

Wildlife and Native Plants Study Group Newsletter

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Dear Members,

2008 is quickly drawing to a close, with Christmas looming on the horizon. Just another financial hurdle in the pursuit of life and happiness. But it's a time also to reflect on the year just gone and the days ahead. Many have experienced the year's highs and lows - the wet, the dry. Our struggling often starving wildlife and our withered gardens that hold precious memories of days long gone. Let us enjoy family and friends over Christmas with the hope that 2009 will be better.

This is Dorothea Mackellar's Australia- 'a land of sweeping plains, of rugged mountain ranges of droughts and pouring rains'. No matter who or where you are, Australia and is unique and undoubtedly the best place in the world to live. May this Christmas be a happy time for all - wherever you are, whatever your situation or circumstance.

A special Aussie 12 days of Christmas.
On the first day of Christmas my true love sent to me: A kookaburra in a gum tree
On the second day...Two snakes on skis, and a kookaburra in a gum tree.
On the third day of Christmas....

3. Three wet galahs
4. Four lyrebirds
5. Five kangaroos.
6. Six sharks a surfing
7. Seven emus laying
8. Eight dingoes dancing
9. Nine crocs a snoozing
10. Ten wombats washing
11. Eleven lizards leaping
12. Twelve possums playing.



This issue we have a number of members' contributions for you to read and enjoy over the holiday season. Thank you members for your support and interesting articles. Keep them coming please..... Happy Reading!

DID YOU KNOW?

Wattle is an old English word meaning 'rod or stake'. The word was introduced to Australia during the construction of the 'wattle and daub' huts of early settlers, when the flexible acacia saplings were used for the frames.

IN THIS ISSUE

- Rosella Tucker by Leigh Murray
- Garden Notes by Barbara Preston
- About Our Garden-2008- Open garden Scheme by Barbara Melville (2008)
- Casualties of floods and downpours in Rockhampton by Lenore Lindsay
- Banned Grasses seized in Big W blitz. From *Grass Notes*, No.20 Winter 2008
- A Native Grass that thrives on Diesel from *Wildlife & Habitat Support Group Newsletter* Vol.13.Iss.4 Jul/Sept.2008
- The Current Plight of the Grey Falcon/Swift parrots from *Volunteer- TBN and Atlas of Australian Birds* Iss.27- Oct,2008
- Our Little Pollen Porters Part 3 - *Footprints in the pollen* by Phil Watson
- The Plant Doctor- Webbing Caterpillar by SA State Flora



ASGAP MEMBERS' LETTERS

Thank you members for promptly paying your subs. Here are some comments well received

- 'I really appreciate your informative information' (B.Nilsson, Maraylya, NSW)
- 'Thankyou for your newsletters, I really appreciate them'.(K.Wray, Armidale NSW)
- 'Terrific latest issues! Hope you're feeling better, and on the mend.' (L.Murray, Queanbeyan, NSW)
- 'Many thanks for the great newsletter' (J.McLachlan, Bathurst, NSW)
- 'Have enjoyed your friendly, informative newsletters. Best wishes (C.Miller, NSW)

LETTER OF THE MONTH

'Dear Chris,

Again you have given us very special editions of the newsletter. Congratulations, and thank you for your hard work and talent! The articles by Phil Watson are just ideal as a basis for appreciating the complexities of our flora and the inter-relationships between our flowers and their pollinators. I think they would be of interest to a wider readership ...I think it's just work like his that has the potential to intrigue members of the public too. And if they're enthused then there's more chance our wildlife and wild places will be appreciated by more people- turned-activists! Wouldn't Phil's work make a great DVD! Bringing plants and their pollinators together! Best wishes and Thanks again.'

Rosemary

(R.Blemings, Flynn ACT)

THANKYOU MEMBERS FOR YOUR ARTICLES AND LETTERS

WELCOME to New and rejoining members.

A warm welcome to:

Nikki Kirkman - Balance Management Group, NSW; and Joy Cook, NSW.

I hope that you will find pleasure and info. aplenty in the newsletter.

§

VALE

We are sad to learn of the death of Veronica Thorp of Tasmania, who has been a valued members for many years.



Rosella Tucker

by Leigh Murray

We delight in the company of Crimson Rosellas in our gardens at Tuross Head and Queanbeyan, where *Darwinia citriodora*, *Grevillea* 'Ember Glow', *G. jephcottii*, *Enchylaena tomentosa*, *Correa pulchella* and *Acacia rubida* are all particular favourites of these beautiful birds.

Clambering :*Darwinia citriodora* grows well at Tuross as a shrub of about a metre high and a bit wider. It's happy with pruning, and this thickens the plant. *Grevillea* 'Ember Glow' (a hybrid of *G. juniperina* and *G. rhyolitica*), a low, slightly sprawling shrub, bears orangey-red spider flowers over a long period. Crimson Rosellas love to clamber amongst the foliage of both shrubs, dining on the flowers.

Pruning :*Grevillea jephcottii* is a top attractor for honeyeaters and rosellas. It grows as a shrub of about 1-2 metres high and wide. Most of ours are on the smaller side. One of our early plantings at Queanbeyan (before I learnt the benefits of pruning) grew into a very straggly plant. The Crimson Rosellas reshaped it beautifully by nipping off flowering stems, gradually encouraging the plant to become bushier.

Carpeting : *Correa pulchella*, a very hardy, neat little shrub of less than half a metre high and wide, grows well in both gardens. The ground around our plants is often carpeted by flowers, nipped-off by Crimson Rosellas seeking nectar. They also like to nip off, sample, and then drop the red berries of *Enchylaena tomentosa* (which has the apt common name of Ruby Saltbush).

Crunching :*Acacia rubida*, a large shrub or small tree (it's easily trained to a single trunk), apparently has particularly tasty or nutritious seeds. It is much more popular than our many other acacias with Crimson Rosellas and Sulphur-Crested Cockatoos. They dote on its seeds. When the seeds ripen, the air is alive with the sound of contented crunching.

Australia's Open Garden Scheme

Garden notes 21 Boobialla Street O'Connor ACT

19-20 January 2008

The huge eucalypts first attracted us to the house in 1993 (in original 1960s condition, with many fine trees and shrubs). We sought to complement the trees in the development of the garden and the 1997 alterations and extensions (designed by Anna Pender, who received a Commendation in 1998 from the ACT RALA for the work). The garden has been developed for living and enjoyment. It is an oasis in the hot Canberra summer, with tall trees, cool sheltered nooks and a beautiful pond. There is beauty and interest in all seasons - not only while enjoying the garden, but also in the views from the house, and as you step out-doors.

The garden continues to change. Over recent years proteas and leucadendrons have replaced a sprawling escallonia in the NE corner. In 2005 a huge diseased eucalyptus fastigata was taken out in the back garden against the paling fence. It has been replaced by silver birches - our neighbour can now enjoy the winter sun, while, in a few years, we will again have good shade from the late afternoon summer sun. In this area species camellias, vegetables, herbs, lilies and hellebores have also been planted.

