

ARMIDALE TREE GROUP NEWSLETTER

Number 105 Autumn Edition

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**New England's Grassy Woodlands: Restoring the Grassy
Bits
By David Carr**



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Cover photo: Harris block Grassy Woodland

Editors note: Our Autumn Edition

Dear ATG Members and Friends

Welcome to our large but late 2016 Autumn edition of the ATG Newsletter. As winter approaches let us enjoy the last of the unseasonal warmth and look forward to some much-needed rain soon. Our feature article on the Grassy Bits Project written by David Carr provides the culmination of three year's hard work to find ways and means to restore the native grasses and forbs in our woodlands. This article is fascinating in the way it has paved the way for us to not only 'Releaf New England' with trees and shrubs for improved biodiversity but to allow the understory to be managed more effectively with tried and tested methods by the Armidale Tree Group. I am certainly going to follow some of this advice and plant more grasses and wildflowers on my block to try to restore what was once a diverse woodland area.

Please take time to complete the Dieback Survey online at www.armidaletreegroup.org.au/educational-resources/ or request a paper survey and try to get this others to provide vital information on this problem.

What you'll find in this Autumn edition -

- A summary of the ATG Strategic Plan
- Survey of Dieback on the Tablelands
- Questionnaire for future member's events
- *New England's Grassy Woodlands: Restoring the Grassy Bits* by Dave Carr
- Pictures of Warren Sheather's ATG Member's Garden tour
- Warren Sheather's *Blooming in Autumn*
- Peter Metcalfe's article *A Second Bite at the Cherry: The Role of Leaf Litter in the Environment*
- *Growing Frost Kissed Vegetables* by Alicia Cooper
- A flyer for the Open Day at Maria Hitchcock's Private Botanical Garden Fangorn on 29th May
- A membership renewal form – all membership falls due on 30th June 2016 so please forward your \$5 by the payment method chosen.

After a successful member's tour of Warren Sheather's Garden we would like some feedback on what you as members would like to do, learn or take part in so that we can organise informative, fun events on a more regular basis. Please complete and return the questionnaire below to the nursery or by email to Dan manager@armidaletreegroup.org.au and I will compile it. Dan is currently seeking feedback on a suitable date for a seed collecting workshop so let him know if you are available.

Kerry Steller

ATG Strategic Plan summary

An organisational review of the ATG in 2014 by the ATG Committee proposed the following Strategic Actions that have provided a focus for the ATG planning for the last twelve months and that continue to inform our future direction as a community group.

Strategic Actions

1. Putting on an Environmental Services Trainee/Staff Member to provide an opportunity for business growth in this expanding area.
2. Restructuring staffing roles and responsibilities to ensure the succession from Rob to Dan is completed and clarification of roles in production and environmental services are clear.
3. Developing an education/training enterprise to share the expertise of the ATG with the wider community through vocational and informal training and workshops.
4. Outsourcing some or all of wholesale plant propagation to reduce the soaring costs of production and to increase the range of landscaping plants for potential marketing.

Minor actions

Improving the retail nursery through:

- Opening longer on weekends and close Mondays or low sales days
- Selling more advanced stock (200mm) pots
- Publicising the plant of the week
- Promoting the need for understory and functional plants to increase sales
- Stop growing or buying non-natives
- Tailoring brochures for different customer market/have more specific brochures

Improving the wholesale nursery by:

- Growing 20 key plants for landscaping market
- Build market community engagement by:
 - Producing four newsletters a year
 - Lobbying politicians for tree planting support
 - Keeping a book of rejected requests to identify opportunities

Other improvements

- Charge more for Dan's time

Survey of Dieback on the Tablelands

We have started a survey to determine the current extent of dieback so we can plan action to tackle it. We really need Tree Group members to help us out by completing the online survey. Please let your neighbours know about it as well. We would like to hear from people with either dieback or healthy trees.

In the 70s and 80s ‘New England Dieback’ saw the loss of tens of thousands of hectares of native trees in Northern NSW. Dieback is the continuing deterioration of the eucalypt canopy which eventually results in the death of trees and a reduction in total tree cover in the landscape. It has detrimental consequences for both the natural environment and primary production. In the late 80s the situation seemed to stabilise, however in recent years dieback appears to be making a comeback.

