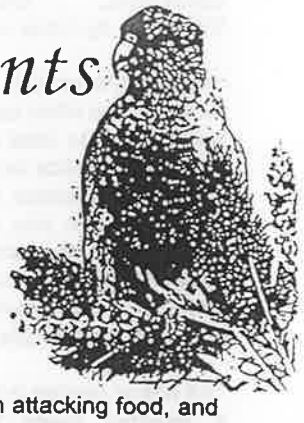
ASSOCIATION of
SOCIETIES FOR GROWING AUSTRALIAN PLANTS Inc.

Liaison

Wildlife and Native Plants Study Group Newsletter



SUMMER 2002/2003 EDITION. NO. 40 **ISSN: 1038 7897**

Dear Members,

Well Summer is well and truly upon us, as many Australians experience the devastation once again of fires, drought and extreme temperatures. I do hope you have been one to escape the fires, it is so sad to see so much devastation, and the loss of species and habitats will be profound in the Aussie bush and in native gardens. Of course there are many critics who blame the 'greenies' or those of us who plant native species and expound the virtues of biodiversity, but that unfortunately is life. Let's hope that recovery is swift and that people will plant gardens with our beautiful Australian flora.

As I write the temperature here is about 44° and we are experiencing hot, dry north-easterly winds - it is yet again a day of extreme fire danger. We all, I'm sure, could do with lots of rain to restore the dying plants. Even in these days of extreme temperatures the Aussie natives are looking very sick, and many mature natives have already lost their battle. Such a shame, when healthy specimens cannot take the hot, drying winds and the continued lack of moisture. We have had only 250mm rain in the past 12 months, which is well below our average - even the naturally occurring species are curling up their toes! There is little moisture anywhere, and we have birds, kangaroos, small mammals and reptiles coming up around the house for food and water. Yesterday we had a visit from a heath monitor (about 100cm. long) which came up to our front verandah, seeking shade and nourishment - even the shingleback lizards had to move aside!

Every morning we wake to the sounds of young grey currawongs caroling, magpies calling, galahs and cockatoos screeching and many other heath and mallee birds whistling and shrilling. As we have many Aussie birds in our sanctuary and aviaries, the local wild birds are also attracted in. Many have made the area their home,(Mallee ringnecks, galahs, lorikeets, rosella parrots, redrumps, magpies, magpie larks, bronzewing pigeons, babblers, honeyeaters, wattlebirds, etc) and have nested somewhere close by in the months leading up to Christmas. They all know that food and water is close at hand. The trees and shrubs are brimming with birds, seeking refuge from the heat and having a feed of insects and seeds. It is a great place to get an education - for both birds and people alike! It is quite interesting to watch the fledglings embark on their great adventure, flitting from tree to tree, copying the parents in attacking food, and even more comical to watch them in the bird bath. Recently we had an endangered malleefowl seeking acacia seeds on our property. This was a rarity to actually see in the daytime. Have you seen anything interesting?

Malleefowl
Leipoa ocellata

Members, we finally have our very own website. Why not check it out. There are lots of links to other wildlife & native plant groups too. Have a look and let me know your thoughts. Our web address is:
http://www.communitywebs.org/ASGAPWildlife/default.htm

Thankyou Australia Post for featuring Australian native plants on recent stamp issues. Check out the Bush Tucker series of stamps which has Quandong, Acacia seeds, Murnong, Lilly Pilly and the Honey Grevillea depicted. Hopefully, these will be followed up with even more issues later.

Thankyou to all members who have forwarded articles or subscriptions since the last newsletter. I do apologise for not banking cheques, or replying to your letters as promptly as I should have, but ill health and hospitalisation has again taken its toll.

Well, Christmas has been and gone, and already 2003 is passing quickly. No doubt many of you, have been able to have some sort of a holiday from work and your hectic lifestyles. Hopefully you spent a few days relaxing, and catching up with family and friends. Perhaps you've been busy planning work in the garden, for when the cooler days arrive. Whatever you have been, or will be doing in the year ahead, I do hope you will find it enjoyable.

Wishing you all the best for 2003. Chris

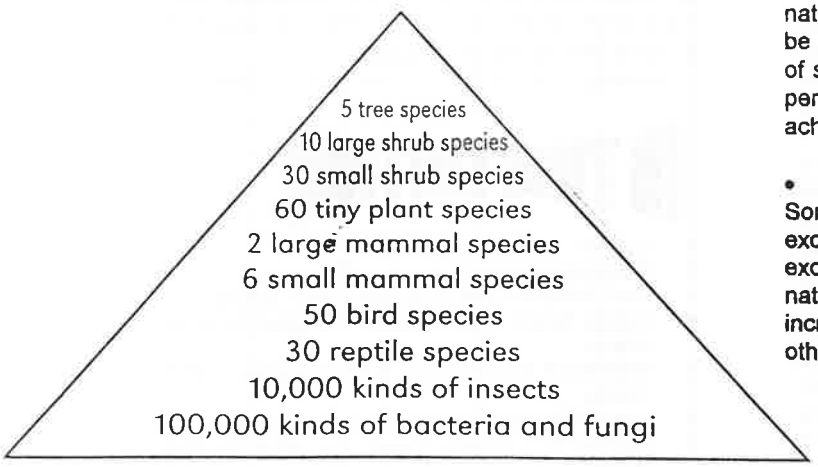
IN THIS EDITION

EDITORIAL : DROUGHT PROOF YOUR GARDEN by Chris Jones

Keeping the garden healthy through the Aussie summer can often be an uphill battle, but at least natives are the ideal choice for low maintenance. Instead of exotics and dried up lawns use native plants and grasses as extensively as possible. *(But of course you already know this, and I'm preaching to the converted!)* Our native plants have adapted to our tough environment and encourage and provide a natural haven for our unique Aussie birdlife and other fauna.

The native garden is low in maintenance because it requires fewer fertilisers and much less watering. This is an important point often overlooked by the zealous gardener of exotics, especially as many Australian states now have water restrictions in place. Try to avoid watering in the heat of the day or evening as plants left wet overnight are more prone to fungal diseases. The optimum time for watering is early morning. A longer soaking every few days beats a quick daily spray, and encourages a strong root system. Don't lose water to the wind. Low water pressure and larger droplet size will reduce wastage through wind drift.

Good management of the garden will benefit not only the natives but also the exotics. Plants should be grouped together according to their water requirements. Thirstier plants do better in a cool area at the bottom of an incline or near a watercourse. A mulched garden bed will also reduce water requirements, helping to reduce evaporation and to maintain moisture. Mulches can also restrict weed growth, giving new plants a greater chance of survival. Mulches should be applied early in the season before the hot dry summer months dry out the soil. Aim for a mulch layer about 10cm thick. And then as the long summer days evolve, sit back and enjoy your garden.



The biodiversity 'pyramid' showing the general proportion and range of life in a theoretical block of native vegetation.

NATIVE **VEGETATION CONSERVATION** AND FIRE **AS A MANAGEMENT TOOL**

Adapted from an Information sheet provided to landowners by the SA Dept. of Environment, Heritage and Aboriginal Affairs.

In many ways fire is a natural part of the Australian landscape. However, while much native bushland is adapted to fire, it can also be seriously degraded where fire is not used carefully.

FACTORS TO BE CONSIDERED

- Variable response of plant species

Some native plants such as sheoak and native pine are readily destroyed by fire and rely on seedling establishment for regeneration. Fire followed by grazing destroys seedlings and is particularly damaging. Other plants such as tea trees and correas regrow from old rootstock following fire while others such as banksias rely on fire to promote the release of seed so that regeneration can follow.

- Fire Intensity

Some plants require high fire intensity to promote natural regeneration, while others are intolerant of high density.

- Fire Frequency

If native vegetation is burnt too frequently, species will be lost. Plants which rely on seedling regeneration will be severely affected if the next fire occurs before the seedlings themselves have started to produce seed.

- Timing

Burning of native vegetation in spring may disturb nesting birds, but may be preferred in terms of reducing fire hazard prior to the oncoming summer. Burning in autumn is often preferred for environmental reasons, but may be less useful for hazard protection. A hot, summer fire may, promote the best regeneration of native plants.

- Pattern of burning

Fire in isolated blocks of scrub can have severe effects. If an entire block is burnt populations of native animals may have nowhere to go and may be lost. Conversely, a pattern of mosaic burning of small patches within a block over an extended period of time may reduce fire hazard and achieve environmental benefits.

- Previous disturbance

Some bushland areas have been invaded by exotic weeds and grasses, and many of these exotic plants respond more rapidly to fire than the native species. In this situation, fire can lead to increased invasion of bushland by exotics. In other situations, however it is possible to

combine fire with other management techniques to control some weed species in bushland.

- Shape and edge effects

Weeds and grasses often creep into native vegetation from the edge, ie. the boundary of the bushland with cleared land. A bushland area with a large edge to area ratio may be severely affected by weed/grass invasion in the event of fire. Roadside vegetation adjoining cleared farmland may be degraded substantially by fire.

PLANNING FOR THE USE OF FIRE

While fire has a role in native vegetation management, each situation needs to be considered carefully on its own merits.

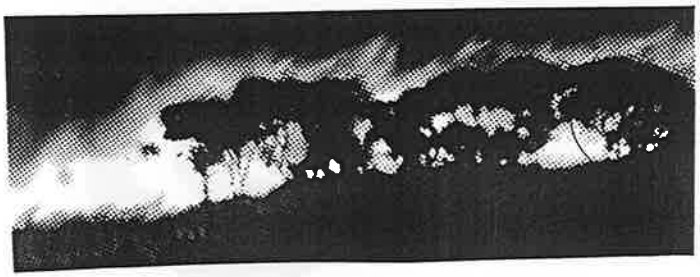
The following broad principles can normally be applied:

- The use of fire in areas of native vegetation should be based on an adequate appraisal of the species present (both flora and fauna), the condition of the vegetation and the overall management objectives for the areas
- Burning for habitat management purposes will usually involve mosaic burning of small patches within a bushland block, with no particular patch being burnt at a frequency which will lead to loss of species, and with any non-local plants which establish after fire being controlled
- Burning for hazard reduction purposes is unlikely to be effective in bushland areas degraded by exotic weeds and grasses unless specific programs to control those weeds and grasses are carried out after fire
- In a situation with many small blocks of native vegetation, narrow strips of roadside vegetation and large scope for weed invasion- eg. in built up areas, fire is likely to degrade bushland unless very carefully planned and managed.

LEGAL AND ADMINISTRATIVE ASPECTS

Local government and bushfire prevention committees, the Country Fire Service or Rural Fire Service work under a `Fire Act '. All activities must comply with the legal framework which operates in each State. There may be district fire prevention plans, or laws in relation to native vegetation. Each landholder will need to contact the relevant authority in their State. Remember burning for hazard reduction purposes should comply with district plans and the relevant Acts and operational Codes of Practice.

Always get the right advice and assistance in such matters.



ENJOY YOUR SUMMER WITHOUT MOSQUITOES

Information supplied by SA Dept. Human Services.

Mosquito activity is at its peak during the summer months when people are on holidays or relaxing. Mosquitoes are not only a biting, irritating nuisance but are also disease carriers.

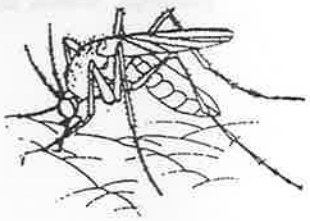
The most common diseases passed on by mosquitoes include malaria, Ross River virus (epidemic polyarthritis) and hepatitis. Some mosquitoes are at their biting best around sunrise and from sunset for 2-3 hours, while others will bite during the day.

HOW CAN WE PROTECT OURSELVES?

- Wear loose fitting, light coloured clothing covering up as much of the body as possible- mosquitoes can bite through jeans and other tightly fitting clothing.
- Use insect repellants containing DEET (Diethyl toluamide) to cover areas of exposed skin. Read the manufacturer's instructions- wash off DEET before retiring to bed and do not sue on infants if the DEET concentration exceeds 20%.
- Use insect screens on your house, unit, houseboat, caravan or tent. If this is not possible use a mosquito net.
- Aerosol knockdown or surface insect sprays are also useful for killing mosquitoes. Mosquito coils are also effective in protecting from mosquitoes.

HOW CAN I HELP CONTROL MOSQUITOES

- Empty all containers which may pool water, eg. pot plant saucers etc. Put sand around the bases to absorb water in each dish.
- Stock ornamental ponds and property dams with native fish and keep the sides clear of plants.
- Cut back and trim trees to prevent leaves and debris from blocking roof gutters.
- Keep all open drains and channels free from obstructions, weeds, grass and other debris.
- Drill holes in tyres used for swings and garden surrounds to allow water to drain .
- Keep swimming pools chlorinated or salted.
- Overturn boats, canoes and dinghies so that they do not hold water after rain.
- Reschedule outdoor activity to earlier in the day when mosquitoes are less active.
- Empty bird baths and pets' drinking water at least once a week.
- Screen all openings to tanks, wells or other large water containers with wire gauze no coarser than 1mm mesh.