Ecology - the garden is intended to be environmentally sound and easy to maintain. It is water-wise and friendly for birds and other creatures. Plantings take account of the sun in each season (with the exception of the large trees planted around 1960 on the north side!). The climbing rose frame is placed to shade the bedroom window from summer early morning sun while allowing winter sun to enter fully; trees and tall shrubs on the Boobialla Street side (SE) of house shade the windows from summer morning sun; deciduous wisteria along NE facia shades in early and late summer mornings while the winter sun freely enters the house; and the bay tree and deciduous maples and birches shade the downstairs from late afternoon summer sun (upstairs lost its shade with the taking out of the E. fastigata). The big trees protect from heavy frosts. The wallaby grass 'lawn' is never mown (only the seed heads near the paths are trimmed) - it was developed over several years from a nature strip patch of remnant native grass, and clumps subdivided and replanted while other grasses were removed.

Deadheading prevents agapanthus and other seeds entering the storm water system.

Colour - mostly subtle and harmonious, but with some seasonal drama. Wattles are first in spring, then bulbs, wisteria, dogwoods, then dark orange and brick red azaleas and a rich purple rhododendron (back garden), and roses. In January the agapanthus provide a cool blue visual foundation from the street, and, later as the agapanthus begin to fade, tiger lilies and jackanapes are a burnt orange contrast. In autumn there's a huge fiery ornamental grape through a large eucalyptus, and the wisteria, dogwoods, maples etc colour richly. From mid-winter to spring the ruby red *Allocasuarina littoralis* flowers glow with the low winter sun behind them (especially appreciated from inside the house), and dark pink tracery of coral bark maples contrasts with cool greys and greens.

Fragrance is important. All purchased roses are perfumed, and perfume is a major criterion for bulb selection. There are seven osmanthus varieties (penetrating and evocative perfume in autumn and early winter is especially welcome at that melancholy time of year), perfumed species and hybrid camellias, michelias, daphnes, lilac, rhododendron fragrantissimum, philadelphus, pittosporum, lily-of-the-valley, violets, potted citruses, gardenias, and some wattles and eucalypts are heavily scented in flower. There is aromatic foliage from small lavenders in the driveway that are brushed by cars passing over, and English lavender along the fence under the clothes line gives some pleasure to hanging out the washing. There is also foliage aroma from many different scented-leaf geraniums, mint bushes, a kaffir lime, and herbs including rosemary, thyme, basil, coriander, lemon grass, marjoram, oregano, mints and sage.

Intimate & rare interest - among the 'treasures' are species camellias with small white scented flowers, small bulbs (fritillaries, antique daffodils and the native orchid, *pterostylis curta*), and species and named small cyclamens and great variety of hellebores.

Picking & harvesting - flowers are picked for the house (and for giving) all year round. There are herbs and greens throughout the garden, strawberries under the roses, tomatoes, and beans and cucumbers.

Basalt columns - the 1999 gift of the basalt columns was inspired by the angles of the house. They were originally from roadworks in the Walcha lava field (laid down about 50 million years ago). The design and placement of the rocks (including the pond) took nearly four years.

Birds

Food and water for birds - additional plantings and the garden design ensure that all year round there is a wide variety of feed, suitable for many different native birds. This includes smaller nectar flowers close to the ground (correas through winter, and small and ground-covering grevilleas from spring to autumn) throughout the garden so that the small honeyeaters (eastern spinebills, etc) are not out-competed by the wattlebirds - which have access to profusely flowering large grevilleas (*G. barklyana* & *G. arenaria*) around breeding time. There are gumnuts and hakea, wattle and grass seeds for a wide range of parrots (gang-gangs, king parrots, crimson and eastern rosellas, white cockatoos, etc), finches and others. The large eucalypts have always supported many varieties of birds - pardalotes feeding on lerps high up, treecreepers and currawongs probing the bark, honeyeaters enjoying the flowering periods, and grey fantails and many varieties of 'small brown birds' (thornbills etc) taking insects through the year. Dense understorey and deep leaf/bark litter supports insects and other invertebrates which provide food for many small and large birds (from scrubwrens and fairy-wrens to magpies, kookaburras and frogmouths). The pond is not covered. Many birds enjoy the water for drinking, bathing and feeding: magpie-larks spend time in the shallows finding insects, water snails, and, at least once, taking a small fish; kookaburras often visit to check out the fish; crimson rosellas bathe with gusto, and small birds skim the water, dive and play. A bird bath in the front garden is used daily for bathing by the wattlebirds.

Nesting places - to support safe nesting places, dense prickly shrubs (osmanthus, berberis, prickly melaleucas, etc) have been planted and maintained, and have been well-used over the years by wattle birds, crested pigeons and some smaller birds. Scrubwrens also successfully nest - in most years in a patch of rough undergrowth protected from currawongs and cats by wire netting. Possible nesting places for Spotted Pardalotes have been created/enhanced, and some nest boxes are installed.



Water-wise

Rain & storm water. We attempt to keep almost all rainwater on site. Rain that falls on most roof areas enters rainwater tanks, from which it is immediately directed to selected areas of the garden. Rain that falls on the garden or paving soaks in close to where it falls wherever possible. This is achieved by (a) deep mulches, (b) uneven garden bed surfaces so water collects and soaks in, (c) swales and contour banks (notable above the path in the back garden and above the Boobiella Street kerb), (d) sumps (runoff directed to depressions over deep porous material), (e) ensuring the slope of paving directs water onto garden or sumps, rather than continuing on to the storm water system (most notable in the path close to the Boobiella Street driveway where a small rise in the path directs water into a depression that can take any likely volume of water, and ensures adequate watering of proteas and grevilleas planted on the bank of the depression, and more distant large trees and shrubs).

Greywater. A custom-made greywater recycling system (with approved plumbing) that takes water from the shower and laundry to selected areas of the garden has been operating continuously and automatically since 2004.

Soils and mulching. Whenever gardens are revived and new plantings undertaken large amounts of organic matter (compost and leaf mould) are incorporated in the soil, and the ground is thickly mulched. This helps retain moisture as well as improving fertility over time.

Plantings. Most of the garden (except for recently planted areas) tolerates dry periods and does not need substantial additional watering.

We hope you enjoy our garden!

..... & please sign the visitors book

barbara.preston@netspeed.com.au

Funds raised go to Amnesty International Australia



ABOUT OUR GARDEN at
83 Malison Street, Wyoming NSW by Barbara Melville (2008)

We moved to the Central Coast, which is about 100 kms north of Sydney in 1972 when the garden consisted of 12 orange trees and numerous 'stinking rogers' which we thought were marigolds and replanted them where they would look prettiest!

Our yard is a normal suburban block but is multi-levelled mainly due to living on the low side of a steep hill and when we built we had to dump many tons of sand in the backyard to cater for the on-site septic system that was replaced with the sewer about 10 years later. All but one of the orange trees were removed straight away and the last tree was removed just last year after several years of ill health and few fruit. Orange orchards were a major industry on the central coast for many years.