The Armidale Tree Group started in 1983 to fight dieback and is now driving a new research project looking for causes and solutions to this devastating problem affecting native trees across the Northern Tablelands. The ‘Community Dieback Monitoring’ project is calling on landholders across the Northern Tablelands to fill in an online survey about how the native tree cover on their property is faring. This survey will provide important baseline data about where dieback is occurring and what might be causing it. The more people who fill in the online survey, the better the information we’ll have on the true extent of the problem.

The survey contains questions for landholders to answer about land use, native tree management, and dieback history on their property. The location of each participant’s property is requested so that it can be related to mapped information about soils, topography and climate. All personal information, including property location, will be kept confidential and individuals and property locations will not be identifiable in any published results. A short report summarising the survey results will be compiled and sent to participants and Northern Tablelands Local Land Services. This information will be used to help target future funding for extension and incentive programs, as well as providing background for future research using remote sensing to detect dieback.

The Armidale Tree Group has received funding to run the ‘Community Dieback Monitoring’ project as part of the Northern Tablelands Local Land Services Small Community Partnerships Grants program. This

project is part of the \$25 million of National Landcare Programme investment that Local Land Services is delivering to boost farm gate productivity and improve environmental health across NSW.

If you would prefer to complete a paper survey, or have any questions about the survey, please contact the Project Officer Danielle Andersson on 0472 743 919, or email

diebacksurvey@armidaletreegroup.org.au

All completed surveys (that include contact details) will go in a draw to receive a \$100 gift voucher at the Armidale Tree Group. The gift voucher will be drawn on the 1 July 2016 at the Armidale Tree Group.

The survey will take approximately 20-30 minutes to complete. Please have your property Lot and DP information on hand (you can find this on your rates notice).

Access the online survey by visiting:

www.armidaletreegroup.org.au/educational-resources/

ATG member's survey for future events

As an ATG member I would like to undertake the following activities:

- Talks
- Workshops
- Garden tours
- Farm planting tours
- Tree planting
- Field days
- Seed collecting
- Other ideas (please state) _____

I can assist in the following way (please detail) _____

Name and contact details _____

Please complete and return this questionnaire to the nursery or by email to Dan manager@armidaletreegroup.org.au

New England's Grassy Woodlands: Restoring the Grassy Bits

By David Carr

Much of the native vegetation on the Northern Tablelands is, or was, Grassy Woodland. A woodland is a type of vegetation community where the crowns of the trees have some space between them, usually less than 60% crown cover. In this part of the world, the woodland trees are mostly eucalypts. Woodlands can have an understorey dominated by shrubs or by tussock grasses. The Northern Tablelands have both, but it is the grassy woodlands that have suffered most over the years and are now endangered.

Grassy woodlands have been preferred for grazing by sheep and cattle because of the higher availability of grasses for feed. Sheep and cattle are selective grazers, so over time the more palatable plants are removed and the less palatable grasses remain. This leads to a simplification of the grassy layer and local extinction of many plant species.

Grassy woodlands are also affected by clearing of the trees. In many areas the trees have been cleared and grazing has altered the ground layer, leaving a pasture of mostly native species but with much less diversity. The introduction of fertiliser and sowing of exotic pasture grasses also leads to significant changes in the structure of the ground layer in the woodlands. Exotic perennial grasses, such as Phalaris, Cocksfoot and Fescue are better able to utilise nitrogen and phosphorous than native grasses. As a result, they outcompete and replace the natives. As a result of clearing, continuous grazing, fertiliser application and introduction of exotic grasses, all of our grassy woodland communities on the Northern Tablelands are now endangered.

The four main grassy woodland communities on the Tablelands are:

1. Yellow Box-Blakely's Red Gum Grassy Woodland, listed under the EPBC Act and TSC Act* as part of the Critically Endangered Box Gum Grassy Woodland,
2. New England Peppermint – Mountain Gum – Black Sally Grassy Woodlands, listed under the EPBC Act and TSC Act* as Critically Endangered,
3. Ribbon Gum – Mountain Gum – Snow Gum Grassy Woodland, listed under the TSC Act in NSW as Endangered, and
4. Grey Box-Yellow Box Grassy Woodland, listed under the EPBC Act and TSC Act* as part of the Critically Endangered Box Gum Grassy Woodland,

What makes these communities endangered is not the loss of the trees (many of which are very common), but the loss or degradation of the ground layer.