SNAKES *by Geoff Coombe*

Basic Needs:

Like all animals snakes have certain requirements to survive - food, water and shelter. Usually the water they need is obtained from their food, as all snakes are carnivorous. Food is normally obtained alive, although a few Australian snakes have been known to eat carrion, eg. "road kills". Shelter used by these secretive reptiles mostly allows them to keep away from potential predators, and because they are ectothermic animals (colloquially "cold blooded") to balance their thermal requirements within the local environmental conditions.

Reasons why Snakes Enter a Property

All basic survival needs of snakes are often readily met in urban backyards or on rural properties, sometimes even in the vicinity of an occupied building. Examining each of their basic requirements, as supplied (even accidentally) by humans, can be instructive.

Food

Almost all occupied buildings will at some stage have house mice and/or black rats in residence. In addition some snakes such as the Eastern Brown snake, can be attracted to bird aviaries, either because of the small birds themselves or to the mice which frequent aviaries for any spent seed.

In some situations snakes may enter a property seeking natural prey, such as small lizards, or even medium sized lizards such as Blue-tongue Skinks. Occasionally, Red-bellied Black snakes may be attracted to fish in an ornamental pond, or to native frogs inhabiting such a water feature, made especially to attract these amphibians.

Incidentally, very few Australian snakes habitually eat insect prey.

Water

As indicated, snakes most often have their water needs met when they eat other animals. In very hot weather they will certainly drink water when it's available, like puddles made by a watering system, a dripping tap, water on vegetation from a sprinkler, swimming pools, ornamental and fish ponds, or a dam.

Shelter

Snakes prefer shelter under which they can readily hide. This is normally anything providing close ground cover. Suitable shelter can include ground hugging vegetation, plants with branches growing to ground level, debris from building/renovating, piles of bricks or timber, loosely stacked firewood, compost heaps, garden prunings, sheets of iron, old carpet left outside, and even weed-mat or plastic intended to smother weeds.

Having an appreciation of the behaviour of our venomous snakes can help you understand why they react when confronted by larger animals, including humans, pets and stock.

SNAKES ALIVE - THE DUGITE IN WA

by Brian Bush, Malleefowl Matter. November 2002

Around October, the local serpents will be doing there thing. They will be on the move: males actively searching for females, while the females and immature individuals forage for mice. Now there is a far greater chance for snakes to enter gardens and investigate sheds, aviaries and chicken runs. If an adult female passes through your yard, then it is likely that over the next few days a procession of males will follow along her pheromone trail. At this time if a male contacts another, they wrestle tightly entwined around each other.

The stimulus responsible for the procreation process, including the male-male combat, is so strong that a so inclined individual may not be as aware of you as would normally be the case. I have grabbed fighting males simultaneously and thrown them in the bag, only to have them continue fighting unaware of their new surroundings.

The most common dangerous snake in South Western Australia is the dugite (also called spotted brown snake). This snake is so variable in colour and pattern that it is almost impossible to describe. It can attain in excess of two metres, although more commonly is from 1-2 metres in length. It is alert and in the warmer weather is generally quick to get out of your way; however it may get caught in a well, in netting, fall in the swimming pool and occasionally enters the house, or is carried in by the cat.

After mating, a dugite may produce several clutches of eggs without getting together with another male until next season. A reservoir of viable sperm is stored away and if there is sufficient food she will ovulate again immediately after depositing her eggs. If there is not sufficient food to provide all the egg yolks, he body will reabsorb as many as is required to sustain her. In some cases, this may amount to the whole clutch. Juvenile dugites abound in late February and March and often find their way into buildings. Although less dangerous, the bite from one of these can cause severe swelling and anxiety in adults; in children it can be serious. The juveniles are typically greenish or brownish with dark head and when disturbed they quickly attain a defensive stance.

COOTAMUNDRA WATTLE

By Rosemary Blemings, Canberra Region

Should we feel ashamed when Australian plants gain reputations of becoming weeds in their own country? The notoriety of Cootamundra Wattle *Acacia baileyana* has arisen as a result of its appeal and use as an ornamental species in areas far beyond its origins in the Cootamundra region of NSW. It was widely planted 2-3 decades ago. Growing quickly into small trees in urban open spaces and bare residential blocks its instant-green seemed an ideal way to hide the ravages of development.

Each Canberra August the first delicate yellow pom-poms herald the arrival of warmer weather and the species is praised for the cheering colour it brings to parks, open space, gardens and streets after a cold, dry winter. Numerous long-viable seeds are produced. Some are dispersed by ants. Others lie dormant until a fire splits the seeds and triggers germination. Seedlings and saplings form dense thickets that out-compete other native understorey species.

The mature trees have a reputation for dying when about 15 years old or becoming diseased and borer-ridden to the point of partial collapse. To those with a strong northern hemisphere vision of forests and parkland the brittle, brown, untidy hulks that Cootamundra wattles become when dead are an eyesore. Messy and tangled they represent "all that's wrong with the Australian bush".

The dead or partly decaying trees are also targets for those directed to remove material which is a potential fire hazard. For Landcare and Parkcare volunteers the wattles add to the annoyance factor when removing woody weeds such as Cotoneaster, Privet, Pyracantha and Hawthorn. The weeds' berries are excreted by birds ranging from Currawongs to Silvereyes as they perch in the wattles. Crawling under the branches to 'cut and dab' woody weeds soon loses its appeal.

In death or decay as in vigorous life *Acacia baileyana* trees play a vital role as habitat and food-source vegetation for numerous species of birds. Often these birds progress through natural or modified woodland and grassy woodland gleaning busily in the communal safety of mixed feeding flocks. For them Australia's "messy understoreys" are vital as a range of feeding situations are provided, yielding the diversity of prey species needed by birds both common and rare.

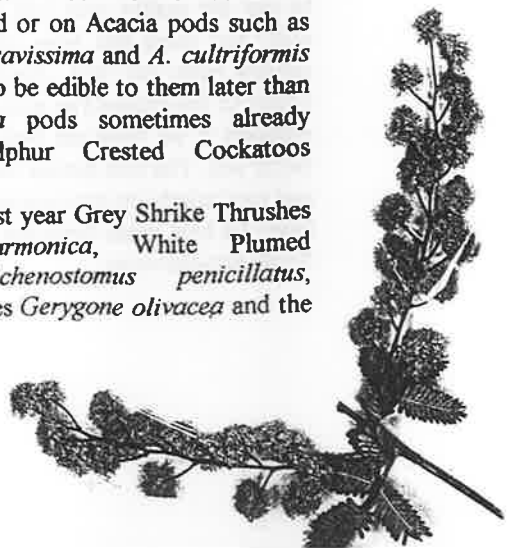
There are numerous Cootamundra wattles throughout the 2 hectare 'patch' of urban open space where I regularly walk, with binoculars handy. The trees, with several other non-indigenous natives, are originals or descendants of those planted in the seventies when the former sheep-grazing area was revegetated as surrounding suburbs were developed.

Silvereyes *Zosterops lateralis* feed there and also make regular gleaning trips into suburban gardens. Weebills *Smicornis brevirostris* and Thornbills, Buff-rumped *Acanthiza reguloides* and Yellow rumped *Acanthiza chrysorrhoa* in particular are also numerous and vocal residents. Grey fantails *Rhipidura fuliginosa* perform aerial ballet as insects are sought on the wing. They return to fan their tails amongst the foliage. The fourth 'noisy' species commonly heard are Superb fairy wrens *Malurus cyaneus*. Scarlet robins *Petroica multicolour*, the males visible almost to the point of vanity between August and March, have a characteristic way of darting from branches to the ground and back with pinpointed insects. Golden Whistlers *Pachycephala pectoralis* are also regularly seen.

These common but delightful birds can be a distraction. Persistence and patience will reveal the presence of less usual species. A flock of Red browed finches *Neochmia temporalis* feeds on the ground using the wattles' branches as a haven should anxiety interrupt their search for seeds. Double barred finches *Taeniopygia bichenovii* are becoming harder to find in the ACT but there usually seems to be a small, perhaps family group, of up to nine individuals around. They also take refuge in the trees' branches 'meowing' to each other or to those still feeding on grass seeds below.

Speckled Warblers *Sericornis sagittatus*, even rarer and on some threatened species lists, are represented by a pair. Cryptically plumaged they may be found nonchalantly preening on Cootamundra Wattle branches or busily foraging in the camouflaging grassy understorey. The nationally threatened Superb Parrot *Polytelis swainsonii* comes to this north ACT 'patch' around Christmastime to feed on the ground or on Acacia pods such as those of *Acacia pravissima* and *A. cultriformis* since these seem to be edible to them later than the *A. baileyana* pods sometimes already stripped by Sulphur Crested Cockatoos *Cacatua galerita*.

In the past year Grey Shrike Thrushes *Colluricincla harmonica*, White Plumed Honeyeaters *Lichenostomus penicillatus*, Western Gerygones *Gerygone olivacea* and the



rarer Rufous Fantails *Rhipidura rufifrons*, Red Capped *Petroica goodenovii* and Rose Robins *Petroica rosea* White winged trillers *Lalage tricolou* and Varied Sitellas *Daphoenositta chrysoptera* have been recorded making more 'migratory' appearances amongst the feeding flocks using Cootamundra Wattles in the process. In contrast the booming monotony of the Common Bronzewing *Phaps chalcoptera's* call regularly broadcasts from the denseness of favourite A. baileyana roosts.

Human intervention has caused escalations in the long list of pest and invasive species that have intruded on the ecological balance inherent in Australian habitats. Introduced into areas beyond its natural range Cootamundra Wattle is undoubtedly an invasive species but it also has value in revegetation activities when used to establish a temporary sheltered environment for other species' protection. The trees' removal from the ACT 's open spaces and Nature Reserves may be a long-term desirable project but needs to progress slowly and not before significant plantings of replacement species have been accomplished.

There is, perhaps, great shame attached to actions and species introductions committed in relative ignorance decades ago. The shame only remains if we continue to act impulsively and without due regard to the scientific and anecdotal evidence that's emerged from studies of habitat and species behaviour. May Cootamundra Wattles continue to delight us in Spring, to shelter and feed native species for a limited period...until appropriate replacements are mature.

Ed.Note: On a personal note I would have to agree with Rosemary. Here in our own mallee block, we have several Cootamundra wattles *Acacia baileyana purpurae* and even a prostrate form. The cheery colours brighten the dullness of winter, and provide refuge, seed and nesting materials for many birds. It is a favourite of the galah *Cacatua rosae* who delight in nipping back the tender shoots and effectively pruning the trees for us, as well as getting to the seeds first once the pods are ripe. In our dry mallee only one tree thrives really well, and there has been no regeneration of species from this tree, despite years of seed falling to the groundThe story may however be different if we received higher rainfall or had better soil. The tree thrives well on poorer soils and particularly on non-wetting sands which we have. Its blue green branches are also magic in floral arrangements.

In South Australia the Cootamundra wattle *Acacia baileyana* occurs mainly in the Northern and Southern Lofty regions around the Adelaide hills areas as a garden escape. It prefers soils of hard yellow or hard alkaline red duplex and rainfall in the 700mm to 1200mm range. [1] On our malleé soils which are non wetting sands over limestone the tree performs well, despite also only receiving 250mm rainfall a year. The tree is obviously drought and frost resistant. It has a limited natural distribution in the Cootamundra and Wagga Districts of NSW, and has become naturalised in the ACT and Victoria. [2] It is also known to have naturalised in New Zealand [3] and South Africa [4]

Despite this, in cultivation the Cootamundra Wattle is a very attractive small tree with feathery silver-blue foliage and golden yellow flowers. It has been widely planted as an ornamental, shade or shelter tree, and is fast growing but short lived. It grows to 6m high at first conical with branches to the ground but later develops a short trunk with a rounded canopy. The seed pods are 4-10cm.long, 8-12mm broad, straight or slightly curved, flattish brown [5] when the tree has matured. The species has been known to hybridise with Acacia dealbata and A.decurrens. [6]

All parts of *Acacia baileyana*, preferable separately, can be used to dye wool. The colours range from dark green, fawns, pale yellow, gold to orange depending on the mordants used.[7]

In South Australia, the Cootamundra wattle is also a food plant for the larvae of the butterfly *Polyura pyrrhus*.[8]

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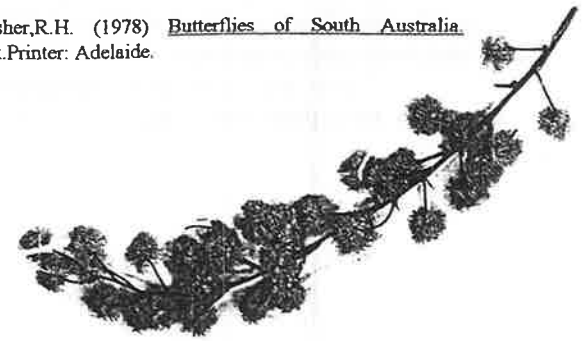

Feral wattles

Most people probably are aware that the green and gold Australian colours come from our national flower, the wattle.