Naively we planted many trees and have subsequently spent a fortune on removing some of them. The majority of these trees were/are exotic because we had not been "enlightened" at that stage. We have about 9 large trees and many tall shrubs including Rulingea, Ceratopetalum gummiferum (NSW Christmas Bush), 2 Blueberry Ash, Syzygium paniculatum and an enormous Eucalyptus botryoides. Non-native but very appealing for birds & flying foxes is the Cherry Guava. The most popular small tree in our garden at the moment (late September) is Honey Gem Grevillea which has been flowering for nearly 3 months.

For many years these trees formed a perimeter for a totally grass (green stuff anyway!) multi level cricket pitch and soccer field along with various other games played with our children. About 20 years ago we joined SGAP (now APS) and from then on became hooked on native plants, although not many local species. Our green patch is now only approximately 4 metres x 2 metres, the rest is a bushy garden collection of mostly native plants.

About ² years ago we became members of Habitat for Wildlife which signifies an interest in creating corridors for our wildlife. We live approximately 500 metres from remnant rainforest hills, gullies & creeks and have watched helplessly as progress creeps into our valley. Old farms have been subdivided for housing & 2 aged care facilities have been built. We back onto a school playground and years ago attempted to extend our garden into the school with the approval of two consecutive school principals. Unfortunately recent general assistants think the easiest way to keep a narrow strip of dirt tidy is to mow it so only our taller shrubs have survived. Instead we have planted a thick strip of shrubs and small trees inside our back fence, not only to encourage the wildlife but to keep the dust down from the poorly maintained playground. We also had a change of neighbour a few years ago and the nice corridor we had with them was destroyed.

Most of the wildlife that visits our garden is of the feathered variety but we do have a healthy lot of skinks, bigger lizards & spiders including the beautiful Golden Orb Weaver spider. Several species of butterfly spend a little time here in summer. We have a possum (think it's a ringtail) that runs across our roof about 3 in the morning. The birds include Magpies, Noisy Miners (no pest Indian Mynas thank goodness), Eastern Rosellas, Rainbow Lorikeets, Grey Butcherbirds, Kookaburras and the



seasonal visit of Tawny Frogmouths which have arrived or been noticed for the first time this season today. Sadly not many small birds anymore, although we've tried to plant a mixture of prickly or dense small shrubs & trees. The Noisy Miners have pretty much taken over our yard and the Eastern Spinebill which used to come regularly is now only game to come to the front garden maybe once or twice a year and then only briefly. Bowerbirds are also regular visitors in damp weather and mostly when the guava and lilli pilli are fruiting. They compete with 1 or 2 flying foxes who also enjoy the fruit. The Koel couple have arrived for the summer although we haven't seen them in our yard yet.

Our greatest wish is to see the Regent Bowerbird in our garden again, having seen him twice only. Prior to our finding out that Ochna was a shocker of a plant to be growing we were quite thrilled to have seen this beautiful bird just outside the bathroom window. After the big job of removing the Ochna we planted Trema aspera, more Blueberry Ash & Kangaroo Apple in the hope of attracting him back but so far the Regent has been very elusive if he has visited at all.

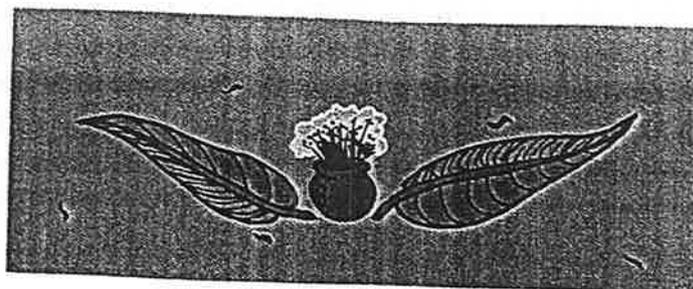
Most of our garden plants need to cope with a fair amount of dry shade because of our tall trees and this has been a challenge at times. It's frightening to think how many pots we've discarded or kept for 'one day' over the years! We also grow a few plants in pots that we can place in the sun during winter and back in under the trees a little in summer.

The Mangrove Creek Dam which supplies most of the growing Central Coast was down to less than 14% full less than 2 years ago so we've been on very harsh water restrictions. In early September our total water storage level is 31.3%. Many people, including us, have installed rainwater tanks for our gardens.

We have 3 decent sized bird baths in our garden and 2 smaller ones. All are very popular for bathing more than drinking.

Yesterday our latest baby Magpie made itself heard and was certainly very vocal this morning. I hope it survives. The Tawny Frogmouths are probably a very real threat to the Maggies. Noisy Miners & Eastern Rosellas have been bringing their young to the garden for a couple of weeks now.

Our first Magpie which we named Junior was an 'abandoned' chick that our daughter was given to care for by the Wildlife ARC. Many feeds and terrifying times while Junior learnt to fly followed until he flew the nest so to speak. The first time a magpie came back to our garden we wondered if it could be Junior and he read our thoughts and did a swing on the washing and a slide on the veranda stairs rail. Michelle then decided that Junior was doing the nesting so we'd help to raise a 'she'. We still have just one Magpie family around each year but we don't have the same connection with the newer breed.



CASUALTIES OF FLOODS AND DOWNPOURS IN ROCKHAMPTON

Adapted from Lenore Lindsay's Editorial in the Australian Food Plants Study Group Newsletter May 2008.

'After years of unfulfilled wishes for a "proper wet season", we were finally rewarded ...the Heavens opened, and the rain fell. The rivers filled, and Rockhampton's mighty Fitzroy flooded not once, but twice! However...it was not the flood that caused havoc...but the two intervening downpours which proved too much for town drainage systems, blocked with debris after years of drought...

There was flash flooding...but the areas which suffered most were the new housing developments...full of brick houses on cement slabs. The older style Queenslanders on their high bases survived virtually unscathed....

Unfortunately, in the aftermath, a large number of mature trees, both natives and exotics, have slowly turned up their toes and died or are dying from the top down. It appears that after so many years of adaptation to drought conditions, the prolonged waterlogging stressed the trees so much they were easy prey to a root fungus, which did not succumb to the various treatments tried.

Among the casualties is our beautiful 35 year old Lemon Myrtle (*Backhousia citriodora*) which died slowly and painfully in spite of all our efforts to save it. The saddest thing is that, while there are lots of seedlings...none appear to be in places where we'd want another largish tree, and we've had no luck in the past with transplanting seedlings, which don't react well to root disturbance of any sort.'

BANNED GRASSES SEIZED IN BIG W BLITZ

From Grass Notes, No.20.Winter 2008

'Hundreds of illegal Mexican feather grass plants were seized from Big W stores across Victoria, and from the wholesale supplier. The plants selling under the label Summerhill, were in white metal jugs and slatted timber containers. Big W is now working with officers of the Victorian DPI to recall the plants that have been sold and a bounty has been offered for their return.

Mexican feather grass, *Nassella tenuissima*, also known as Texas Tussock, is a potentially serious weed. It has the potential to occupy a greater range of territory than the closely related serrated tussock, *Nassella trichotoma*, regarded as Australia's worst pasture weed. The importation of *all Nassella spp.* to Australia is prohibited under Australian quarantine regulations.