Most of these communities would once have had a ground layer dominated by Kangaroo Grass (*Themeda triandra*), Native Sorghum (*Sorghum leiocladum*), Snow Grass (*Poa sieberiana*) or Barbed-wire Grass (*Cymbopogon refractus*). They would have once had a high diversity of wildflower species including daisies, lilies, orchids, peas and sedges. Over time, with continuous grazing, many species are lost and the less palatable grasses are left, such as Poa Tussock (*Poa labillardierei*), Red Grass (*Bothriochloa macra*) and Paddock Lovegrass (*Eragrostis leptostachya*).

For the past three years Armidale Tree Group has been working on a project to restore Grassy Woodlands. We know how to put the trees and shrubs back (we've been doing that for more than 30 years), but putting the grasses and wildflowers back is a bit trickier. The NSW Environment Trust funded the project through their Restoration and Rehabilitation Grants to the tune of \$100,000.



Figure 1: Dense sward of Weeping Rice Grass (*Microlaena stipoides*)

We designed the project to work on sites where there was a mixture of both native and exotic perennial grasses. If there are just natives, we don't need to do anything. If it is just exotic grasses that we want to restore to natives, we can use high disturbance techniques like blanket herbicide spray and scalping. In mixed swards we have to be careful to retain the natives while removing or reducing the exotics. While there has been quite a bit of research done on annual exotic grasses, less has been done on controlling perennial grasses.

The "Restoring the Grassy Bits" project selected 5 sites, mostly on private land where we had native grassy woodlands with a manageable percentage of weeds. We used an expert working group from ATG, UNE, DPI and the CMA to advise us on sites and techniques to use. This

group came up with the following techniques to use where we could:

- Selective herbicide spraying of weeds using glyphosate or flupropionate,
- Mowing,
- Burning,
- Hand-weeding,

- Combinations of these techniques.

In 2010 I co-authored a book on managing Box Gum Grassy Woodlands for the Commonwealth Environmental Stewardship program (Rawlings et al, 2010). In this book, we recommended low-disturbance techniques for planting seed and seedlings into degraded woodlands. We also decided to use and test some of these techniques in the project.

You have probably noticed an increase in the number of wildflower species available through the nursery over the last few years. We have made a huge effort to collect seeds from wildflower species and Rob has worked out how to grow lots of these. We have species available now that are very rarely available in cultivation. Many Armidale gardens now feature many species that probably haven't grown there for 150 years! We also purchased a second hand grass seed harvester and this has enabled us to collect local grass seed for use in the project. We collected nearly 200kg of native grass, including kangaroo grass, native sorghum, a rare bluegrass (*Dichanthium setosum*), Plume Grass, Microlaena and Red Grass. We have used some of this for growing seedlings and most for spreading over our sites.

The five sites that the project has worked on are:

1. The Mike O'Keeffe Woodland, behind the ATG nursery (6ha),
2. The Armidale Arboretum grassland (2ha),
3. Snow Gums Reserve at the northern end of Markham St, Armidale (5ha),
4. Steve and Julie Harris's block in Bimbimbi Lane, Armidale (1ha),
5. Walcha TSR, adjacent to the town common (30ha), and
6. The TSR on Bundarra Rd between Dairy Creek and Abington Creek (150ha).

Mike O'Keeffe Woodland

This remnant of Ribbon Gum – Mountain Gum – Snow Gum Grassy Woodland has been used for grazing, drainage, rubbish dumping and education and now has a mix of exotic and native grasses. We established a number of trial plots very early in the project where we tested mowing, spraying and scalping with sowing native grass seed. Early results showed that scalping followed by sowing grass seed was very good for highly disturbed areas. Each plot now has a good cover of Kangaroo Grass and other species. We also found that mowing and burning followed by spot spraying with glyphosate was a good way to control scattered exotic grasses. Burning was slightly better because it gave clear access to spray the regrowing tussocks without accidentally hitting the natives. However, burning in the middle of town is difficult because Council puts very tight limits on smoke emission in Winter. The grass

plots can be seen in the southeast corner of the woodland on the rise above the dam.