"To many Australians the wattle stands for home, country, kindred, sunshine and love, every instinct that the heart most deeply enshrines. (1 September 1910, Sydney Morning Herald)

There are probably about a thousand species of wattles or Acacias native to Australia. We can't give an exact number because the number is still rising as new species continue to be found. The Adelaide Hills is home to about 30 native species but it is also home to a number of non-native Australian species and these are spreading alarmingly at the expense of our native vegetation. While there are some, such as *A. longifolia, A. saligna* and *A. cyclops* which are non-natives and more difficult to easily distinguish from natives, it may surprise some people to know that the easily recognised **pinnate- or fern-leaved** species are **all** introduced and weedy.

Pinnate-leaved Acacias

A. mearnsii (black wattle).
A. baileyana (Cootamundra wattle)
A. dealbata (silver wattle)
A. decurrens (early black wattle)

For a short time from late winter to spring, these non-natives put on a brilliant display of yellow flowers and it was no doubt for this purpose that they were originally planted in gardens, although the black wattle was cultivated as a source of bark for tanning. All of the species were planted in the Adelaide Botanic Gardens in the 1850's and all were recorded as naturalised in the Adelaide Hills by the 1940's.

Many of these plants have only relatively recently been identified as weeds and those who have planted them in the past should not be condemned. However it is in your hands to make a choice about the type of vegetation system you are going to leave for future generations. **If your garden is near bushland, be selective in your purchase of garden plants. Ask if they are likely to spread.**

The Cootamundra Wattle: a very restricted species becomes a weed.

Acacia baileyana is native to only a very small area about the Cootamundra area of New South Wales. See overleaf how a relatively rare species has become a problem in other areas outside of South Australia.

***Acacia cyclops:* another species with restricted distribution which has become a weed?**

Acacia cyclops may well have only been native in South Australia in the dunes of the Nullarbor region. Earliest record of the species in the PBC is an 1879 collection from Fowlers Bay. There is also a collection from Kingscote in 1945. Apart from a number of collections from the Botanic Gardens in 1920, all other collections in the PBC have been made after 1969. Present occurrences of the species on Yorke Peninsula and Fleurieu Peninsula are therefore likely to be introductions from early revegetation projects, when the growing of any plants, as long as they were Australian natives, was the policy.

Because of the copious fruit production and the attractive and nutritious red aril on the seed, this species is readily spread by birds and ants and in some places is rapidly replacing native vegetation.

Sources

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Feral Wattles: a shared problem...

The following extracts from web pages indicate we are not alone in this problem. Note that some of the species native to the Adelaide Hills, *Acacia melanoxylon* (Blackwood), *Acacia pycnantha* (Golden wattle) *Acacia paradoxa* (Kangaroo Thorn) and *Acacia verticillata* (Prickly Moses) are less than welcome in other areas.

Pacific Island Ecosystems at Risk (PIER)

Acacias tend to be prolific seed producers, self-fix nitrogen, and are often well adapted to reproducing after fire or other disturbance. As such, they have the potential to be invasive. [They also have the ability to spread] from new shoots coming up from the roots of existing trees.

Some acacia species which are known invaders are listed separately, but all acacia should be suspect. If they are introduced, they should be closely monitored for invasiveness (or, better yet, not introduced at all).

The seeds of most species remain viable for many years, building up a seed bank in the soil and germinating when disturbance occurs.

http://www.hear.org/pier/acasp.htm

Weeds in New Zealand

There are two groups of acacia - those with pinnate leaves ... and those with leaves reduced to phyllodes (extensions of the stem) ... Common species with pinnate leaves are black wattle (*A. mearnsii*) and less commonly ... silver wattle (*A. dealbata*) and green wattle (*A. decurrens*). Common species with leaves reduced to phyllodes are Sydney golden wattle (*A. longifolia*), Tasmanian blackwood (*A. melanoxylon*) (widespread and locally common), prickly leaved species - kangaroo acacia (*A. paradoxa*) and prickly moses (*A. verticillata*).

HABITATS

Roadsides, wasteplaces, shrubland. Common and locally abundant.

IMPACT TO BIOTA AND ECOSYSTEMS

Serious threat to regenerating bush and sprouts where canopy space occurs. Unchecked growth in cleared areas can result in a wattle forest which will exclude development of native plant species. A nitrogen fixer which is a threat to gumlands. Sydney golden wattle can form dense thickets.

DISPERSAL ROUTES, VECTORS, INFESTATION SOURCES

Cultivation escape. Regenerates well after fire. Can seed prolifically. Some species form dense stands by suckering.

http://www.boprc.govt.nz/www/green/weedindx.htm

Declared weeds and invader plants (South Africa)

Acacia baileyana F. Muell., Bailey's wattle / Invader
Acacia cyclops A. Cunn. ex G. Don, Red eye / Invader
Acacia dealbata Link, Silver wattle / Invader
Acacia decurrens (J.C. Wendl.) Willd., Green wattle / Invader
Acacia longifolia (Andr.) Willd., Long-leaved wattle / Weed
Acacia mearnsii De Wild., Black wattle / Invader
Category 1 plant South Africa, except in KwaZulu-Natal and Mpumalanga where it is used commercially
Acacia melanoxylon R. Br., Australian blackwood / Invader
Acacia paradoxa DC., Kangaroo wattle / Weed
Acacia podalyriifolia A Cunn., Pearl acacia / Invader
Acacia pycnantha Benth., Golden wattle / Weed
Acacia saligna (Labill.) H.L. Wendl., Port Jackson willow / Weed

http://www.polity.org.za/govdocs/notices/1999/not99-2485.html

Bushcare Tasmania

Wattles (*Acacia baileyana*, *Acacia longifolia*, *Acacia pycnantha*, *Acacia paradoxa*)

Most of the wattles that are weeds in Tasmania are Australian native species so they are well-adapted to survival in the bush. They generally produce large quantities of seed that build up to a significant seedbank and germinate after fire.

http://www.bushcare.tas.gov.au/weeds/species.html#wattles

Organic Delights from the Grassy Woodlands by Anna Watson

Preparing your backyard organic garden for the inevitable high water demands of the dry summer and autumn periods is an ideal winter activity. One method of saving water, which was discussed in the previous article, involves converting the driest portion of your back yard into an organic bush tucker garden. This can be achieved by selecting from the extensive colourful array of daisies, lilies, herbs, orchids, etc., commonly found amongst the grass and sedge tussocks that characterise our grassy woodland communities.

Described below are a few tempting floral and taste treats, drawn from the many inter-tussock plant options, along with a brief note on their bush tucker attributes.

Firstly, the ground hugging, Native Cranberry (*Astroloma humifusum*), has attractive long lasting winter bell-shaped flowers and forms a sweet red berry which ripens in spring. Both the Peach Berry (*Lissanthe strigosa*) and the Ant's Delight (*Acrotriche serrulata*) are alternatives to the Native Cranberry. The Ant's Delight has an added bonus of the being able to have its flowers soaked in water to produce a pleasant nectar flavoured drink.

Another is the Native Pigface (*Carpobrotus rossii*), which was such a treat for the Tasmanian Aborigines, that during lean times, they would camp nearby drifts of this plant to feast on its prized fruits. It is now recognised as of one of Australia's tastiest wild fruits. The flavour of these succulent, late summer ripening fruits has often been described as a blend between a strawberry and fig. Their fleshy leaves can also be cooked as greens or squeezed to provide soothing juices for bites and burns.

Our coastal grassy woodlands succulent ground cover named, Warrigul Greens (*Tetragonia implexicoma*) could be one of the earliest bush tucker exports. By the 1820's the French were regularly harvesting it from their vegetable gardens following its importation by their early explorers. The English, as a result of Banks introduction still enjoy it today, as a pleasant spinach substitute, being ideal for stir-fries. Its succulent red fruit in late summer can also be eaten.

Many of the spring flowering herbaceous lilies die back during summer and autumn to form underground tubers of various shapes and sizes. The delicate, purple Fringed Twinning Lily often referred to as Daisy Bates or Nullabor Yam (*Thysanotus patersonii*) produces a long finger sized yam which has proved to be very nutritious by Aborigines, once cooked in a hot charcoal bed. Its leaves and flowers can also be cooked.

Other plants which have nutritious tubers located under their lush spring growth include; the yellow flowering Leek Lily with a intriguing botanical name of *Bulbine bulbosa*; the white flowering, vanilla scented Vanilla Lily (*Arthropodium millefollium*); the blue flowered, chocolate scented Chocolate Lily (*Dichopogon strictus*) and the numerous exquisite orchids. These include the Donkey, Sun, Greenhood, Potato, Flying Duck and Bearded Orchids. They all have a pair of edible tubers from which the Greek name *Orchis* is derived.

It is hoped that this brief introduction will help motivate the reader into upgrading the dry areas of your yard to form patches of colourful water saving grassland. The added bonus of course is a chance to sample some home grown organic bush tucker.

Bee Navigation

The ability of bees to navigate from hive to flowers and home again is well-known. But colonies of migratory bees from Assam, northern India, evidently travel hundreds of kilometers and then return not only to the same tree but also to the same branch where their relatives nested some two years earlier! What makes this so remarkable is that worker bees live for only three months or less. So the bees that return are several generations removed from the bees that built the original hive. How they find their way back is a mystery. *The Sydney Morning Herald* newspaper reports that it might involve the sense of smell. Another possibility is that the surviving queen may somehow communicate information to the scout bees by a dance, showing them the direction in which to fly. From Aurally 5/4/2001

Carpobrotus
Native Pigface

Bush Tucker from the "Carrot" & "Daisy" Families By Phil Watson

Inter tussock spaces, located between a selection of native grasses and/or sedges making up a backyard organic native grassland garden patch, are ideal locations for planting a selection of bush tucker plants. Of course, this planting technique can also apply to organic veggie gardens. For example, the fast growing lettuces (from the "Daisy" or *Asteraceae* family) can be tucked in between slower growing celery plants and/or radishes can be planted with carrots or parsnips (*Apiaceae* family members).

Have you ever thought of growing in these inter tussock spaces, bush tucker representatives from the same botanical families as those plants in your veggie garden? This is not only an intriguing way to botanically compare vegetable and indigenous plants from the same family, but it will also improves your understanding of the similar cultural requirements for most plants grouped within a common family.

Having asked the question, lets explore this theme by concentrating on examples of indigenous bush tucker taste-bud tempters, from the Carrot (*Apiaceae*) and Daisy (*Asteraceae*) Families.

As an initial learning experience, allow a carrot, parsley or celery (*Apiaceae* family) to go to seed in your veggie patch. Not only will you benefit from harvesting your own seed supply, but also you will be fascinated by the large umbrella like flower (umbel) formed. A comparison with flowers from indigenous *Apiaceae* members soon establishes the family's floral similarities. Suitable exquisite examples include the green flowers, of the alpine grassland herb, Alpine Trachymene (*Trachymene humilis*) and/or the squat prickle-like flowers of the Blue Devil (*Eryngium ovium*).

In order to harvest organic bush tucker derived from the *Apiaceace* family, try the native *Apium prostratum*, known as Sea Celery. Its broad leaf form occurs naturally on sunny beaches, while its tenderer and tastier, narrow leaf form known as Native Parsley, likes moist shady areas. The First Fleeters relied heavily on variable forms of this plant as a cure for scurvy. Both Cook and Banks referred to it as parsley and regularly ate it.

Other *Apiaceae* bush tucker options are the Caraway herbs, which all can be added to stir-fries. These include the silver leaved, Silver Caraway (*Oreomyrrhis argenta*) and the strong carrot scented, Carroty Caraway (*Oreomyrrhis sessiliflolia*), along with Aussies equivalent to the garden Carrot, known as the Native Carrot (*Daucas glochidatum*).

The Daisy family (*Asteraceae*) also has many intriguing bush tucker herbs that are floristically similar to organic veggies such as lettuce, salsify, endives and artichokes. Again, as a learning and seed collecting experience, allow a lettuce to flower and go to seed.

Compare this flower which produces myriad of tiny seeds with rings of fine hairs (pappus) with the same flowers and seeds produced from a few inter-tussock *Asteraceae* plantings. These can include the yellow button-like flowers of the native herb Billy Buttons *Craspedia glauca* or the smaller flowers of Shiny Buttons *Leptorhynchos linearis*. Both produce bulbous roots with a crisp nutty taste. In addition introduce the attractive yellow daisy Native Dandelion *Microseris scapigera* that is known as an important Aboriginal bush tucker plant. Its fleshy bulbous tubers and can be either eaten raw or baked in baskets within an earth oven. The sweet syrup, which exudes from the roasted tubers, has given it staple food status amongst the aborigines.

Finally, as something fairly radical, consider growing Salsify or Vegetable Oyster (*Tragopogon porrifolius)* by purchasing seed and sowing it preferably in your veggie patch. This delicious unpopular veggie is also recognised as a common weed of the native grasslands. It has outstanding food value with the long parsnip like tap root being eaten (sweetish oyster like flavour) as a vegetable or roasted and broken down into a rich sweet, chocolate like powder ready to use as coffee substitute or sprinkled on ice-cream. The young shoots can be cooked and eaten like asparagus. Interesting enough the Latin meaning of the botanical name directly translates as "Goats Beard flower" with "leek like foliage" This certainly provides an excellent mental picture of the plant.