Confusion about the name and identity of this grass allowed it to be illegally imported by mail order from Great Britain under the name *Stipa tenuissima*. From 1996 until its detection in December 1998 at Mt. Macedon, it was propagated for sale as ornamental specimens. A nursery in NSW is known to have grown and sold potted stock as "elegant spear grass" the name usually applied to the Australian native grass *Austrostipa elegantissima*! Since then, plants have been found growing as ornamentals in private and public gardens.

If such a weed can get past surveillance in Victoria, it can certainly happen anywhere. Mexican feather grass is a 'declared' pest plant.'



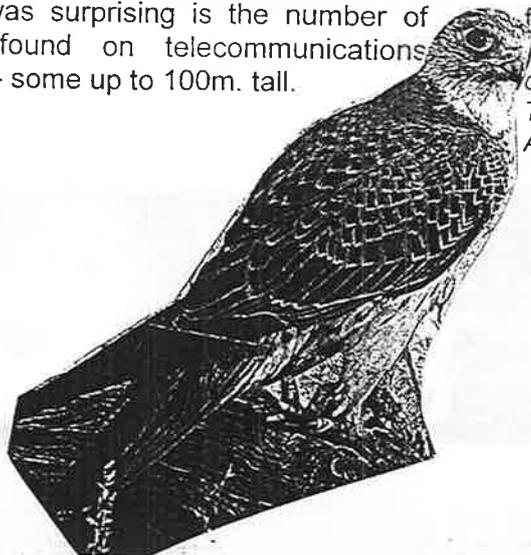
A Native Grass that Thrives on Diesel
Adapted from Wildlife & Habitat Support
Group Newsletter Vol13. Iss.4 Jul/Sep
2008.

'A hunt for native grasses suitable for use in the rehabilitation of diesel-contaminated sites has found one, *Cymbopogon ambiguus* or Lemon-scented Grass, which actually grew faster in contaminated than in clean soil.

The roots of grasses contribute to the breakdown of hydrocarbons in the soil by the secretion of compounds that stimulate the action of micro-organisms in the root zone. The grasses act as an accelerant by providing a food source to kick-start the action of the micro-organisms, which then degrade the pollutants. It appears that the roots are excreting organic compounds into the soil that fortuitously select in favour of bacteria which are able to degrade diesel. In effect, they are their own enrichment factories.'

The current plight of the grey Falcon

The falcon is not one of my favourite creatures, because their visits used to upset our caged birds. They certainly are bold and menacing to smaller prey. In a recent newsletter from the Atlas of Australian Birds I have learnt that some aspects of their ecology have created much interest. One is the fact that only one nest was found in a Eucalyptus tree along a watercourse, a situation which had been considered typical for Grey Falcons nests. During a recent study, all nests appeared to be old corvids' nests. What was surprising is the number of nests found on telecommunications towers - some up to 100m. tall.



Swift parrots

Mainland bird surveys this year highlighted that the majority of Swift Parrot records were through Central Victoria, and some scattered records in New South Wales. Over the previous few years surveys have been regularly conducted in Tasmania. The birds 'breeding distribution is restricted to areas of forest that have sufficient nest holes and nearby food trees, primarily Tasmanian bluegum (*Eucalyptus globulus*) and Black gum (*Eucalyptus ovata*). As flowering events vary from year to year, the parrots may not use the same areas in consecutive years.'

'In the four years of fieldwork few Swift Parrots have returned to nesting sites. During the 2007-08 breeding season a large number of Swift Parrots were recorded in the Southern forests from Huonville to Southport, an area that had no previous nest records. While most of the population appeared to be in this Southern region, Swift Parrot nesting was also recorded on South Bruny Island, Kelcey Tier near Devonport and on Maria Island. Swift parrots have generally been considered to be a dry forest species, however, in the last two breeding seasons the vast majority of the population have been found in wetter forests. These areas of wet forest habitats such as the Southern forests and South Bruny Island appear to be extremely important, particularly when flowering is poor in the drier forests. It is necessary to ensure these wet forest areas are surveyed during breeding seasons to come. At the time of writing a large number of the birds had descended on Weilangta State Forest for the 2008-09 breeding season.'

Information on the above two articles courtesy Volunteer, the newsletter of the Threatened Bird Network and Atlas of Australian Birds. Iss.27-October 2008)

Our little Pollen Porters

It is not until one sees a swarm insects busily working sweetly scented, nectar filled blooms such as the prickly box *Bursaria spinosa* that it is realised there are a myriad of insect all enlisted in the pollination service. To ensure the plants are able to attract the pollen porters they are endowed with curious features which are no better exemplified than by our Tasmanian orchids. Examples of these characteristics include the sweet scent of red beaks *Lyperanthus suaveolens* and bearded midge orchid *Genoplesium morrisii*, the female pheromone attractants of the tailed spider orchid *Caladenia caudata* and copper beard orchid *Calochilus campestris*, the deceptive pseudo-pollen of the potato orchid *Gastrodia procera*, the mimicry of nearby native bush pea flowers and native irioids, by the leopard orchid *Diuris pardina* and rainbow sun orchid *Thelymitra polychroma*, the rich nectar pools deep within the throat of the pink autumn orchid's labellum (*Eriochilus cucullatus*) and the bold colours of the wax-lip orchid *Glossodia major*.

Pollinating insects have also evolved specialised attributes such as eye receptors capable of seeing the far end of the UV spectrum and sensitive smell receptors. As a consequence, where we only detect scentless white flowers of the sweet hounds tongue (*Cynoglossum suaveolens*) the insects perceive them as pale blue with dark maroon nectar guides emitting sweet scent.

This insect pollination article is the third in a trilogy of pollination ecology articles, with the previous two exploring wind and water pollination as well as the roles bees, mammals and birds play in the plant's mating game.

When the sun doesn't shine

Some plants particularly orchids have developed a default self pollination option when their pollen porters are absent or go on strike. Sensitive orchids prefer not to waste their energy by flowering when dull, cool or windy conditions suggest that their pollinators will remain dormant. Some orchids such as the slender sun orchid *Thelymitra pauciflora* can self pollinate without opening (cleistogamy) as an option if the weather remains cool and overcast. Others may open normally, but revert to self pollination if their pollen porters fail to visit the open flower. This process (autogamy) is common amongst the onion orchids *Microtis* sp. and the diminutive, cryptic beech orchid *Townsonia viridus*, which hides within the litter on mossy forest floors.

Trigger plants give pollinators a thumping good time

Deservedly, the 200 odd species (surprisingly world's 7th largest genus)¹ of mostly Australian trigger plants (*Stylidium* sp.) are considered as one of our most appreciated floral heirlooms. They vary from the pygmy trigger plant (*S. calcaratum*) located on freezing mountain tops to 1.5m high tree trigger plants (*S. laricifolium*) situated in steamy Queensland billabongs to climbing trigger plants (*S. scandens*) sited in SW Western Australia coastal heath lands. Each species is designed to target endemic flies, bees, wasps or beetles pollinators.