The western side of the dam has been heavily planted with trees and shrubs, which are now up to 10m tall. The understorey is a mix of native grass (*Bothriochloa*, *Poa*, *Microlaena*, *Sporobolus*), weeds (Cocksfoot, *Phalaris*) and wildflowers (*Chrysocephalum*, *Linum*, *Glycine*). We set up some plots to trial mowing, spraying and planting seedlings. Mowing made it a little easier to spray weeds and we were able to reduce weed cover in parts of the area. In a section of this area totally dominated by weeds, we used a blanket spray of glyphosate to kill all the grass, then repeated this on new grass growing from seed. We then mulched the area with woodchip and planted seedlings of grasses and forbs. The shade of the existing trees helps reduce the vigour of exotic grasses, so we are able to keep the weeds somewhat in check.

Recently PhD student (and current committee member) Sharon Brown has established some grass establishment and herbicide trial plots on the site and will publish the results shortly.

Armidale Arboretum

At the top of the arboretum is an unmown, open grassland area which is a “derived native grassland”. This means it was once a grassy woodland until the *Eucalyptus viminalis*, *E. pauciflora* and *E. melliodora* trees were cut down. The grassland is predominantly native, but there were some invasions of exotic grasses along the boundary adjacent to Galloway St. Water runs off Galloway St bringing with it nutrients from dirt, dog poo and car wash. This feeds the exotic grasses, allowing them to gradually invade the native grassland. To intercept the nutrients we have planted a dense buffer of Mat Rush (*Lomandra longifolia*) around the boundary. Armidale Dumaresq Council had previously agreed to only mow the site twice a year, but have now agreed to mow every two years. This is allowing late season plants such as *Xerochrysum bracteata* to set seed. *Dichanthium setosum* is a threatened grass species that is a dominant species here. In the last two years, since the mowing regime was changed, there has been very good seed set in this species.



Figure 2: Dichanthium setosum at the Armidale Arboretum

We burnt the areas where there was a mixture of natives and exotics. This cleaned out the old grass stems and allowed us clear access to spray the tussocks of Fescue and Paspalum as they regrew, while avoiding the natives. We followed up the spraying over the next two years. Some weeds were hand-pulled. Once the weeds were cleared we were able to plant seedlings of grasses and forbs, which are now growing well. An interesting side benefit of burning was that we had a germination of native geranium (*Geranium solanderi*) which grows as a vigorous groundcover in bare areas and keeps the weeds out. Monitoring of the site shows a gradual decrease in the cover of weeds while native cover is increasing. We also collected good quantities of *Dichanthium setosum* from this site.

Snow Gums Reserve

Snow Gums is a patch of Ribbon Gum – Mountain Gum – Snow Gum Grassy woodland in Armidale that has been managed by Kate Boyd and her team of ATG volunteers forever. Its on the site of a former quarry but has some patches in excellent condition. It also has some highly disturbed areas. The Grassy Bits project worked on the area between the good and the bad, initially controlling blackberry and doing some spot spraying.

The plan for the site changed significantly following a hot fire lit by arsonists in January 2013. The fire burnt out about one hectare before the fire brigade put it out. The fire completely burnt out the ground layer and



killed some of the trees. A similar area right next door was not burnt so we had a perfect, if accidental, site to compare methods.

Figure 3: Dan and Alicia monitoring recovery after the Snow Gums fire

The year following the fire was very dry so we saw little regrowth of natives or exotics. However, as the rain returned, we were able to easily select and spray the weeds. We sowed part of the area with grass seed, but had a disappointing strike as a result of the drought. The most recent monitoring (May 2016) has shown that this grass seed is now germinating and there is better cover. The fire stimulated many species that had seed stored in the soil and we now have good stands of *Dichondra repens* (Kidney Weed), *Dianella revoluta* and *D. longifolia* (Blue Flax Lilies), *Xerochrysum bracteata* (Golden Everlasting Daisy) and even a small patch of *Cryptandra amara*. The fire also stimulated a mass germination of Montpellier Broom which we have controlled by hand pulling seedlings. The worst weed on the site is Chinese Wormwood which is difficult to control by spraying or manual means and threatens to take over the site.