FROM YOUR EDITOR

Tragopogon porrifolius also has the common name of Oyster Plant, as it has a flavour of seafood. Not sure whether I'd really like it with icecream though!

FROM A WILD GARDEN by Chris Jones

The wild parsnip *Trachymene incisa* is a pretty wildflower, found in the coastal areas of Qld. and NSW. It has a thickened taproot and looks like a small parsnip. It also has a parsnip flavour. It can be eaten either raw or cooked.[1]

The native carrot *Trachymene glaucifolia* is found in inland areas of Qld. Cribb (1974) reports that the root is edible either raw or cooked, and suggests that cooking would have been by baking the vegetable in the ashes of a campfire.[2]

Prickly lettuce or *Lactuca serriola* is possible related to the cultivated lettuce. It is one of the yellow-flowered milky thistles similar in looks to the sow thistle but much harsher and with prickly leaves. Fresh, young leafy stems and unopened flowerheads can be used raw in salads or cooked as greens.[3]

The weed Dandelion, *Taraxacum officinale* is also a member of the Compositae family. Its young, fresh leaves are edible, raw or cooked, and the roots are used and cooked as vegetables. Like chicory, another weed found in inland areas, the roots can be dried, roasted and ground and used as a coffee substitute. The young tender leaves can be chopped and tossed with a dressing and used in salads. They are rather bitter however. In cooking the leaves should be added to boiling water and cooked for only a few minutes. [4]

Chicory, *Cichorium intybus* is a thistle like plant with milky latex and very pretty blue flowers. It often can be found growing along roadsides, and is also listed as a weed species. However the leaves can be used in the same way as the Dandelion, tasting a bit like an old lettuce, and can also be blanched for use in salads. Cooking will reduce the bitterness. [5]

Another popular bushfood plant which thrives in sandy, coastal areas is the New Zealand spinach, *Tetragonia tetragonioides*. It is a native not only of New Zealand but also Australia, Japan and South America. This native spinach is distinctive in appearance, with glistening stems and triangular leaves. Stems os a well grown plant are crisp and snap easily. The young shoots are used as a green vegetable and resemble spinach in taste. It was also a favourite of Cook and Banks and was among the first Australian plants used as food by the invaders. Banks is also credited with introducing the plant to English gardens in 1772.[6]

Of course, there are many more Australian native plants and even a weed or two which can be utilised in a garden. We have provided an appetiser, and trust that your hunger will lead to new discoveries and comparisons with the ornamental varieties readily available.

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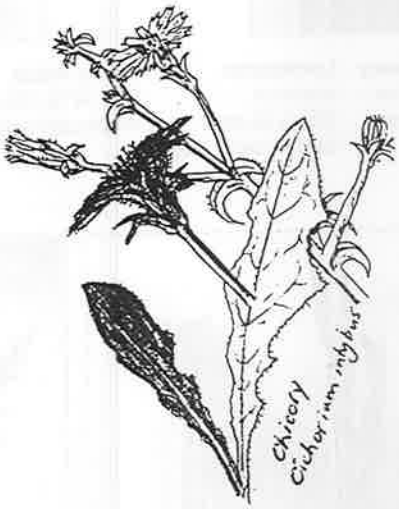
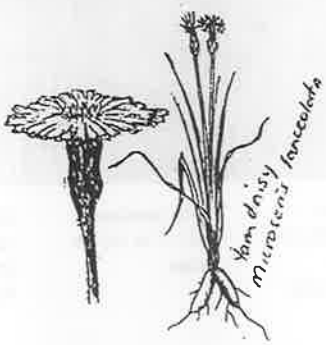
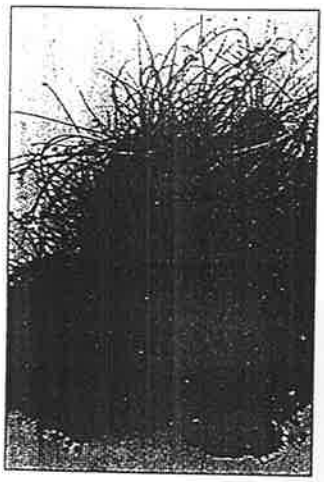




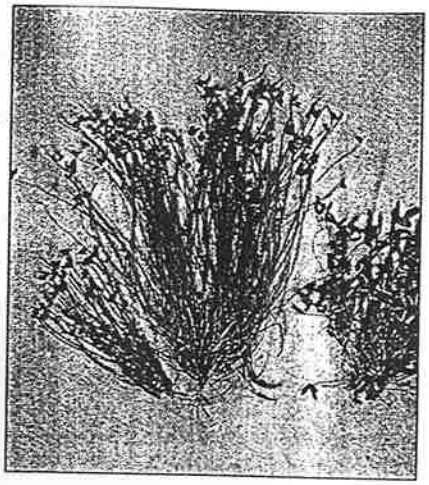
Ack. Illustrations from Dashort + Jessop (1970) Plants of the Adelaide Plains and Hills Botanic Gardens Adelaide

Some of the Cyperaceae family

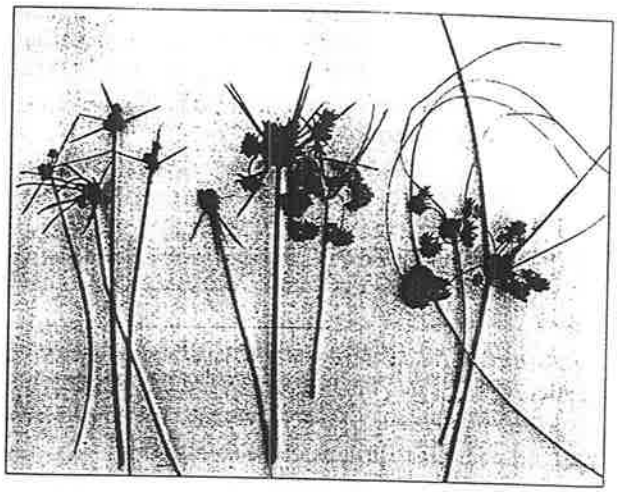
The measurements give stem heigh: in centimetres.
Stem cross-sections are shown as ○ cylindrical; and △ triangular.
Where found: BT, batter zone; Bf, bottom zone; C, outer catchment, away from the riparian zone.



Isolepis inundata
Swamp club-rush, Bt ; 10-30 cm.
Isolepis cernua (dense clump)
Nodding club-rush, to 10 cm.
(with moss and liverwort).



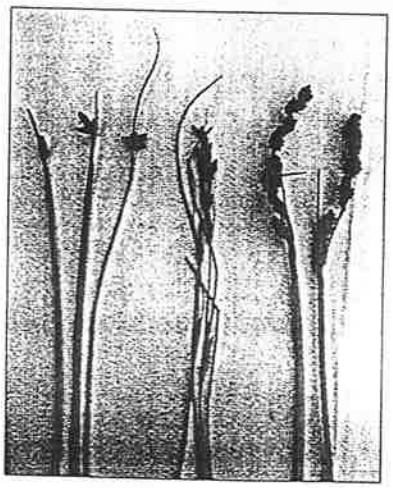
Isolepis hookeriana
Bt; to 12 cm.
Cyperus tenellus
Tiny flat-sedge; to 8 cm.



Cyperus gymnocaulos
Bt; ○ 15-70 cm.
Spiny, flat-sedge

Cyperus vaginatus
Bt/Bf; ○ 30-150 cm.
Flat-sedge.

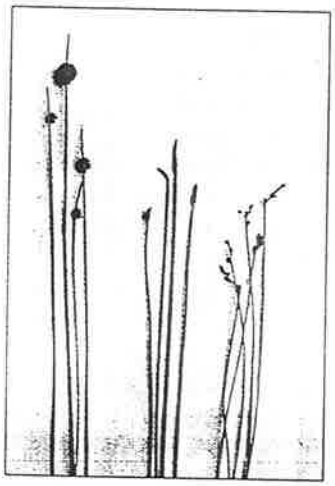
Cyperus gunnii
Bf/C; △ 60-100 cm.
Flecked flat-sedge.
Rough-edged, grass-like leaves.



Schoenoplectus pungens
Bt; △ 30-60 cm.
Sharp-leaf club-rush.

Carex bichenoviana
Bf/C; △ 25-50 cm.
Grass-like leaves.

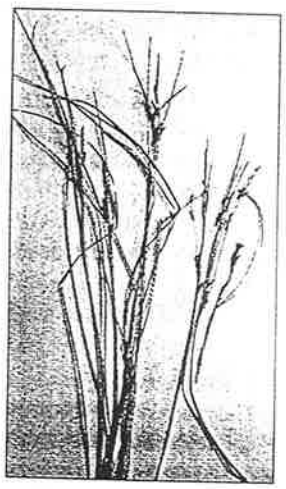
Lepidosperma concavum
Bf/C; to 60 cm.
Sand-hill sword-sedge.



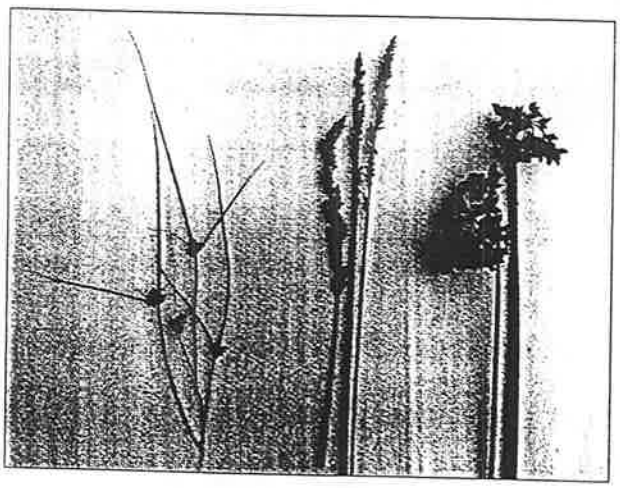
Isolepis nodosa
Bt/Bf; ○ 50-150 cm.
Knobby club-rush.

Eleocharis acuta
Bt; ○ to 90 cm.
Common spike-rush.

Baumea juncea
Bt/Bf/C; ○
30 to 100 cm.
Bare twig-rush.



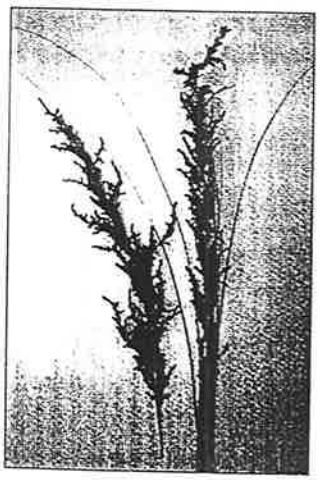
Carex gaudichaudiana (left)
Bt/Bf; ☆ to 60 cm.
Rough-edged, grass-like leaves.
with *C. bichenoviana*.



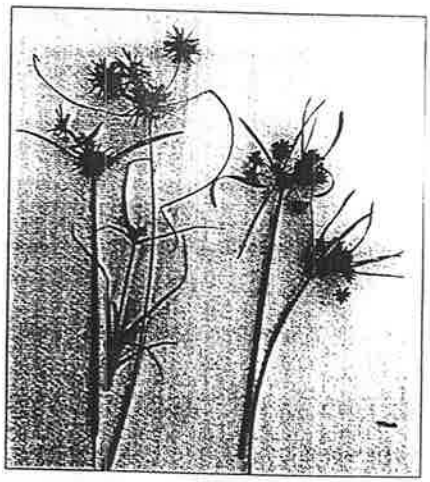
Carex inversa
Bf/C; △ 10-60 cm.
Knob sedge.
Grass-like leaves.

Carex tereticaulis
Bf/C; ○ to 100 cm.
Sedge.

Schoenoplectus validus
Bt; ○ to 200 cm.
River club-rush



Gahnia sieberiana
Bf/C; ○ to 100-250 cm.
Red-fruit saw-sedge.
Long, rough-edged leaves



**Cyperus congestus*
Bt/C; △ 20-60 cm.
Dense flat-sedge.
(*Exotic - Sth Africa)

Cyperus vaginatus
Bt /Bf; ○ 30-150 cm
A flat-sedge.
(Native species)

Saluting the Drought tolerant Saw-Sedges: Planning a drought tolerant garden. by Phil Watson

Drought proofing your backyard bush tucker patch requires establishing a well-mulched framework of hardy native grasses, sedges and rushes. These should be selected from those that are represented in our drought tolerant native vegetation communities. Within their inter-tussock spaces delicate herbaceous natives can be planted. Remember that these drought adapted herbs, with their lush green leaves and colourful spring flowers will die back to their underground rootstocks by the onset of our dry summer and autumn. However they reappear in all their splendour by early spring. Hence this is a garden style that relies solely on rainfall and will happily survive the droughty periods without supplementary watering.