Although nature loving kids and adults have been fascinated by the flipping of its trigger few fully understand the trigger mechanism. The trigger is actually a motile column (also characteristic of many orchids) consisting of the fusion of the male's filament and the female's style. This brings the anther and stigma lovingly close together on the column's tip. Critical to the accuracy of the column's movement, is its ability to always flip in the same

¹ Darnowski Douglas W., *Triggerplants* Rosenberg Publications

way irrespective from where the trigger stimulus occurred. This movement is termed *seisomonastic*.

As a consequence of each trigger plant species being able to arrange their 4 petals and the labellum (small modified 5th petal) to form a uniquely orientated landing platform, the column is able to direct its *seisomonastic* precision to strike each visitor with pin point accuracy. In the early stages of flowering, once the unsuspecting insect is lured into position the column's tip dabs the insect with pollen. Once the flower ages the stigma becomes receptive on the column's tip as the pollen dries up, collecting only pollen from insects which have visited fellow species, thereby limiting hybridisation.

Their intriguing life history is not complete without mentioning the carnivorous behaviour. Trigger plant flower stems are covered with minute glandular hairs tipped with glistening drops of gluey mucilage, akin to sundews (*Drosera* sp.). These are designed to trap and digest very small, non-pollinating, insects which give them a nutritious boost. This invigorates them to grow taller in the nutrient depleted soils, increasing the likelihood of visits from pollinating insects.

Pollinators do it with Style-words

Another intriguing Trigger plant genus includes the ten, bright pink flowering, ephemeral species of styleworts including the possibly extinct Tasmanian hairy stylewort *Levenhookia dubia*. The group's less sophisticated pollination process employs a large touch sensitive labellum. It reacts, like the column of the trigger plant when stimulated by the appropriately sized insect. This in turn releases the cocked stamen to strike at the insect. Unlike the trigger plant, they do not have a mechanism to reset themselves. The stylewort's lower order of refinement is also demonstrated by its reliance on pure chance, that a pollen-laden insect will brush past and transfer pollen onto the sticky stigma before departing.

Flies, gnats, midges and mosquitos

Long tongued flies pollinate geraniums and irises

The remarkable **long-proboscis** South African flies whose needle-like mouth part are up to 70 mm or 4 times their body length are one of nature's curiosities. Without an ability to retract their prodigious appendage, they are committed to fly with them extended forward or tucked loosely below their bodies. Due to millenniums of co-evolution, each fly's proboscis perfectly matches the curvature and length of their pollinating plant's deep floral tubes (hypanthium) giving those exclusive rights to the sweet nectar. Classic *rhinomyophily* pollination stories include the relationship between two species of horseflies (*Tabanidae*) and several tangled-veined flies (*Nemestrinidae*) with some of South Africa's floral gifts to the world, namely the geraniums *Pelargonium* sp. and well known genera from the iris family namely *Gladiolus*, *Babiana*, *Sparaxis*, *Homeria* and *Ixia*. As a result of their vividly coloured flowers and bold nectar guides many of these species are flower garden favourites in southeast Australia, others environmental weeds. Luckily without the S. African flies here to open-pollinate these weeds no vigorous new hybrids will arise. However in S. Africa the future of these finely tuned life cycles seems extremely tenuous and risky.

Short tongued flies are attracted to putrid scents

The adults of short tongued flies such as the hovering bee flies (*Bombyliidae*), bow flies (*Calliphoridae*), hover flies (*Syrphidae*), soldier flies (*Stratiomyidae*), bristle flies (*Tachinidae*), march flies (*Tabanidae*) and wasp-mimicking flies (*Stylogaster* sp.) along with mosquitoes are all known pollen porters servicing a wide range of promiscuous incigenous plants particularly the daisy and myrtle family. They are also known for their biting and predatory natures as well as their fondness for rotting vegetation or flesh. To take advantage of the adults piercing and sucking mouth parts flies seek out decaying flesh, livid-coloured,

rotting vegetation and shallow nectar bearing flowers. Fly pollination (*sapromyophily*) can also be carried out when blowflies, attracted by putrid smelling floral mimics, seeks out egg laying sites. A champion example is the brown and yellow spring flowering stinking roger *Hakea denticulata* which smells like rotting wallaby.

The slender, dark coloured midge orchids *Genoplesium* sp. as obligate seeders, actively seek to attract small bee flies. They employ their fruity fragrance, sweet nectar bearing, upside down flowers crowded into dense terminal spikes and an ability to rapidly flower in recent burnt or cleared areas. To aid with their seed dispersal the pollinated flower stalks elongate well above their surrounds.

In wetlands, species of pennywort (*Hydrocotyle* sp.) and cape pondweed (*Aponogeton distachyos*) are frequented by hoverflies, whose larva parasitise earthworms. For those who have been attacked by blood thirsty female midges, flies or mosquitos which skim between flowers on a wetlands' surface, be consoled in the fact that your blood has enabled their breeding cycle to be completed.

Orchids love affair with fungus gnats

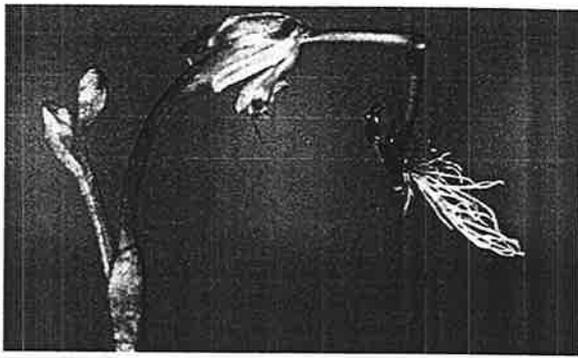
For similar reasons to those that attract flies, the helmet orchid *Corybus recurvus* entices fungus gnats (family *Mycetophilidae*) (Jones 1970) to their ground hugging, fungus-like dull green and reds flowers. They employ their fungus-scented flowers to mimic the small fruiting bodies of fungi which provide larval food for the gnats. Once pollinated the flower shrivels and then rises on an elongated stalk blocking further pollination. Other examples are the colony forming mosquito orchid (*Acianthus pusillus*) and mayfly orchid (*Acianthus caudatus*), which attract small gnats by nectar incentives and their strong musty odour emitted on warm days. Alternatively as a back up, they can just to self pollinate!

Some of the well known greenhoods (*Pterostylis* spp.) emit alluring pheromones of the female **fungus gnats** or, less commonly, of a mosquito species. This is intended to entice the male onto the cocked elastic labellum. Once triggered the labellum flips inwards encapsulating the insect inside the flower. In its frantic attempts to escape, the gnat initially brushes its pollen load onto the stigma before being directed by columnar wings to be pollen dusted and finally set free. As a testament to their very short memories and the power of the pollination process, they soon suffer a repeat episode.

