dielsii, dietrichiana, difficilis, difformis, dimidiata, diphylla, disparrima, divergens, dodonaefolia, donaldsonii, doratoxylon, drepanocarpa, drewiana, drummondii dwarf, drummondii ssp affinis, drummondii ssp candolleana, drummondii ssp drummondii, drummondii ssp grossus, dunnii
elata, elongata, empeloclada, enervia ssp explicata, enterocarpa, ephedroides, eremaea, eremophila, ericifolia, erinacea, eriopoda, estrophiolata, euthycarpa, everistii, excelsa, exilis, exocarpoides, extensa
falcata, falciformis, farinosa, fasciculifera, fauntleroyi, filicifolia, filifolia, fimbriata, flagelliformis, flavescens, flexifolia, flocktoniae, floribunda, fragilis, frigescens
gemina, genistifolia, georgensis, gilbertii, gillii, gittinsii, gladiiformis, glandulicarpa, glaucescens, glaucissima, glaucocarpa, glaucoptera, gnidium, gonocarpa, gonoclada, gonophylla, gracilifolia, grandifolia, granitica, grasbyi, gregorii, guinetii, gunnii
hadrophylla, hakeoides, halliana, hamersleyensis, hamiltoniana, hammondii, handonis, harpophylla, harveyi, hastulata, havilandiorum, helicophylla, hemignosta, hemiteles, hemsleyi, heteroclita, heteroneura, hexaneura, hilliana, holosericea, holotricha, horridula, howittii, hubbardiana, huegelii, hyaloneura, hystrix
idiomorpha, imbricata, implexa, inaequilatera, inaequiloba, incurva, inophloia, intricata, irrorata, iteaphylla, ixiophylla, ixodes jamesiana, jennerae, jensenii, jibberdingensis, johnsonii, jonesii, jucunda, julifera, juncifolia
kempeana, kettlewelliae, kybeanensis
laccata, lanigera, lasiocalyx, lasiocarpa, lateritica, latescens, latipes, latisepala, lauta, lazarides, leichhardtii, leiocalyx, leioderma, leiophylla, leprosa, leptalea, leptocarpa, leptoclada, leptoloba, leptoneura, leptopetala, leptospermoides, leptostachya, leuoclada, ligulata, ligulata prostrate, ligustrina, limbata, linearifolia, lineata, linifolia, littorea, loderi, longifolia, longipedunculata, longiphyllodinea, longispicata, longissima, longispinea, loroloba, loxophylla var nervosa, luteola, lysisphloia
mabellae, macdonnellensis, macradenia, maidenii, maitlandii, mangium, maranoensis, marramamba, masliniana, mearnsii, megacephala, megalantha, meosperma, meisneri, melanoxylon, melliodora, melvillei, menzellei, merinthophora, merrallii, microbotrya, microcarpa, mimula, mitchellii, moirii ssp dasycarpa, mollifolia, montana, monticola, mooreana, mountfordiae, mucronata, mucronata var longifolia, muelleriana, multisiliqua, multispicata, murrayana, myrtifolia, myrtifolia WA
nematophylla, neriifolia, nervosa, neurophylla, neurophylla ssp erugata, nigricans, nitidula, nodiflora var ferox, notabilis, nuperrima ssp cassitera, nysophylla
obliquinervia, obovata, oblecta, obtusata, obtusifolia, oldfieldii, olseni, omalophylla, oncinocarpa, oncinocarpa, oncinophylla, oraria, orthocarpa, oswaldii, oxycedrus, oxyclada
pachyacra, pachycarpa, palustris, papyrocarpa, paradoxa, paraneura, parramattensis, parvipinnula, pataczekii, patagiata, pellita, pendula, penninervis, pentadenia, perangusta, peuce, phlebocarpa, pilligaensis, pinguifolia, platycarpa, plectocarpa, plectocarpa ssp tanumbirinensis, plicata, podalyriifolia, polybotrya, polifolia, polystachya, prainii, pravissima, preissiana, prominens, pruinocarpa, pruinosa, ptychoclada, pubescens, pubicosta, pubifolia, pulchella, pulchella hairy form, pulchella var glaberrima, pulchella var goadbya, pustula, pycnantha, pycnostachya, pyrifolia
quadrilateralis, quadrimarginea, quadrisulcata
racospermoides, ramulosa, redolens, redolens prostrate, restiacea, retinodes, retivenia, rhotinocarpa, rhigiophylla, rhodophloia, riceana, rigens, rivalis, rossei 81, rostelifera, rothii, rubida, rupicola, ruppii
sabulosa, saliciformis, salicina, saligna, schinoides, scirpifolia, sclerophylla, sclerophylla var lissophylla, sclerophylla var teretiuscula, sclerosperma, semilunata, semirigida, sessilis, sessilispica, shirleyi, sibina, sicutiformis, signata, silvestris, simsii, sophorae, sparsiflora, spathulifolia, spectabilis, sphacelata, spinescens, spondylophylla, squamata, steedmanii, stenophylla, stenoptera, stereophylla, stipuligera, stowardii, striatifolia, stricta, suaveolens, subcaerulea, subflexuosa, sublanata, subulata, synchronica
tenuissima, teretifolia, terminalis Katoomba type, tetragonophylla, tetragonophylla, tetraptera, tindaleae, torulosa, trachycarpa, trachyphloia, translucens, trigonophylla, trinervata, trineura, triptera, triptycha, triquetra, truncata, tumida, tysonii
ulicifolia, ulicifolia var brownei, ulicina, umbellata, nucifera, uncinata, uncinella, urophylla
validinervia, varia var parviflora, venulosa, verniciflua, verricula, verticillata, vestita, victoriae, viscidula
wanyu, wardellii, watsiana, wickhamii, willdenowiana, wilhelmiana, williamsonii
xanthina, xanthocarpa, xiphophylla