Of the drought tolerant framework plants, the Saw-sedges (*Gahnia sp.*) are worthwhile trying. They are typically hardier than most other members of this Sedge Family known as *Cyperaceae*. The Papyrus Sedge, biblically referred to for its use in Egyptian papermaking and the bulbous rooted Water Chestnut, used, as tasty crunchy additive in Chinese style cooking are well known members of the *Cyperaceae* family. This article focuses on the Saw sedges, which are not only drought tolerant, but also possess a set of fascinating attributes.

Cutting Grass feeds Currawongs

The best-known member of the Saw Sedge genus is the large Cutting Grass *Gahnia grandis*. Although generally considered too big for our bush tucker patch, it along with the Red Fruit Saw Sedge *Gahnia sieberiana* can take pride of place as feature plants. Fringed by 2 metre strap-like leaves, their long plume-like flowering heads and bright red fruits, present wonderful landscaping potential. Typical of the Saw sedges, they have thin weeping leaves with their distinctive sharp saw-like leaf edges, formed from tiny granules of silica incorporated into the leaf surface. Many an unsuspecting bush walker's limbs have been deeply gashed as a consequence of these sharp leaves brushing across their unprotected skin. Fingers often suffer deep wounds when trekkers grab its foliage when pushing through the obstacle course formed by their large tussocks.

Interestingly, Cutting grass relies on birds such as the Currawong for germinating its seed, more correctly referred to as small nuts. The Currawong eats and regurgitates the red flesh covered seed, with the aid of a gullet full of water. This helps purge out a reddish bolus of partially digested fruits. The Currawong's stomach acid etches these seeds weakening their tough seed coats to allow ease of germination. This is an intriguing example of how co-evolution between native plants and wildlife ensures mutual benefits for both.

Thatch Saw Sedge supplies bush tucker and attracts Butterflies

Common in the drier woodlands is the Thatch Saw-sedge (*Gahnia radula*) with its characteristic thin leaves that droop markedly at their tips. This rapidly browning landscape of summer is punctated with drifts of dark brown flowers, dashed with the cream colour of their thread-like anthers. These supply pollen to the delicate Chaostola Skipper butterflies whose larva (caterpillars) occupies a cylindrical shelter constructed from 2 or 3 leaves drawn together and bound with silk. The mottled brown and yellow butterflies remain in close flying distance to the flowers during the October to December period.

Both the Flame Skipper and Donnysa Skipper butterflies also rely on either the Thatched Saw Sedge or Large Cutting Grass for their survival. The male Donnysa Skipper is very territorial, engaging other males in spiralling flights as it endeavours to defend its patch and attract females. Once mated, tiny yellowish green eggs are laid under the leaves, hatching into caterpillars with distinctive dark streaks along their green bodies. This camouflage only partially protects them from the native birds, which successful scavenge large numbers to feed their young nestlings.

By late summer, the Thatch Saw Sedge's flower heads ripen to form hundreds of small nuts. Once harvested, these nuts can be pounded and ground into flour for making flat breads. The young leaf bases can provide a tasty pea-like snack when harvested from plants grown with sufficient soil moisture. The waist high leaves can be woven into traditional items such as baskets and dillies. Traditionally they are split, left to dry for a few days and stored for later use. To render them pliable for weaving they require dampening for a day.

Chaffy Saw Sedge helps clean the wetlands

Large expanses of the Chaffy Saw Sedges (*Gahnia filum*) in association with Coastal Tussock and Spear grasses, frequently occupy the margins of brackish estuarine marshes and saline water bodies. Common in the Lauderdale and Pittwater inter-tidal wetland flats these sedges form part of the crucial habitat for many of our migratory birds.

Their roots also act as hosts for the microbes that filter the detritus from the nutrient laden tides thus performing a fundamental role in the food web for these wetland communities.

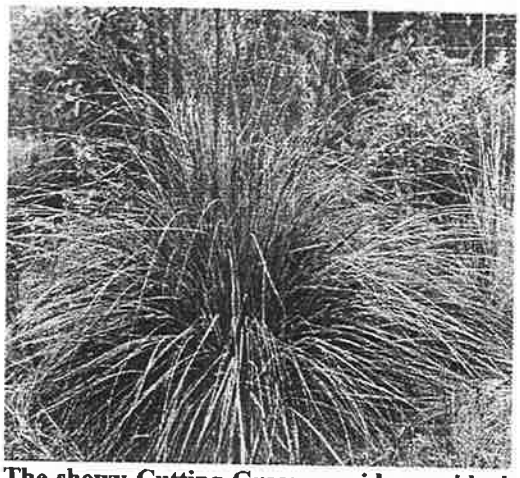
Along with the Coast Saw Sedge (*Gahnia trifida*) they host the erratic flying Chrysotricha Skipper butterfly. Their larva have the unusual habit of twisting adjacent leaves together in a spiral fashion to form their characteristic shelter.

The Rodway's Saw Sedge is a rarity but a challenge

Gahnia rodwayi, is the smallest and most compact of all the Saw sedges. It is ideally suited to planting in dry grassland patches. Since it is listed as a rare plant, growing this little beauty helps increase its rapidly diminishing populations. However, like *Gahnia radula* even though the seed is easily collected, its propagation is more of an enigma.

Finally, as many bush tucker gardeners enjoy propagating their own plants, the challenge of successfully culturing these Saw Sedges awaits the enthusiast and all the green-fingered readers.

Phil Watson
For *www.backyardorganicgardening.com*



The showy Cutting Grass provides an ideal feature plant

ED.NOTE : The Cyperaceae species are also known as sedges. The tough, fibrous stems have been used extensively worldwide by indigenous people in fibrous cordage, rough string, weaving, matting and fishing nets.

THE FAMILY CYPERACEAE
by Chris Jones

The Cyperaceae are usually perennial grass or rush like herbs and sedges. There are about 4,000 species in 90 genera; and about 650 species and 47 genera in Australia.[1] Amongst the Cyperaceae are Carex, Chorizandra, Cyperus, Schoenus, Tetraria, Tricostularia, Gymnoschoenus, Isolepis, Bolboschoenus, Schoenoplectus, Lipocarpha, Fimbristylis, Bulbostylis, Eleocharis, Caustis, Lepidosperma, Tricostularia, Cladium, Gahnia and Baumea.

GAHNIA SPECIES

Gahnia was named after a Swedish botanist and friend of Linnaeus, Dr.Henry Ghan. There are about 30 species of Gahnia from Asia to Australia and the Pacific Islands.[2]

Here on our property we have a number of the Cyperacae growing naturally, including *G. deusta and G. lanigera*, the Desert saw-sedge. Most Gahnia species flower throughout the year, but there are exceptions. *G. ancistrophylla* also grows in the region, and may also be found in Western Australia and Victoria., along with *G.deusta*. *G.clarkei*, the Tall saw -sedge grows in SA, Qld, NSW and Victoria. *G.filum and G.lanigera* in SA, WA, NSW and Victoria. *G. hystrix* is a dwarf plant 4-15cm high, with flowering occurring between November and January, and occasionally in April, found on Kangaroo Island, SA. The Thatch saw-sedge, *G.radula* is found additionally in SA, Qld, NSW, Vic., and as Phil has highlighted in his article, grows in Tasmania. It flowers in March, July-August and October-November. *G.sieberiana* the Red-fruit saw-sedge is found in damp, shady areas in SA, Qld, NSW, Vic., Tas. and New Guinea. The cutting grass, or Coast saw-sedge, *G.trifida* may be found flowering throughout the year in SA, WA, Victoria and Tasmania.[3]

Gahnia aspera grows in the sandy coastal country of Qld, NSW and the Northern Territory. The nuts of this species are orange-red or brown-red when ripe and are very shiny and smooth. Aborigines collected them and pounded them to produce a flour.[4]

The Gahnia is recognised easily because of its long, grass like leaves and very sharp, finely saw edged margins. They are perennials with woody rhizomes and often form large tussocks. It has in general, a very short, creeping rhizome with a tall flowering stem to more than 2m tall. The inflorescence is black, either loosely branched and drooping or erect and spike-like, with the shiny nuts, which may be red, black or pale grey, hanging by short threads.[5]

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Butterfly Attractions

Many butterflies and moths are attracted to the upper-most branches of the tallest trees on the highest mountain! Even in relatively flat areas, the focus may be one or more tall trees, rather than a change in topography. This activity is known as *hill-topping*.

During summer, particularly on warm, sunny days with little wind, males of hill-topping species are attracted to isolated mountain peaks where they congregate. Some species also establish and defend territories, attract females and mate.

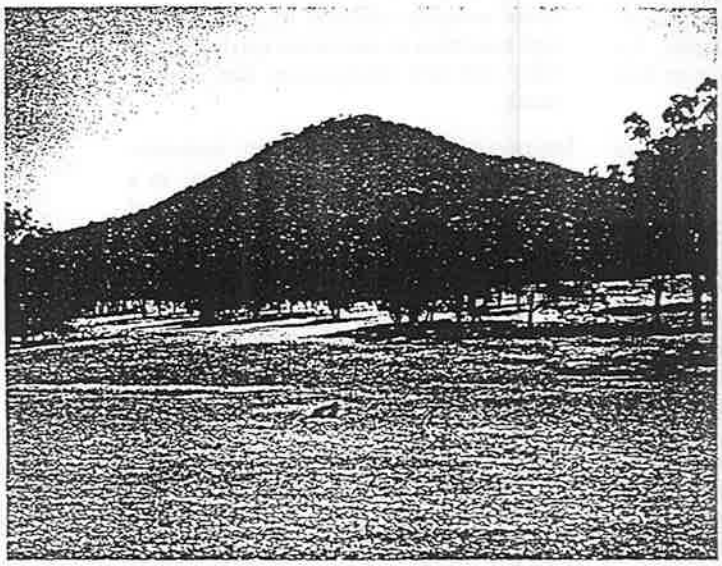
Females search for suitable sites to lay their eggs soon after mating. For some species, these sites may be close by, for others they may be several kilometres away. Females respond to environmental clues such as the presence of larval food or host plants and ants. Likely egg-laying sites include acacia seedlings, mistletoes and near ant nest sites in tree stumps, beneath bark or in dead or living, standing and fallen eucalypts and acacias.

Many mountain peaks are now virtually 'islands' of natural bushland surrounded by largely cleared agricultural land. Most have been used for transmission, communication and/or survey facilities. Associated activities involve construction of access roads, tree clearing and trimming along sight lines for trigonometric stations and vegetation clearing around communication tower sites. Erosion and invasion of introduced plants occur in areas of soil disturbance.

Remnant bushland on private land may link native vegetation on these mountains with roadside and streamside vegetation. It often provides essential habitats for butterflies as some adult butterflies and moths seek nectar-producing plants and breeding sites over a large area.

Mt. Piper in central Victoria is a significant habitat for butterflies, moths and ants. Mt. Piper's special features include a highly diverse and interdependent flora and fauna community, the attraction of the isolated mountain landscape for hill-topping butterflies and moths and its distinctive vegetation patterns reflecting changes in soils, aspect and altitude. Key elements of the Mt. Piper environment that are important for these invertebrates include the largely naturally vegetated mountain with acacia seedlings, senescent or dead eucalypts and acacias, decaying ground timber and leaf litter, mistletoe-bearing eucalypts and acacias, native grasses and sedges. Such hill-topping sites exhibit many and varied interdependent relationships and interactions between animals, plants and the landscape.

Some butterflies belonging to the Family Lycaenidae (Blues and Coppers) have a mutually beneficial relationship with various species of terrestrial and arboreal ants. Ants attend the caterpillars, guide them to fresh food supplies and protect them from disease, parasites and predators. They in turn, feed on a honey-like fluid secreted by the caterpillars that provides them with essential food nutrients.



Mt Piper, central Victoria - prominent in the landscape, it is a hill-topping site for butterflies. Photo: Ann Jelinek.

The Common Imperial Blue, *Jalmenus evagoras evagoras* is common throughout south-eastern Australia. Its caterpillars feed on various species of acacia seedlings whilst those of the Genoveva Azure *Ogyris genoveva genoveva* and Dark Purple Azure *Ogyris abrota* feed on Box Mistletoe *Amyema miquelii* and Creeping Mistletoe *Muellerina eucalyptoides* respectively. Larvae of the hill-topping moth, *Comocrus behri* also feed on Box Mistletoe.

In contrast, a few butterfly larvae, such as those of the Ant-blue butterflies, may even prey on ant larvae and pupae during their early larval development.

Native grasslands provide important habitats for a rare day-flying moth, *Synemon plana*. Its larvae feed on the roots of wallaby grasses *Danthonia* spp and other native grasses. As well, birds (e.g. Grey Fantail), mammals (e.g. Short-beaked Echidna), reptiles (e.g. Grass Skink) and many arthropod species feed on butterflies, moths or ants.