The search for Fairy Lantern's pollinators

The virtually subterranean fairy lanterns (*Thismia rodwayi*) have bright, small, fleshy red and orange tubular flowers. These cryptically emerge in spring above their leafy forested soil layer in a concerted attempt to attract pollinators. Fairy lanterns pollination ecology, like many other species, still requires significant research to be fully understood. Current investigations by dedicated researchers (Mark Wapstra, Brian French, Noel Davies, Julianne O'Reilly-Wapstra and David Peters) have revealed some of the fundamentals which can help solve this pollination mystery. Weirdly, for a forest floor dweller, a detectable odour akin to rotten fish was detected in laboratory conditions, suggesting it has the potential to be pollinated by flies. This observation is supported by studies of *Thismia clandestinus*. This species is similar in nature to the huge, fly pollinated tropical species of *Rafflesia*, whose smell and visual clues deceive flies with the false offer of food and a safe breeding site. Other observations have revealed holes in fairy lanterns floral tube walls and minute soil or faecal deposits from presumably small insects. Chemical analysis of the volatile scent compounds add further complexity to the puzzle in that they are not typical of the fishy odour scent but rather have been implicated in behavioural responses in pollinators such as termites, ants, wasps, springtails beetles and flies. In summary, the jury is still out on the fairy lantern's pollinator and awaiting further research.

Wasps, sawflies and ants



Orchids frustrate stupid thynnid wasps

It has been known for some time that worldwide, terrestrial orchids apply a classic form of mimicry to achieve pollination by balancing a multitude of common plant derived compounds to imitate sexy female wasps. Recently it has been revealed that many of the Australian terrestrial orchids employ only one chemical compound to mimic a single pheromone to fool just one species of wasp². This makes these orchids fully dependant on the targeted species of wasp thus forming a 1:1 relationship. Examples mentioned in this recent research revelation by Dr Rod Peakall include the broad-lip bird orchid *Chiloglottis trapeziformis*. Other orchids which attract the wasps without rewarding them include the duck orchids *Caleana* spp., elbow orchids *Thynniorchis* sp. and spider-orchids *Caladenia* spp.

Really this is a bad news story from the wasp's perspective as he turns up fairly randy to the female wasp impersonator and finishes up totally frustrated. However many males thynnids do successfully contribute their part in the wasp life cycle.

This starts with the flightless female wasp emerging from her underground cell and climbing up on a grass stalk or low shrub. Here, posing with erect antennae, she releases a pheromone unique to her species. If he is not tricked by an orchid mimicking the female, he is able to fly off and mate with her on the wing. The female is fully reliant on the male to supply her food during this journey. If the male wasp has been tricked, he instead seizes an elasticised labellum causing him to be thrown into the pollen-dusted column tip, satisfying the orchid's pollination but not the frustrated wasp.

Alternatively the happy couple finally part company with the gentleman wasp being a new aged guy relocating her back to the original site. Here, the pregnant mum burrows underground where she parasitises scarab beetle **Thynnid wasp pollinating a Hammer Orchid**

larva (corbie or curl grubs) by directing the long proboscis to inject her eggs. Like the orchid, the parasitising wasps show no sympathy in their reproduction game. Interestingly, to reduce the sex competition from the actual female wasps, records indicate that many of the thynnid wasp-pollinated orchids flower just before the females emerges.

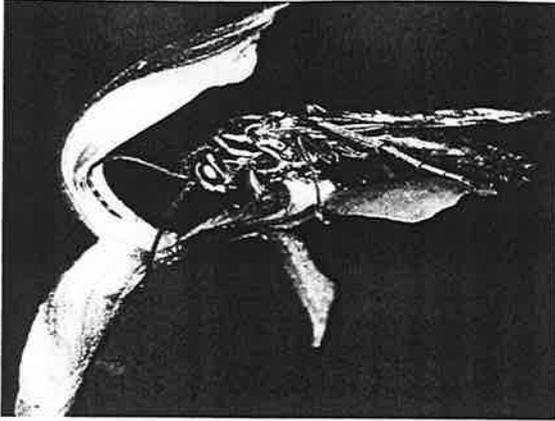
Despite this sexual baiting process, being apparently a risky, extinction-threatening evolutionary strategy to both the cheating plant and fooled wasp, it is common amongst 150 but possibly 300 species of Australian terrestrial orchids. The orchids benefit by not making nectar and conserving its pollen. Unfortunately for the orchid, the wasp stays on the flower for only a millisecond, before perceiving the orchid's trickery. Rarely are the sucked-in wasps sufficiently stimulated by the chemical pheromone to actually attempt to mate! In recognition of the thynnids as a key wasp species in the pollination game, the reclassification of the elbow orchids resulted in them being renamed *Thynniorchis* including *T. huntiana* and *T. nothofagicola*, to highlight their symbiotic relationship with the thynnid wasps.

Nectar feeding wasps are busy pollinators

The stoutly built, hairy, black and orange coloured native flower wasps and dark blue bluebottle wasps (family *Tiphiidae*) feed and pollinate eucalyptus blossoms. Other few species are attracted to the bearded orchid (*Calochilus herbaceus*). The orchid employs sexual enticements of its pheromone scent and pairs of eye-like glands at the base of the prominent hairy labellum to lure the excited male wasp to land on the

² F.P. Schiestl, et al, *The Chemistry of Deception in an Orchid-Wasp Pollination System* Science Oct 17, 2003

labellum before engaging in its pollination service



The intriguing, yet cruel life styles of other wasps are worth illustrating. Although the exotic European and English wasps (family *Vespidae*) are notorious for stinging to protect their nests and hunt caterpillars to feed their larvae, they do have a redeeming attribute by way of pollinating sweet nectar bearing blooms. The adult, blue sand wasps and digger wasps (family *Sphecidae*) also fed on nectar, which provides them energy for impaling their paralysed prey on their sting or mandibles prior to flying to their ground mud nest. The yellow banded ichneumon wasp and caterpillar

wasp (*Ichneumonidae*) are important contributors not only as pollinators but also as natural pesticides (parasites) working to reduce those destructive pest caterpillars.

The adult Sawflies (family *Pergidae*), a variety of non stinging wasp, are also active pollinators of flowers. Their caterpillar-like larva (spitfires) feed destructively on native plants and often form tight clusters which defensively spit acrid liquids. The flying duck-orchid *Caleana major* has mimicked the female wasps by employing their upside-down flowers, which have a pouch formed by broad columnar wings. When the insect lands the labellum is triggered to plug the pouch trapping the insect. Here the insect transfers its pollen and collects further pollen before being freed.

It should be noted that ants are poor pollinators, due to their lack of body hair and tendency to damage the pollen during its transport.

Beetles look for landing platforms

Although beetles may have pollinated some of the very earliest of flowers, their contributions are mostly limited to species within the Myrtle and Daisy families (*Myrtaceae* & *Asteraceae*). Most beetle pollinated plants present attractive, robust landing platforms on which the beetles can randomly stagger around transferring pollen from their hairy lower legs and body parts. The flowers tend to be brightly coloured with shallow nectaries, held erect with short sturdy exposed organs. The daisy family's broad tightly clustered flower heads (capitulum) are ideal landing sites being sufficiently robust to handle the vigorous buffeting which beetles meter out. Some flowers even have ornamental beetle-like markings to lure passing mates with the promise of frivolity inadvertently servicing the flowers needs. Many beetles which act as pollen porters include the distinctive wasp-like and hairy longicorn beetles (*Cerambycidae*)



and small nectar scarab and green scarab beetles (family *Scarabaeidae*). Others are more prone to eat and damage the leaves and flowers rather than pollinate them particularly the acacia and eucalyptus leaf beetles *Chrysomelidae* which decimate wattles and gums and the beautiful blue metallic flea beetle which plaques *Rosaceae* such as buzzies (*Acaena* sp.) The myrtle family (gums, tea-trees, heath-myrtles and paperbarks) benefit from the adults of nectar feeders such as the brightly coloured jewel beetles (family *Buprestidae*) and the Clerid beetle pollinating a gum flower

small flattened, soft-bodied plague soldier beetles (family *Cantharidae*).