Harris block

The Harris's purchased a five-acre block that had previously been heavily grazed. Half the block is Yellow Box – Blakely's Red Gum Grassy Woodland with the understorey dominated by Weeping Rice Grass (*Microlaena stipoides*). The rocky nature of the site had preserved a good diversity of grass and forb species, but there were patches dominated by African Love Grass. We sprayed the Love Grass and the bare patches were quickly filled by native grasses. Weeping Rice Grass is a vigorous grass and in places it had grown so thick that other plants could not grow. We used low disturbance methods to create niches among the grasses to plant seedlings of a range of native forbs. The seed for most of these was collected at the University of New England about 2km up the road. One of the species planted was Yam Daisy (*Microseris lanceolata*). This daisy is regionally very rare and found only in areas with a history of no or light grazing.

Walcha TSR

On the northern edge of Walcha town, a wide TSR links to the town common. The TSR supports a very good patch of New England Peppermint Grassy Woodland, dominated by *Eucalyptus nova-anglica*, *E. stellulata* and *E. pauciflora*. The understorey is mostly native grasses, dominated by *Poa sieberiana*. There are patches totally dominated by exotic grasses. The exotic grasses were likely to spread and eventually take over the whole site. The site has a good diversity of forbs including orchids, lilies and peas.

We sprayed the patches of exotic grasses with glyphosate three times over 18 months. We used a vehicle-mounted spray unit to cover large areas and a backpack sprayer to spray in between native tussock grasses.

This left bare patchy areas which are currently being planted out with native grasses and forbs.

Walcha Council were mowing the whole site to keep it tidy because it is right at the entrance to town on the Uralla Rd. After explaining what we were trying to do, they agreed to only mow the 20m closest to the road. The rest is not mown and the response has been amazing. There is very good regeneration of both New England Peppermint and Black Sallee. Native Raspberry (*Rubus parviflora*) plants have grown larger and set a lot of seed. Many forb species have expanded in area, particularly *Chrysocephalum spp* (Billy Buttons), *Ajuga australis* (Austral Bugle) and *Leucopogon fraseri*.

Most of the patches of exotic grasses seem to have started from lawn clippings being dumped on the reserve, a problem for many bushland areas close to a town.

Bundarra Rd TSR

The Bundarra Rd between Uralla and Bundarra is a major Travelling Stock Route, up to 200m wide in places with regular reserves along the route. Between Mt Yarrowyck and Bundarra there are patches with some of the best examples of Box Gum Grassy Woodland on the Tablelands. We chose to work on a section between Dairy Creek and Abington Creek 15km in length.

Our first action was to assess the length of the TSR and identify areas for intensive work, areas for occasional work and areas to avoid. There are several vegetation communities along the road. These include a patch of Mugga Ironbark woodland that is known to be used by the critically endangered Regent Honeyeater. There are some small patches of Caley's Ironbark, but the main community is grassy woodland dominated by Grey Box (*Eucalyptus moluccana*) and Yellow Box (*E. melliodora*). The understorey has a very high diversity of forbs and grasses, including



Figure 4: Diuris abbreviata in the Bundarra Rd TSR

many threatened species. One section has a very high density of two species of ground orchids (*Diuris spp*). The Uralla Shire floral emblem, *Cheiranthera telfordii*, is abundant in another section.

The main threat to the site is from the encroachment of Coolatai Grass (*Hyparrhenia hirta*), a vigorous tussock grass that outcompetes other



Figure 5: *Ajuga australis* (Austral Bugle) is found in grassy woodlands in good condition.

species. It is favoured by fire and difficult to kill with Round Up alone. Working in partnership with Uralla Shire Council, we used different spray regimes in different sections to kill Coolatai Grass where it grows in pure stands, patches and among natives. While we have been successful in some places, repeat sprays will be necessary to ensure it does not continue to grow. It is worth the effort to control it in areas with very high conservation values, but many other areas are now beyond control. The adjoining Gwydir and Inverell Shires have many roadside areas where the understorey is completely overgrown with Coolatai Grass.