Because of their sensitivity to environmental conditions, invertebrate communities can be severely affected by:

- Use of mountain summits for communication, transmission and survey facilities, and other uses, where these are not carefully planned, landscaped and managed. Adopting minimum site clearance requirements for satellite survey instead of using sight lines for ground survey would significantly mitigate impacts on the natural and scenic values of these distinctive landscapes. Also, re-establishment of eucalypts, acacias and other plants required by butterflies and moths for hill-topping and territorial behaviour, food, breeding or shelter is essential.
- High intensity and frequent fire; firewood collecting; intensive grazing, soil compaction and increased soil fertility due to livestock, invasive plants and pest animals have potential to significantly change, deplete or compete for food sources, shelter, butterfly and moth egg-laying sites and ant nest sites.
- Mineral exploration and mining have potential to cause habitat disturbance and pollution;
- Salinity, chemical sprays, tree dieback, rural subdivision and vegetation clearance, including active removal of native grasses, sedges, mistletoe, acacia seedlings and old standing or fallen acacias and eucalypts, can directly degrade breeding, feeding and shelter sites for butter-

continued page 7

Common Imperial Blue caterpillars attended by ants. Photo: Ann Jelinek.

continued from page 6

flies, ants and associated fauna. They can also progressively fragment remnant bushland habitats around and between hill-topping and egg-laying sites.

- Intensive visitor use of mountain environments can cause erosion, inhibit regeneration and create other habitat disturbance unless carefully managed.

Healthy ecosystems are essential for the survival of butterflies, moths and ants. Landholders and managers are thus encouraged to:

- Protect native vegetation remnants;
- Sustain community dynamics, especially areas of successional vegetation including acacias and native grasslands, by selective slashing, light grazing or low intensity, infrequent fire;
- Promote acacia diversity and native grasslands;
- Leave senescent and dead, standing or fallen acacia and eucalypt stems, dead and decaying stumps, fallen timber and leaf litter in native vegetation remnants;
- Encourage natural revegetation by fencing out livestock and minimising vehicle use, particularly along water courses and on steep slopes;
- Establish strategic plantings of local, native trees and shrubs to connect existing vegetation remnants and in areas which also provide shelterbelts for livestock;
- Protect roadside vegetation from clearing, frequent or intense fires and wood collecting activities;
- Cease removal of mistletoe and fence areas severely affected by tree dieback and mistletoe to minimise increased fertility and soil compaction due to livestock.

Improved hill-top management, maintaining vegetation, particularly acacias, in a range of age classes and understanding ant ecology will greatly assist butterfly conservation. Most importantly, however, the long-term conservation of these fascinating and important wildlife communities depends on the continuing, active support of landholders.

Ann Jelinek, CNR

Acknowledgements: D. Britton, W.N.B. Quick, Dr T. New and D. Crosby.

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The tortoise could be losing the race - to the fox

It is late spring to early summer and dark clouds gather, warning of imminent rain. Drops begin to fall splashing dust craters in the dry earth. In adjacent waters, nostrils then heads, like floating sticks, appear at the surface. Cautiously, creatures in prehistoric garments crawl from their liquid blanket in a ritual that has occurred for eons. The nesting activity of the Murray River Tortoise has begun.

Three species of freshwater tortoises occur in Victoria: the Broad-shelled Tortoise, Common Long-necked Tortoise and Murray River Tortoise.

Tortoises lay their eggs in sand adjacent to water courses. Sand is an ideal incubation material providing insulation during very hot days. The Murray River Tortoise may lay its eggs at any time of day but night-time is preferred. An average of 23 eggs are laid by each female.

A study, conducted by Michael Thompson of Adelaide University, revealed alarming statistics on the degree of Murray River Tortoise egg predation. He found that there were five species of predator involved. They included four native species; a water rat, two species of goanna and a raven and one introduced species; the Red Fox.

The rate of egg predation was found to be 96.5% with foxes taking 93% and native predators just 3%. Predation of tortoise eggs has been found to be high in other countries so it remained to be determined if this is a normal rate of egg predation.

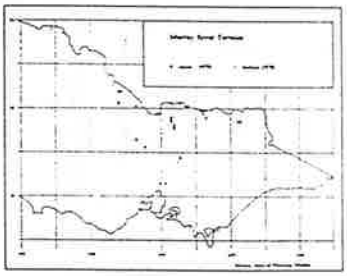
Aborigines considered tortoise eggs a delicacy, and dingoes, Tasmanian devils and thylacines (both of which were once on the mainland) would also have been potential predators along the Murray prior to the fox. Quolls are not known to eat tortoise eggs.

As no information on predation is available prior to European settlement, natural rates of predation were estimated by comparison of the population age structure of Murray River Tortoises within the range of the fox with those from fox-free areas. The results showed a comparative lack of juveniles in areas with foxes indicating the fox is having an impact on tortoises.

Tortoises are long-lived animals and so the impact of fox predation can take a long time to show its effect on the population. Fox control by landholders near tortoise breeding sites, particularly along streams and other water bodies, would assist the recruitment of young tortoises and also assist other species (qv. fox control techniques: LFW News Vol. 1, No 10, p 3, Note 24).

Stephen Platt

Reference: Thompson, M.B. (1983) Populations of the Murray River Tortoise, Emydura (Chelodina): the Effect of Egg Predation by the Red Fox, *Vulpes vulpes*. *Aust. Wildl. Res.* 10, 363-71.



Distribution of the Murray River Tortoise in Victoria. Records near Melbourne may represent animals kept as pets then released from captivity. Source: Atlas of Victorian Wildlife, CNR.

Tortoise nest excavated by a fox. Photo: CNR.

BIRD ATTRACTING GARDENS

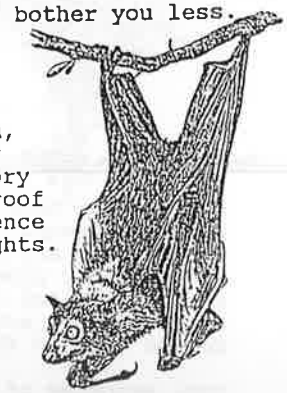
Birdscaping is the designing of a garden to attract the variety of birds that would have occurred originally in the area. Birds need many types of foods including insects, reptiles, seeds, nectar and fruit which plants should be selected to provide seasons by season. They also need nesting material and shelter from the weather and predators. A balanced garden which attracts birds will also attract insects, spiders, reptiles, frogs and even mammals. If you are providing this habitat, apart from water, artificial feeding and supplements should not be necessary as they can cause nutritional imbalances. Birds become dependent and lose the ability to forage for themselves.

This topic is covered in a separate title, *No 5 in this series*, and there is a range of good books on this theme, providing lists of plants, their requirements and foods they supply to birds.

SMALL MAMMALS

If you are fortunate to have kangaroos, wallabies, wombats or koalas visit your garden, you need more specialist advice in your own area. You may wish to encourage smaller mammals - possums, bats, bandicoots, bush mice and rats, antechinus, or even echidna.

POSSUMS The delightful ring-tailed possum is easily distinguished from its larger brush-tailed relative by its smaller size and slender tail. Brushtails love the new growth of plants so an alternative food source is desirable. Small eucalypts which stand coppicing are a good idea. Pygmy possums and the various gliders are welcome but not common unless you are close to the bush. They rely on nectar and sweet gum, also insects, so bother you less.



If you do not have nesting hollows you can make an artificial one high in a tree. Possum boxes are on sale in some localities. Smaller species need an opening less than 7 cm, but brush tails need 12 cm. Removing annoying brushtails to another area is not a satisfactory solution for a possum who has nested in your roof or too close to your house. Peaceful coexistence is the more desirable solution for quieter nights.

BATS also can be provided with a box in a tree or on the side of a house.
Bats are the only mammals which fly.
They are divided into two categories
- the larger fruit or blossom-eating species which have long faces and no tails. They are arboreal and nocturnal, sometimes forming large colonies.
- the smaller insectivorous bats which have tails and short faces and gather their food on the wing. Some larger species are called flying foxes but they are not related to foxes.

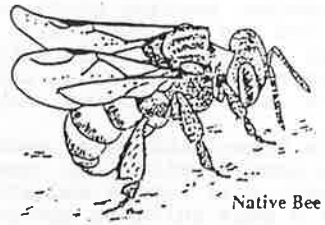
BANDICOOTS, like bats, have had a bad press. They need a thick understorey of grass tussocks. They wander quite a way at night, foraging individually over a wide range.
The holes they leave may be annoying but they rid lawns of many root chomping grubs and weevils.

A Project of the
BLUE MOUNTAINS GROUP

AUSTRALIAN PLANTS SOCIETY

GARDENS FOR WILDLIFE

Is your garden friendly to native wildlife? How do you design and maintain your garden to attract birds, butterflies and insects, frogs and reptiles, small mammals?



Native Bee

There is a natural balance in Australian native plants, animals, birds and insects, a pattern of interdependence. A garden can provide the habitat which makes these possible. Not only can your garden ensure an environment for native fauna but it can allow you to observe and to enjoy their fascinating behaviour. In providing for their well-being, you will be enhancing your own lifestyle and you will be decreasing your dependence on chemicals as the animals will act as predators on garden pests.

A habitat for wildlife needs to comprise three elements:

* SHELTER - places for resting, nesting and residence
* FOOD - available, if possible, all the year
* WATER - the presence of regular water

Antechinus swainsonii

To attract the greatest variety of wildlife in your garden you need to provide a habitat with *structural diversity* as well as *plant diversity*. This means that a garden must provide well developed *layers* - lots of layers of vegetation and natural elements. Working from the ground layer up, you will need grasses, tufting and clumping plants, climbers, groundcovers and then shrubs and trees including thorny species offering both refuge and nesting sites.

And you need a mulch of twigs, leaves and stones for insects and lizards. Organic mulch also provides places of winter hibernation. Permanent water will increase the number of visiting creatures and a pond or water garden is essential to attract frogs.

Untidy gardens with nooks and crannies, grub-curled leaves, logs and dead branches, are what attracts most fauna. A "tidy mind" may need a change of attitude if birds and animals are to find your garden attractive. The very attributes you consider important, may deter wildlife from visiting you! Gardens that have a "clipped" shrubs and closely mown lawns are mostly only popular with introduced birds. Frequently applied pesticides and herbicides deny food to the fauna you wish to attract.

When carrying out garden maintenance or renovating, observe carefully what is already visiting or living there. Try not to remove large sections of vegetation at once. Use a mosaic pattern of weeding or clearing, allowing planting or regeneration to take effect before starting on a new section. Even invasive weeds such as jasmine, morning glory or blackberry may be home to birds, reptiles and possums. Also choose pruning times carefully so that nectar feeding or fruit eating birds are not left without food. On neglected or degraded sites garbage - metal, pipes, building rubble, even car bodies, may have been providing a habitat.

Mature trees, including exotics and non-indigenous species known to be used by wildlife, need protection of their canopy, root systems, soil levels and access to moisture. If possible wait until a more suitable species is established before removing unwanted trees.

* We acknowledge the ideas of Danie Oldinea, consultant and practitioner in the design and regeneration of wildlife habitats.
* You must read *Attracting Wildlife to your Garden* - Roger Elliot

FROGS The recent interest in frogs is the result of a severe decline in their numbers. Whilst polluted water courses and habitat destruction have contributed, sustained research is necessary to determine other causes. Frogs, despite their reliance on moisture to breathe, reproduce and survive, have evolved and diversified to occupy a variety of climates and habitats. Because of this vast range, from rainforest to desert, the loss of frogs is an indicator of environmentally decline in an area and their return a sign of recovery.

Brown-striped Marsh Frog

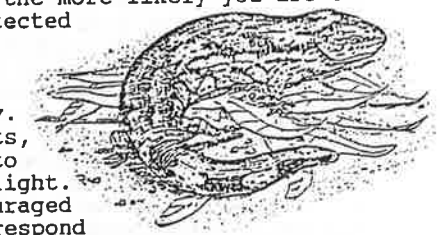
If you can provide a frog refuge in your garden, you will be rewarded with the interest of observing their interesting life cycle and their help in controlling pests. Please don't introduce frogs that don't occur naturally in your area. They may hybridise with local species or crowd them out. 50 km is the limit. Frogs and tadpoles have permeable skins susceptible to pesticides and herbicides. Tadpoles are also affected by fertilisers and manure. Watch water runoff from mulch or the compost heap.

The provision of a water feature or bog in your garden is covered in *Leaflet No 33*, including the provision of a frog habitat.

Frog Facts Sheets, available from P O Box A2405, Sydney South, 2000, have good information about transporting frogs and spawn.
** Read *Attracting Frogs to Your Garden* - Kevin Casey

REPTILES *Why would you want them in your garden?*
Well, reptiles are interesting animals and add to the nature of a bush garden. They are not "cute and cuddly" but they do become accustomed to people and respond to your efforts to assist them. Reptiles can be a cheap and easy solution to the control of pests in eating slugs, snails, aphids, flies and ants which your garden provides as food. Larger lizards, partly herbivorous, need small herbaceous plants, but are not greedy. They are highly water-efficient - even a dripping tap satisfies.

How can you have reptiles in your garden?
The closer you are to a natural area the more likely you are to have a source. All reptiles are protected by law; you can't take them but you can create a reptile-friendly garden to which they will come.
If your habitat suits, they will stay. They need to move about safe from cats, dogs, birds and careless people and to have protected access to warming sunlight. Snakes and goannas are best not encouraged but skinks and blue-tongued lizards respond well to native gardens as long as they are protected.