In the daisy family, the gregarious hairy clerid beetles (family *Cleridae*), the pintail beetles *Mordellidae* and click beetles *Elateridae* are commonly observed on the bright yellow flowering daisies including billy-buttons (*Craspedia glauca* and *C. coolaminica*), dollybushes (*Cassinia aculeata*) and everlasting bushes (*Ozothamnus* spp.) where they feed on the pollen or gather to mate.

Butterflies and Moths

Moths are the cryptic night porters

Most of the 21,000 Australian moths (1400 Tasmanian) are nocturnal, protecting themselves from bird predation by assuming a camouflaged resting stage with cryptic coloured wings flattened to eliminate shadows. The life histories and structures of moth pollinated plants are in accord to the needs of the moths. They remain inconspicuous or even closed during the day with white or pale colours, and little scent. By early evening the plants perform majestic transformations by presenting luminescent colour patterns and wafting out sweet perfumes. Armed with feathery antennae and hairy bodies the moths respond in their roles as pollen porters, in the hope they don't become victims of the voracious sonar wielding bats. Some plant families have co-evolved other features to assist the moths such as having clusters of easily accessible flower spikes on the branch tips and stamen exposed above the necks of the tubular flowers to improve pollen dusting whilst their proboscises are probing the deep nectaries. Plants with these features include the smelly, stinking boronia *Boronia anemonifolia* and the delicate candle-like flowers of the five indigenous candle species including creamy and yellow candles (*Stackhousia monogyna* and *S. viminea*). Weed species such as the strongly scented cottage garden favourite evening jessamine (*Cestrum nocturnum*) also attract endemic moths such as the litter moth (*Crocianthes* sp.).

Once dawn appears the moths retire and the plants revert to their neutral day time forms. Other indigenous examples include the three delicately scented members of the mallow family (*Malvaceae*) namely the riparian, Tasmanian currajong (*Astertrichion discolour*) the fragrant hempbush (*Gynatrix pulchella*) and the salt marsh-loving, thorny saltmallow (*Lawrencia spicata*). Finally the aptly named native cranberry moth (*Poecilasthena* sp.) enjoys the nectar from, your guess it, the native cranberry (*Astroloma humisifusum*) and other epacrids whilst the cute satin green forester (*Pollanisus* sp.) pollinates the guinea flower (*Hibbertia* sp.).

Butterflies are solar powered pollinators

Butterflies are warmth loving fauna, requiring protected sunny sites for basking in order to bring their body temperatures well above the ambient air temperatures before they can go about their pollination activities. Butterflies possess straw-like proboscis for sucking up deep pools of nectar within the flowers corolla. Their larva on the other hand are destructive, commonly feeding on flower buds or foliage at night and retreating in the day to looped shelters of tied leaves amongst tussocks of native grass and sedges. Specific flowers have adapted to meet the butterflies' needs by forming long thin corollas with prominently exerted anthers and stigmas as seen in the rice-flowers *Pimelea* sp., Other species such as the daisy family are less tuned to butterfly pollination being visited by many other insects as well.

Butterflies seek their favoured flowers

Many flowers benefit from the pollination services of a limited range of highly adapted nectar seeking butterflies. For example the rapid and erratic flying, "Skippers and Darts" family (*Hesperiidae*) which includes the white grass dart and the choastola skipper (*Taractrocera papyria* and *Antipoda chaostola*) specifically target the rice-flowers *Pimelea* sp., groundsels *Senecio* spp. and everlastings *Chrysocephalum* spp.

The spectacular, Macleay's Swallowtail, (*Graphium macleayanum*) as the one Tasmanian species from the family *Papilionidae*, has adapted to feed exclusively on nectar from the cherry riceflower and tall riceflower (*Pimelea drupacea* & *P. ligustrina*). These are sited on moist forest margins and roadsides and have larva that target nearby sassafras leaves *Atherosperma moschatum*.

The Wanderers and Browns (family *Nymphalidae*) which display spiralling and buffeting flight behaviour to defend their territory, often seek out nectar sources which contain toxic bioactive ingredients. This feature, along with their bold colour patterns and eyespots on their wings helps protect them from bird predation. The common brown and shouldered brown (*Heteronympha merope* and *H. penelope*) favours the prolific nectar-bearing flowers of native box



box *Bursaria spinosa*, whilst the earliest emerging spring butterfly, the Hobart brown (*Argynnis hobartia*) provides pollination services to the dwarf riceflower and slender riceflower, (*Pimelea humilis* and *P. linifolia*). Not to be overlooked is the wind born spring migrant, the Australia painted lady (*Vanessa kershawi*) which pollinates the weedy cape weed (*Arctotheca calendula*) and curling everlasting (*Helichrysum scorpioides*).

Finally the family of "Blues, Coppers and Hair Streaks" (*Lycaenidae*) butterflies have a mutually beneficial larval stage with ants that protects them in reward for secretions of honey dew. The adults service the pea and native heath

families (*Fabaceae* and *Epacridaceae*). **Hobart brown pollinates riceflowers** Clovers and lucerne (*Trifolium* sp. & *Medicago* sp.) are favourites of the delightful pale blue coloured, common grass blue (*Zizina labradus*) whilst tree broomheath (*Monotoca elliptica*) is favoured by the rare small Mathew's Blue (*Neolucia mathewi*).

Alpine Pollinators are under threat

Visitors to alpine areas admire the magnificent forms of the Tasmania's 5 species of cushion plants and numerous mat-forming plants. They all are characterised by closely packed erect stems supporting whorls of fleshy leaves clumped tightly together giving the appearance of green cushions. Flowers form at the tips resulting in raised mats of tiny white blooms. These adaptations to surviving the torrid alpine climate also ensures they are attractive and accessible to the tiny alpine pollen porters most of which are hardly visible to the naked eye. Examples include the sage cushion plant *Pterygopappus lawrenci*, the diminutive snow cushion plant (*Donatia novae zelandiae*) and the large bolster heath forming Tasmanian cushion plant *Abrotanella forsteroides*.

Interestingly, the trigger plant family also has a range of alpine adapted members (*Phyllachne* sp., *Oreostylidium* sp., and *Forstera* sp.) They are less specialised than the trigger plants, with no labellum and only an in-active column, but manage to compete successfully for insect pollination services.