Lessons from the Grassy Bits project

After three years we now know a lot more about managing the understorey in grassy woodlands. One of the main benefits has been the knowledge gained about collecting seeds from forbs and growing them in the nursery. The increased diversity in the nursery is testament to this, as are the “wildflower packs” we have been able to offer for sale. We know what the seeds of some species look like after having to hunt for them with a microscope amongst spent flowers. For some species, we know

that seed propagation is very difficult due to the short time the seed is held on the plant (such as *Tricoryne elatior*).

In terms of managing weeds, we have learnt that anything that opens up the grass sward makes it easier to spray weeds while avoiding natives. In my view, fire is a very useful tool for doing this. A cool autumn or winter fire avoids damage to seeding plants and allows time for weeds to shoot so they can be sprayed in spring. Mowing and probably grazing would do a similar job. The difficulties with using fire are the risk of it spreading, smoke in urban areas and the fact that some weeds are favoured by burning.

We have learnt that controlling nutrients and water can reduce the advantage to weeds over natives, and allow natives to re-establish. We learnt that Coolatai Grass is controllable to an extent, but is expensive and requires a long-term commitment, so must be confined to high conservation sites only. Both Flupropionate (Taskforce) and Glyphosate (Round Up) can be effective in particular circumstances.

Herbicides alone can be effective where weeds occur as large patches within an otherwise native sward. Repeated sprays are required, which leaves a bare patch which should be replanted with a native species to avoid recolonisation by weeds.

What to do with your grassy woodland

If you have a patch of grassy woodland you want to manage for conservation, there are several things you can do:

- Reduce the grazing pressure. Change from permanent grazing to occasional grazing, avoiding spring and summer if you can.
- Stop or reduce mowing. Unless there is a fire risk, try to mow the edges only. If you have to mow, set the mower on its very highest setting.
- Identify the native and exotic grasses. Exotic grasses are usually a brighter green colour (except *Microlaena*). Get some advice if you are not sure.
- Try to remove the exotic grasses, using some of the techniques mentioned in this article. Get some advice from the Tree Group staff if you need help.
- Monitor changes and adjust your management if necessary.

Rawlings K., Freudenberger D. & Carr D. (2010) *A guide to managing Box Gum Grassy Woodlands*. Commonwealth of Australia, Caring for Our Country, Canberra, ACT. [In the Tree Group library].

Photos from our Member's Tour of Warren Sheather's Garden

Thanks again to Warren for providing a tour of his garden to around thirty-five of our members in March this year.

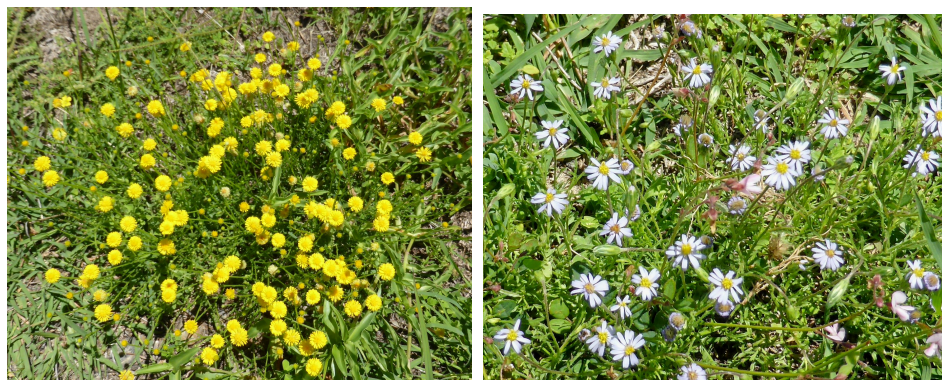


Blooming in Autumn by Warren Sheather

Sheep Camp Rejuvenation

We have a large mown area to the north of our house. This area, before sheep were removed, was the site of a large sheep camp. Sheep camps become havens for a wide range of weeds. Our ex-sheep camp was no exception and was covered by horehound, stinging nettles, thistles and verbascums in profusion. After two decades of mowing there has been a dramatic change. Most of the weeds have disappeared and replaced by native grasses, annuals and perennials. The mix of these plants appears to be dependant on rainfall.