Blotched Blue-tongue

BUTTERFLIES
Any garden can attract butterflies, but you'll see more of them in an overgrown garden. Without going overboard with the neglect, there are practical ways of turning a garden, whatever its size and degree of formality, into a butterfly garden. This is rewarding and helps conserve local butterflies. Those which visit your garden will depend on the area in which you live. Keep a journal and contribute to the knowledge of their life cycle and the plants they utilise.

Pimelea ligustrina

Butterflies and moths are members of the order Lepidoptera. There are 82 families in Australia of which 6 have features in common and are known as butterflies ...
- usually colourful and patterned
- wings held upright at rest
- usually day-flying and mostly active in bright, sunny weather
- not unduly harmful to plants.

They like bright open sunny gardens with protection from strong winds plenty of nectar-rich flowers and lots of suitable larval foodplants

Butterflies have four life stages. The egg is laid singly on a selected plant. If the plant is unsuitable the hatched caterpillar may be poisoned or will not feed at all. Once sufficiently grown it enters the pupal stage in which the tissues are reorganised to form the body of the butterfly. Since the adult is very active it needs a high energy food source, nectar. *SO YOU NEED TO KNOW THE CORRECT FOOD PLANTS FOR EACH SPECIES.*

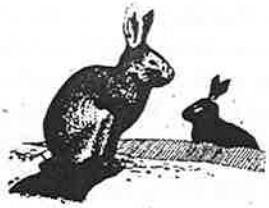
Some examples of good native butterfly food plants are:
Pimelea, Bracteantha (formerly *Helichrysum*), *Bursaria, Lythrum, Melaleuca, Kunzea, Calytrix, Phyla, Westringia, Leptospermum*
** Books on gardening with native plants will provide lists.
Read *How to Attract Butterflies to Your Garden* - Densey Clyne

NATIVE BEES Bees are important pollinators of native plants. It is important to maintain the diversity of native bees because they pollinate different species. There are over 2,000 identified species. They are stingless. Aborigines have prized stingless bee nests for centuries using the honey as food and medicine and the nest resins as glue. *Trigonia carbonaria* is a small, grey-black bee which enjoys the flora of the *Myrtaceae* family.

The Australian Native Bee Research Centre produces a fascinating set of information booklets - P O Box 74, North Richmond 2754

PRACTICALITIES

›moke 'em out



have recently discovered the joys of ıbbit fumigating. Thanks to an NHT ;rant, I have been able to employ ome help to attack our rabbit problem n a direct, immediate and rather atisfying way. I've now so much into he spirit of it, in fact, that I often pop my tape of Art iarfunkel's Bright Eyes in the tape player as I head off to check he warrens.

There are two ways to fumigate warrens. The first uses Phostoxin pellets and can be done with some improvised equipment. The second method, using Larvacide, requires a special machine called an AgMurf fumigator. Both methods arry some risk to the operator, and it is highly recommended hat you do not carry out fumigation alone. This is in case one erson accidentally inhales the gas and becomes ill or loses onsciousness. The other can administer first aid or call the mbulance or at least gets home. Having said this, don't be put off. With some simple safety precautions, the worst most people uffer is watery eyes if the wind changes direction suddenly.

Most of my experience has been with Larvacide, which I consider by far the better option in most circumstances. The AgMurf machine is small enough and light enough to be carried by most people – although in truth I struggle a bit after a few metres if its got a full fuel load on board, and tend to move it around in a wheelbarrow. It would be awkward to use on steep slopes and other difficult to access areas however, and Phostoxin pellets are then the best option.

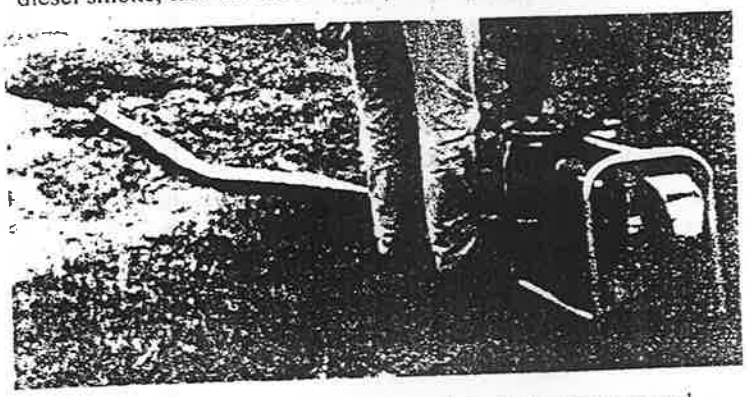
AgMurf machines can be hired from some local Animal and Plant Control Boards, and our local Landcare group also has a machine that is lent out to members. It consists of a small motor, which runs on unleaded petrol, a small tank that holds diesel fuel and is used to make smoke, and another small tank that holds the poison. The machine comes with a long hose for poking down warrens. The poison is chloropicrin, which is sold under the brand name Larvacide. It can be bought from Jade Chemicals at Regency Park, and probably other suppliers as well.

The idea behind the machine is to blow smoke down the warren so as to locate all the outlets. These are then sealed up, using a spade to fill them in. Once all the holes are sealed, the smoke-making diesel is turned off, and the poison is turned on. Everyone stands well back – upwind – and the poison is blown down the warren for a period from 30 seconds to 2 minutes, depending on the size of the warren. It is not a good idea to work on a still day. A bit of breeze to take any fumes away is desirable. Also, very dry soil can be hard to seal, so this method is probably not recommended for summer, unless there have been rains.

Larvacide is a dangerous chemical and comes in a glass bottle, sealed inside a can. When not in use, it should be kept in a locked cupboard or suitable locked box. When handling the chemical, it is important to wear chemical resistant gloves, goggles and an appropriate respirator. It is also highly volatile. Never open a can (or handle the chemical at all) in a confined space, as I once did. Keep others at a distance when handling, especially children It is also corrosive of some metals and some plastics. The reservoir must be drained, and it and the hose must be rinsed out with kerosene, after every use. Thoroughly rinse gloves and other equipment that may have come into contact with it.

Once the machine has been loaded up with fuels and poison, and you have some kerosene standing by for later, you can start to have fun. You will need to keep on the chemical resistant gloves (if you are the one handling the hose) and preferably some eye protection, but a respirator is probably not necessary once you have filled the reservoir with poison. You may need some loppers or pruning saw, as many warrens in my experience are dug in inaccessible spots under bushes.

Take the machine to the warren, and position it on a flat bit of ground, up wind of the most windward opening of the warren. Push the hose down as far as it can go, but don't let it get blocked by soil. Start the machine (it's like a lawn mower and can be a bit fiddly at first), rev it up, and turn on the tap to allow the diesel to flow down, making a nice thick smoke. Once smoking nicely, fill in the hole around the hose. By now, there should be smoke issuing forth from some of the other holes – it can start to look like a scene from the Jurassic at this point. Fill these in too, as quickly as you can – it gets a bit hectic about now – making sure to seal the holes well. If the smoke can get out, so can the poison. If things get too hectic, ease back on the throttle on the machine until you catch up. If you are choking on diesel smoke, turn off the diesel tap while you catch up.



Once the bigger holes are filled in, small holes like mouse and spider holes may start to smoke. Seal these as well. There is one school of thought that says you should leave one hole open downwind, to assist with blow-through, but I don't fancy this idea. I think it is much safer to seal all holes and keep the poison underground, and I've certainly killed a lot of rabbits with this method.

Once all holes are sealed and there is no more smoke showing, turn off the diesel tap and turn on the poison tap, making sure to warn everyone that you are about to do so. Everyone should back off up wind and stay there until the machine operator gives the all-clear. Time the period when the poison is switched on, and after turning it off, wait at least another minute before easing back the throttle and pulling out the hose. Toss this away down wind and allow it to blow a little longer to get rid on any lingering fumes. Seal the hole where the hose was as quickly as possible.

Bunnies have been known to follow the hose out or to manage to dig their way out of one of the other holes. Should this happen, it is considered a mercy to wack them with a spade immediately. They will most likely to be groggy, and will almost certainly have inhaled enough to kill them anyway, but you should finish them off quickly. However, almost all rabbits will die in the burrow, and will not be up to digging their way out.

On one occasion, we found there must have been a blockage in the poison outlet and it did not flow as quickly as normal. Many rabbits must have dug their way out, and when we returned the following day, there were dead bunnies lying everywhere. We

buried them just in case they were a threat to birds, but I have been unable to find any literature to prove that this is the case.

The books all recommend that you use a dog to round up and chase all the rabbits down the holes before you start. Not being a dog owner, we improvised by running around and making a bit of noise at the start, but we drew the line at getting down on all fours and barking.

The most important step is the follow-up. Return and check the warrens regularly. One book says monthly, although we were working over consecutive days and regassed any that had opened up at the start of each day. When we had done all the warrens we could find, we then returned approximately fortnightly and redid any that were open. Some were amazingly persistent. Of course, rabbits will move in from nearby areas to fill any vacuum, so it's a good idea to encourage your neighbours to treat their warrens at the same time.

Phostoxin pellets are handy for burrows with one or two openings, or in difficult to access areas. I have not used these myself but have seen it done. First block all but one hole then, wearing gloves, remove a pellet from the container, wrap it in toilet or tissue paper, wet the paper and shove the pellet down the hole. The gas is released when the pellet becomes wet. Immediately fill in the hole and stand back. Another method is to use a length of plastic pipe, push this down the holes as far as possible, fill in around it, roll the pellet down the pipe, pour some water down the pipe, withdraw the pipe and fill in the hole. Stand back of course.

People I know who have used both methods have reported greater success with the AgMurf machine, possibly because the smoke allows you to seal the warren much more effectively, or possibly because the machine blows the poison right through the warren, but both methods have their place. Just remember, safety first, and get stuck in.

Chris O'Loughlin

AMPHIBIOUS ANECDOTES

Frog or Toad?

According to Gerry Swan (see below), the only toad in Australia is the cane toad, *Bufo marinus*. The true toads *Bufonidae* differ from frogs by fine differences in bone structure and may have a chunky, stumpy appearance. Some native Australian frogs are known as toads or toadlets because of their appearance but nevertheless lack the bone structure of toads and are correctly classified as frogs.

Reference and illustration: *Frogs of Australia (Green Guide)* by Gerry Swan. Published by New Holland, 2001. $16.95

Nobody's Perfect

We revere Linnaeus as the scientist who originated the classification system that we all use for flora and fauna. On occasion he departed from the strict objectivity required by science.

"Most amphibia are abhorrent because of their cold body, pale colour, cartilaginous skeleton, filthy skin, fierce aspect, calculating eye, offensive smell, harsh voice, squalid habitation and terrible venom; and so their Creator has not exerted his powers to make many of them." Linnaeus 1750.

(Quoted in *Frogs of South Australia* by Michael J Tyler, 1977, out of print.)

Peter Reed

LATEST WEED RESEARCH

Excellent control of horehound by plume moths

Peter Sheridan, Animal and Plant Control Officer at Port Lincoln National Park had done releases of the horehound plume moth *(Wheeleria spilodactylus)* at the Park during 1995-96 and Emma Wills of Keith Turnbull Research Institute had followed up with a Weeds CRC-funded visit in 1998.

Peter said the moths had been doing a "fantastic' job at the Park and have suppressed even the big old horehound plants down to about 15cm in height and diameter. Nearly all plants were found to have at least six large larvae on them and there were no flowering heads to be seen, even old ones from the previous year. Peter and his wife had never seen the weed at such low levels. They were expecting the weed to have kicked on this year due to the lower summer temperatures, but these also appear to have favoured the plume moths.

The moths have been found approximately 20km west of the Park (against the prevailing winds), presumably as a result of natural dispersal. The Weeds CRC has learnt that plume moth populations resulting from releases in the late 1990s in and around Robe are also doing well, with moths having spread over 20km. *John Weiss*

Rare species loss increases susceptibility to weed invasion

A field experiment was conducted in California to determine if the removal of rare species from a plant community alters the community's resistance to weed invasion. The plant diversity was lowered in test plots by removal for three consecutive years of 2 to 7 of the less abundant species. The resulting disturbance was controlled for by the removal of an equivalent biomass of the most common species in the plot, and then, in the third year, Italian ryegrass was introduced. The grass established better in plots where biodiversity had been deliberately reduced. Establishment success was inversely related to imposed species richness, ie. incremental species reduction resulted in significant increases in ryegrass colonisation. Biomass removal alone had no effect on establishment of the grass. These results lend credence to the 'fluctuating resource theory': species deletions are accompanied by the release of resources and make a community more susceptible to invasion. Less common species can significantly influence invasions.

Source: Lyons, K.G. and Schwartz, M.W. (2001) Rare species loss alters ecosystem function – invasion resistance. *Ecology Letters* 4, 358-65.