Cold tolerant moths and butterflies also provide valuable pollination services during summer whilst still being able to survive the vagaries of an alpine climate. For example, the delightful emerald moth (*Chlorocoma rhodothrix*) thrives in the alpine regions seeking out tea tree (*Leptospermum* spp.) for protection and nectar. The meandering low flying leprea brown butterfly (*Nesoxenica leprea*) actively seeks out the prostrate alpine heath *Pentachondra pumila*, whilst the mountain blue (*Neolucia hobartensis*) as the most alpine-adapted butterfly in Australia targets alpine buttons *Cotula alpina*, mountain daisies, *Erigeron* spp. and the snow daisies *Celmisia* spp. To protect itself from predation the undersides of its wings blend well with the grey lichens and dead twigs common in alpine areas.

Some butterflies, including the *Hesperilla* skippers are known as local altitudinal migrants travelling to mountain tops for mating and nectar bearing daisy flowers such as the snow everlasting *Helichrysum milliganii* and grassland paperdaisy *Leucochrysum albicans*, before returning to lower altitudes to breed.

Conclusion

These unheralded pollinators could be described as “keystone species” given their iconic and critical pollination roles performed by them throughout our woodlands, forests and non forested communities. With climate change likely to impact on highly tuned relationships and pollination regimes within warming alpine refuges, a rapid decline in species diversity can be predicted. Irrespective of how inconsequential or insignificant species appear, their roles in maintaining the environments checks and balances need to be understood. To capture the many unknowns, the mainstreaming of pollination ecology as a science discipline seems timely.

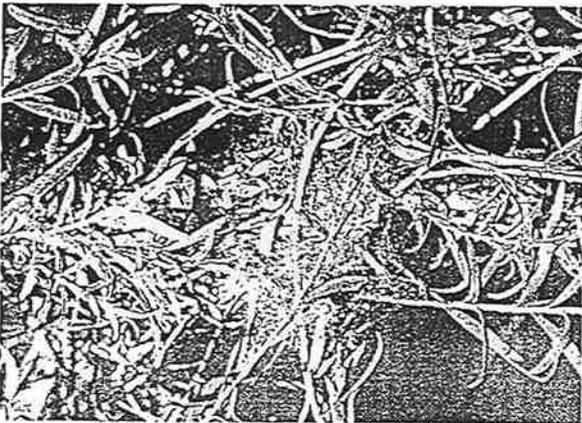
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The Plant Doctor

Webbing Caterpillar

Webbing caterpillar is a common name given to a wide number of web-utilising moth larva. The grubs can vary in habit from single caterpillars that spin leaves together for food and shelter (also called leaf-roller caterpillars), to the more usual mass congregation in a single web engulfing leaves and stems as they grow in an untidy mass of droppings and plant debris. The grubs are rarely seen during the day, preferring to use the night as protection from marauding birds and other predators. Even when they do come out they are very hard to see as their green and brown striped bodies camouflage them very well.



Webbing caterpillars are usually found deep inside a plant where the foliage is thickest. Their preferred food plants are mainly small-leaved, dense-foliaged members of the Myrtaceae family. Members of genera such as *Leptospermum* and *Melaleuca* seem to be the worst affected, but *Babingtonia*, *Beaufortia*, *Kunzea*, *Agonis* and sometimes *Thryptomene* are also on the list of plants affected.

Control / Non Chemical

Small infestations can simply be pulled off by hand, along with any webbing, and crushed. Larger infestations can be pruned out or removed by hand and crushed. When removing or handling nests gloves should be worn as larger ones can contain irritating hairs. Sometimes if the web is disturbed, the larva will abseil down to the ground on silken threads only to disappear in the mulch.

Control / Chemical

The above method should always be tried first, only using chemicals as a last resort. Try using Pyrethrum first, this is a relatively low toxicity chemical and will do less damage to beneficial insects and birds in the garden. Remember to spray the ground underneath the bush to get those caterpillars that have abseiled down to the ground.

New Products

Seamungus



Seamungus is a soil and plant conditioner manufactured by composting seaweed, fish, humic acid and animal manure. Seaweed contains naturally occurring growth stimulants along with a huge range of other essential elements, and its ability to retain moisture is well documented.

Seamungus can be used to revitalize your plants throughout the year. It will help increase resistance to pest and disease, stimulate healthy growth, both above and below ground, and most importantly, aid in improving the well-being of your plants.

Grasses and Strappy-leaf Plants

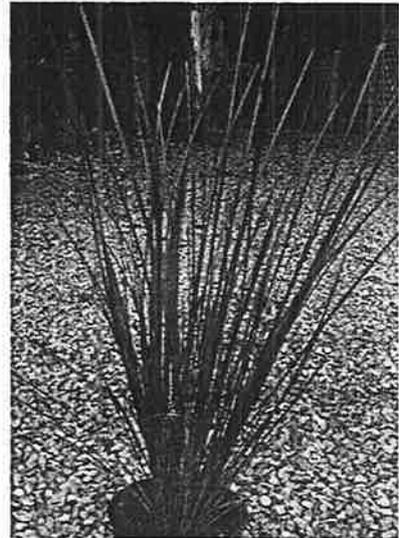
There has been a growing trend over the last few years for tufting plants and grasses for planting in the garden. This has been fuelled by television lifestyle programs such as Burke's Backyard and Backyard Blitz, which usually feature tufting plants somewhere in the landscape. They are very useful for defining the edges of garden beds, for separating two areas in the garden or for a mass planting. Much time and effort has been spent on selecting and breeding new and improved versions and in this article I'd like to introduce you to some of the new Lomandras.

***Lomandra longifolia* 'Tanika'**

This is a selected form of *Lomandra longifolia* that has quite narrow, mid to dark green strappy leaves to a height of about half a metre. Yellow flowers are produced on short stalks in early spring.

'Tanika' is reasonable drought tolerant and will only require a deep watering every three to four weeks during hot, dry weather. It will grow well in most soil types in a sunny or partly shaded position, and is tolerant of heavy frosts.

Little or no maintenance is required other than an occasional application of slow release fertiliser in autumn each year.



Lomandra confertifolia* ssp. *rubiginosa

sold as 'Stormy Seas' or 'Seascape'

This select form boasts fine, blue-grey foliage that turns almost purple at the base of the leaves. It grows as a weeping tussock-like plant to about 50cm high by 75cm wide, and produces fragrant yellow flowers on short stems in spring and summer.

Hardy in most well drained soils, in full sun or partial shade, it will also tolerate heavy frost. As with 'Tanika', it is reasonably drought tolerant, only requiring a deep watering every three to four weeks during hot weather once established.

Lomandra multiflora* ssp. *dura

Many flowered matt-rush

This tough perennial plant occurs widely in South Australia and forms a slender to robust tussock with grey-green leaves, 0.45cm in width and up to 65cm in length. It's small, yellowish bell-shaped flowers are very attractive to honey eating birds and appears from June to January.

This *Lomandra* grows best in dappled shade to full sun and makes an ideal feature plant in a rockery, around a pool or pond, as a border or simply interplanted amongst other shrubs and grasses. It also makes an excellent container plant.

It is an extremely hardy plant that will adapt to a wide range of soils and situations, from sandy soils to heavy clays. It will also tolerate an acidic to highly alkaline soil pH, and is hardy to most frosts.