In the autumn of 2013, after reasonable summer rain, the area was clothed in native grasses. Before mowing, the grasses were about knee high. A reasonably dry period followed and during this time the grasses took a back seat and the area became dominated by *Calotis* and *Vittadinia*. It has been interesting to watch the development of this area triggered by mowing and climate. During extended dry periods mowing is only necessary once or twice a year.



Photos: Calotis (left) and Vittadinia (right) growing in the sheep camp.

Autumn in our Garden

Because of the range of plants that we grow there is always something in flower. This autumn is no exception with a range of blooming plants providing colour in the garden. This time we will feature two plants one is rather rare and comes from the North Coast. The other is a long flowering wattle.

Many years ago we visited the Comboyne Plateau inland from the North Coast of NSW. We were looking at the vegetation along a roadside when we noticed some branches hanging over the road. The leaves were small, aromatic and appeared to be a Myrtaceae of some description. The pendulous foliage was attached to a small tree, unlike any Myrtaceae we knew. As per usual, we collected some material and managed to strike some cuttings. The plant was identified as *Kunzea* sp. Middle Brother Mtn also known as *K. sp A*. Middle Brother Mountain is southwest of Laurieton on the North Coast and is in a national park of the same name.



Photo: Kunzea sp. Middle Brother Mtn

Kunzea sp. Middle Brother Mtn develops into a tree about eight metres tall. At this height this is the tallest *Kunzea* in the world. In summer and autumn plants become covered in small, white, fluffy flowers. The flowers attract a large range of native insects including beetles, bees and wasps. The flowers are too small to attract honeybees. Small capsules follow the flowers and these release small seeds as they mature. In our garden seedlings appear at the base of mature plants. Growth habit, foliage and flowers are attractive features. We propagate this uncommon species from cuttings.

Acacia iteaphylla, the Flinders Ranges Wattle, is a native of South Australia and is found in the north of the state hence the common name. The Flinders Range Wattle is a tall shrub often with pendulous foliage. The slender phyllodes are up to 100 mm long and blue-green in colour.

Buds are carried in long clusters that are covered by bracts (see photo). As the buds swell the bracts are shed revealing bright yellow flowers. Bracts are an uncommon feature in the wattles. We know of only one other species with this feature.

Flowering extends for many months. In our garden flowering starts in February and extends until September.



Photo: *Acacia iteaphylla*, the Flinders Ranges Wattle.

This is our favourite wattle. Over the years it has proved to be hardy, free flowering and once established have very low water requirements. There is a low growing form known as “Parsons Cascade” that grows to a height of half a metre. The species name means willow-leaved.

A Second Bite at the Cherry: The Role of Leaf Litter in the Environment

by Peter Metcalfe

The rainfall during January was excellent and the Yellow Box trees at home put on a spurt of growth and added fresh leaves to their crowns. Then came February and early March with hardly any rain. Very soon every gust of wind caused a tremendous leaf fall that covered the ground and the grass with old leaves. The trees were withdrawing nutrients from old leaves to nourish their new growth. At the same time the trees were reducing the transpiration surfaces in response to the drying soil around their roots. This deluge of leaves got me thinking about the role of leaf litter.



We are all familiar with the idea of the living leaves, flowers and fruits of plants being part of the food chain. Fallen leaves are important too. Leaf litter is also the basis of a complex food web. Perhaps the most obvious “litter critters” we see is a family of Choughs that sweeps through our place occasionally. These sociable birds flick aside the surface leaves looking for the visible insects and other small animals that depend on the leaf litter for food and habitat. Brush Turkeys and Lyrebirds rearrange the leaf litter on a grand scale in moister habitats.

The small lizards such as little Penny Lizards and larger lizards such as Blue-tongues and Jacky Lizards are also largely dependent on the smaller critters of the leaf litter. Very rarely seen are the legless lizards and blind snakes that spend their lives burrowing under the leaf litter. They are more common than you think. Maybe big snakes are less welcome, but never the less they also look for some of their food in the leaf litter. A snake is not the end of the food chain if an alert Kookaburra happens to be about.