Caulerpa taxifolia – marine weed at West Lakes – began life as a native species

Caulerpa taxifolia, a marine alga native to northern Australia, has become one of the world's worst marine weeds. During the 1970s an extremely hardy, aquarium-bred clone, believed to be derived from a cold water strain possibly originally from Brisbane, was developed in Germany and promoted as an aquarium species throughout the world. After being dumped by a commercial aquarium in Monaco about 1984, it has invaded over 5000ha in the Mediterranean on the coast of five European countries. It has also occupied areas along the Atlantic and Pacific coasts of the USA and coastal areas of Australia, including West Lakes in South Australia. Aquarium caulerpa forms dense, deep monocultures that eliminate other marine life and affect fisheries and tourism.

(All extracts from Under Control : Pest Plant and Animal Management News, *no 21, Sep 2002, published by the Keith Turnbull Research Institute, NRE Frankston, Vic.)*

CAT ORIGINS LATEST

Feral Cats *don't* predate white settlement

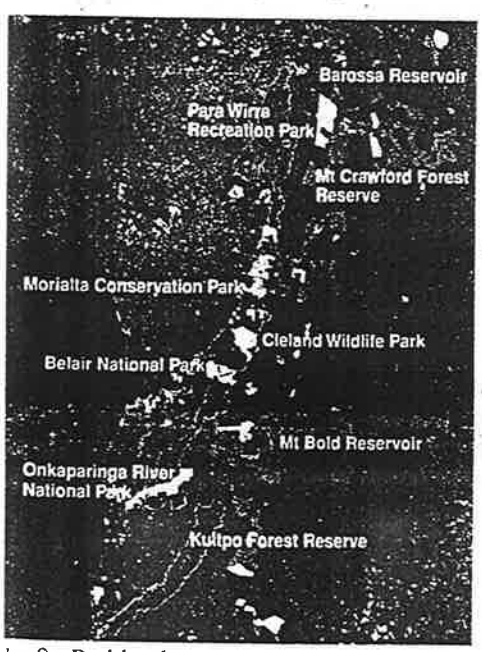
A recent program on ABC TV – 'Ten Million Wildcats', shown on 24 Oct – gave a definitive answer to the intriguing question of the origin of Australia's feral cats (see last newsletter). It was previously speculated that because of the widespread nature of the cat population in Australia, and the earliness of their penetration to the outback, they may have predated European occupation. Theories have been put forward that they were brought here by Indonesians trading with northern aboriginal groups, or they had been released by the Dutch during their voyages along the west coast.

A researcher studied feral cat populations from right across the continent and noted a difference in coat colour, tending to lighter the further west, which suggested that both of these theories may be true. However, when he took samples for DNA analysis, tests proved conclusively that all of Australia's feral cats are descended from cats brought here by English settlers. The difference in coat colour seems to be only an adaptation to the environment.

WHAT'S NEW/WHAT'S NEWS

Yurrebilla – The Greater Mount Lofty Parklands

Reaching from Cox Scrub Conservation Park and Kuitpo Forest Reserve in the south to Para Wirra Recreation Park and Mount Crawford Forest Reserve in the north, The Greater Mount Lofty Parklands will incorporate a mix of publicly owned land and voluntarily nominated privately owned areas.



Over a twenty year period, links will be developed from as far south as Aldinga Scrub and Kuitpo through parks such as Cleland, Belair and Morialta to Sandy Creek and Kaiser Stuhl in the north creating a continuous corridor across the ranges, fulfilling the vision of establishing the Greater Mount Lofty Parklands.

The Greater Mount Lofty Parklands will unite these important reserves providing enhanced protection and representation of the native flora and fauna unique to the area. The program will also support a diversity of initiatives that will contribute to the protection and enhancement of the natural values of the Mount Lofty Ranges.

The management strategy has been designed to work with existing programs such as the Urban Forest Biodiversity Program, Catchment Management Programs, Bushcare and Recreational Trail Management initiatives.

For more information go to www.parks.sa.gov.au.

From a brochure published by the Department of Environment and Heritage

RECENT PUBLICATIONS

Grassland Plants – Identification Books

Grassland plants of South-Eastern Australia – a field guide to native grassland and grassy woodland plants of South-Eastern Australia, by Neil and Jane Marriott. Published by Bloomings Books, 1998. ISBN 1 876 47300 2. $29.95

Contains one species per page in alphabetical order of scientific name. Each page features a colour photograph of the plant, along with description, distribution and similar species and how to differentiate them.

Remember that grassland plants are almost all not grasses, but small flowering plants. Excellent for identifying these, but not good for grasses, where a photo is not as good as a sketch for identification purposes.

Plains wandering : exploring the grassy plains of south-eastern Australia, by Ian Lunt, Tim Barlow and James Ross. Published by the Victorian National Parks Association and the Trust for Nature (Victoria), 1998. ISBN 1 875100 12 1.

An only slightly misleading title and picture of a Plains Wanderer on the cover, as the book is largely about plants and plant identification, but there are chapters on the ecology and wildlife, including birds and reptiles, of grasslands, and chapters on the various regions, including South Australia.

The bulk of the book consists of glossy colour photos of close-ups of plants with brief notes and a distribution code. Many of the grasses are depicted using sketches, which is much more helpful than a photograph, especially as there are close-up drawings of the seed-heads, crucial for identifying grasses.

Crested Pigeons

The Crested Pigeon epitomises the changes that have taken place in the Australian landscape over the past 150 years. They are now a common sight in many urban areas. This quote from explorer John Gould is enlightening.

'The chasteness of its colouring', Gould wrote in 1865, 'the extreme elegance of its form, and the graceful crest which flows from its occiput, all tend to render this Pigeon one of the most lovely members of its family, and it is therefore to be regretted that, owing to its being exclusively an inhabitant of the plains of the interior, it can never become an object of general observation'.

Quoted in The New Nature: Winners and Losers in Wild Australia, *by Tim Low. Published by Viking/Penguin 2000. ISBN 0 670 88466 9. Illustration from* The Birds of Victoria, *by W. Roy Wheeler and Jeremy Boot, published by Nelson 1979. ISBN 0 17 005322 9.*

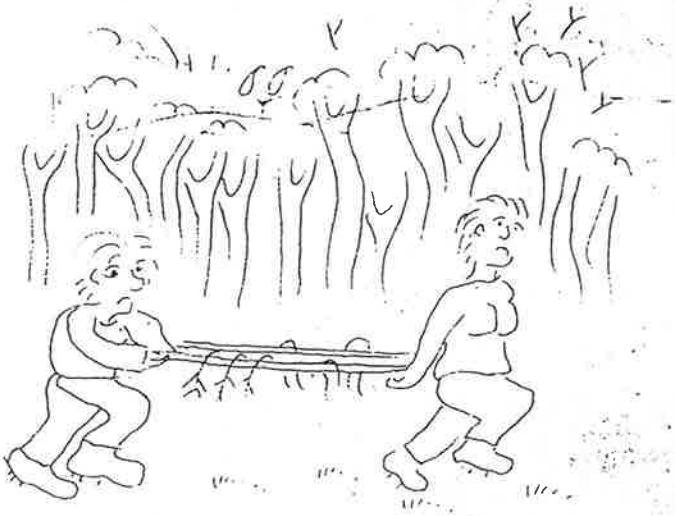
EDUCATION/FUN AND GAMES

Weeding tip of the month

Mulch with the weeds themselves.

Burning weeds or carting them out of the bush is worse than useless – it is wasteful. We keep everything we possibly can, to add to the mulch. In dry places we just put most pulled weeds on the ground with their roots up in the air; in damp places we hang them up to dry on the nearest tree or shrub.

There are a few weeds, or parts of weeds, that are simply not safe to leave in the bush. These we do carry away, but they are only a very small part of the mass of vegetation which we put in safe places until it is ready to atone for its misdeeds and add itself to the protective mulch and give back to the soil all that it has taken out of it.



Some weeds must be carried out of the bush.

Do not pile weeds in heaps

Piling weeds into neat, easy-to-carry heaps makes sense in a conventional garden, but it is bad practice in the bush. Heaps of soft weeds rot down into a nasty squashy mess that is quite often the wrong environment for natives, and there is a very good chance some weeds will re-root and flourish. Heaps of woody weeds are an awful pest to untangle when, as they often do, some of their seedlings grow up through the heaps.

So disperse what you uproot. The soft weeds will quickly dry out and the woody ones will not get in your way during follow-up.

From Bringing back the bush – the Bradley method of bush regeneration, *by Joan Bradley, edited by Shirley Jones. Ure Smith Press, 1991. ISBN 0 7254 0876 6.*

Bird ID for Beginners – Miners and Mynahs

There appears to be much confusion in the general community between the native Noisy Miner and the introduced Indian Mynah. Even though Noisy Miners, which are very common in our gardens, can be noisy, aggressive and drive out other birds, they *are* native.

Indian Mynahs, which are also noisy, aggressive and drive out other birds, are as their name suggests, introduced from Asia. They are chocolate coloured, not grey like the Noisy Miner, and bigger. But they **do not usually occur in South Australia**, despite what you may read in some field guides! There was once a population here, but that was eliminated. They are a problem in cities like Sydney and Melbourne. If you do see one in SA, call NPWS for a hit squad.

EDUCATION/FUN AND GAMES

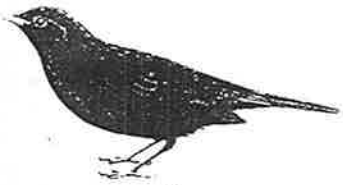
Bird ID for Beginners – Pesky Birds

Not all pesky birds are introduced species. Some native birds, such as the Noisy Miner, have benefited greatly from the changes we have made to our habitat, particularly in our gardens. Some are particularly aggressive and can drive out other species of native birds, to the detriment of biodiversity.

Noisy Miner

This smallish bird (25-28cm) is a mottled grey with a black head and white forehead, and a yellow bill and eye patch. It lives in groups. Although native, the Noisy Miner can be a problem bird. Our changes to the environment have greatly favoured this bird, which is very common in gardens. Also the Noisy Miner is a very aggressive bird, driving out other small birds.

Blackbird



About 25-26cm, male is black all over with a yellow bill. Females and juveniles are a dull brown. Introduced around 1850, it has invaded bushland as well as gardens, orchards and vineyards. The bane of my garden, as it rakes through soil, litter and leaves searching for food and makes a terrible mess.

Starling

Smallish bird (20-21cm), introduced in late 1850s, which has

become a commonly seen pest over much of south-eastern Australia. Iridescent purplish and greenish black, with yellow bill and browner wings. In new plumage, tips if feathers a pale buff, giving plumage a spotted appearance until spots wear off, and bill becomes darker in winter.

House Sparrow

The good old spoggy is often the first bird we learn to recognise as kids. A pity, because it's not a native. It was introduced in the 1860s and is now an abundant pest, found in cities, towns, and farmland. It displaces native birds from nest sites. It is a small bird (14-16cm). It is grey and chestnut, with the male having a black face and the female somewhat duller in colouring. It feeds on grains, fruit and insects and scavenges for food scraps.

References

Image of Noisy Miner from *The Birds of Victoria*, by W. Roy Wheeler and Jeremy Boot, published by Nelson 1979. ISBN 0 17 005322 9.

Images of Starling, Sparrow and Indian Mynah from *The Slater field guide to Australian birds*, by Peter, Pat and Raoul Slater, Rigby 1986. ISBN 0 7270 2085 4.

Image of blackbird from *Field guide to Australian birds*, by Michael Morcombe. Steve Parish Publishing, 2000. ISBN 1 876282 10 X.

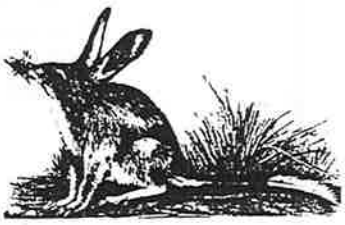
These 2 make excellent field guides. There are other good ones on the market also.

Kids Quiz

1. Native Animals.

Match the name of the animal to the picture of the animal.

a – Bilby
b – Feather Glider
c – Hairy-nosed Wombat
d – Ring-tailed Possum
e – Tasmanian Tiger (Thylacine)
f – Western Grey Kangaroo



1. _____ 2. _____ 3 _____

4 _____ 5 _____ 6 _____

2. Native Birds.

Match the name of the bird with the picture of the bird

a – Crested Pigeon
b – Masked Woodswallow
c – Malleefowl
d – Pelican
e – Regent Parrot
f – Willie Wagtail

1. _____ 2 _____ 3 _____

4. _____ 5. _____ 6. _____

ANSWERS TO KIDS' QUIZ

1. 1) Western Grey Kangaroo 2)Bilby 3)Feather-tailed Glider
   4) Ring-tailed Possum 5) Hairy-nosed Wombat
   6) Tasmanian Tiger (Thylacine)
2. 1) Pelican 2) Malleefowl 3) Crested Pigeon
   4) Masked Woodswallow 5) Willie Wagtail
   6) Regent Parrot
3. I don't know.

Photo Credits Mammal pictures from *Key guide to Australian Mammals* by Leonard Cronin, illustrated by Marion Westmacott. Reed, 1991. ISBN 0 7301 0355 2.
Bird pictures from *The Birds of Victoria,* by W. Roy Wheeler and Jeremy Boot, published by Nelson 1979. ISBN 0 17 005322 9.