There are a number of small birds that forage in the leaf litter, probably seeking smaller prey than the larger birds and animals. Yellow Robins pounce from a branch well above the ground. Blue Wrens forage in both grass and leaf litter. The most dedicated litter searcher is the ever-active White-browed Scrubwrens which rarely venture onto the open lawn. What prey are all these birds and animals seeking in the leaf litter? There are some small creatures that can digest dead plant material directly. Both termites and cockroaches have micro-organisms in their gut that can digest cellulose and lignin. In moister areas worms eat leaves directly but across vast tracts of our dry inland it is the termites that play the greatest role in recycling organic matter. I have watched quite substantial logs reduced to a pile of frass in a few years by families of big black cockroaches with spiky legs that live under the logs and eat away at the underside.



Other important links in the litter food web are the bacteria, fungi and slime moulds that can digest plant material. The fungi etc. can themselves be eaten by the many small creatures that cannot digest plant material directly. These small animals become the food for higher animals. At home there were over thirty different fungi popping out of the soil and

mulch while the soil was damp. These are just the visible part of an unseen army of fungi working away below the surface. Many fungi do not produce fruiting bodies such as mushrooms, toadstools and puffballs above the soil surface. The best known of these are the truffles of commerce. There are many other “invisible” fungi that break down organic matter and some have a direct link to the roots of plants. These MYCORRHIZAE are crucial to the uptake of nutrients and water for most plant species.

Besides being the basic layer in a very complex food web the fallen leaves have important physical and chemical roles to play. Thanks to all that biological activity all those fallen leaves are being broken down physically into ever smaller particles that eventually become incorporated into the soil as humus that plays an important role by increasing the water holding power of the soil. The leaves are also broken down chemically to become soluble plant nutrients to complete the mineral cycle. Before they become incorporated into the soil the freshly fallen leaves and the half decomposed leaf litter form a protective layer above the mineral soil. This mulch reduces evaporation and keeps the root zone cooler than nearby bare ground. This is a very important role of fallen leaves in the harsh Australian environment.

Growing Frost Kissed Vegetables

By Alicia Cooper

As the leaves fall and the first frosts of the season arrive, what does this mean for our gardens? Many of us will have removed the faded remnants of our summer crops, pulling up what remained of tomato and squash vines and if you're lucky, making one last batch of pesto from what remains of the Basil. But your garden bed need not remain bare. Now is the time for planting cool weather vegetables, plants that not only survive the frosts, but many that actually benefit from it.

Lettuces and mustard greens can be quite frustrating to grow during the hot months as they have the tendency to bolt to seed in the long summer days, turning them bitter and inedible. They will last much longer through the cool months, producing plenty of fresh, leafy greens before the full bite of winter arrives.

The Brassica family is well known for its cold tolerance and includes cabbages, broccoli, kale, brussel sprouts, kohlrabi and turnips, to name a few. Many of these react to the cold by converting their starches to sugars. Sugary liquids don't freeze as readily, which prevents the plant's sap from expanding and rupturing the cell walls in the leaves and stems. This defence mechanism stops the plants from turning into a limp mess, but also means your frost kissed sprouts and kale taste all the more sweeter. Another added benefit to planting brassica crops during autumn

is that the dreaded Cabbage White Butterfly is becoming less active and by winter all the caterpillars will be hibernating chrysalids. Certain root crops also convert their starches to sugars after a few frosts, so try parsnips, carrots and celeriac.

The Allium family are another great cool weather crop. Leeks have the frost-sweetening characteristic, so throw these in with your root veggies and you'll have the makings of a delicious, hearty winter stew. Garlic can be planted now and left to mature over winter. By Christmas time, the bulbs will be ready to harvest. Stored properly, some varieties can keep for up to 12 months, so with the right planning, you could be savouring your own home grown garlic year round, without ever having to resort to the fumigated imported bulbs often seen on the supermarket shelves.



Winter Veggies in stock at the ATG nursery

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