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SOCIETIES FOR GROWING AUSTRALIAN PLANTS Inc.

# Wildlife and Native Plants Study Group Newsletter



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Dear Members,

Welcome again to another edition of the newsletter. Hopefully the hot dry days of summer will soon be behind us and we can get on with our autumn nature walks and days in the garden.

I have received a steady stream of newsletters from the State branches of APS, and know that many groups are busy with shows and festivals and plant sales. Some very interesting articles are appearing, and from time to time I will reprint one in the newsletter. The name change saga from SGAP to APS is still occurring across Australia with much debate and consternation. Equally frustrating is the updating and name changing of our Australian flora species. The names for the lay gardener, seem hard enough at the best of times to remember without complicating the matter further by providing entirely new names. Scientifically I can understand the reason why this is happening, however many groups are retaining the older versions, particularly with Eucalyptus and Corymbias, but some of the newer names will come to the forefront and remain there with time. It's a State thing too sometimes, when names are adopted by one State and refused by another, just as plant common names have different interpretations across the borders. What do you think? Is change a good thing or a bad thing? Let us know your views on this.

An interesting article appeared in the January issue of Native Plants (APS NSW) relating to bushfire management in NSW. I know its no consolation to those who were struck by the devastating bushfires over summer, but the very topic of bushfire management is a complex one. It is of particular note across the nation, as there are common misunderstandings relating to the different types of fires and the activities involved in management of the bush. It will always remain a provocative issue to conservationists who hear so readily that National Parks & Wildlife (regardless of states) intend to burn to reduce fuel load, and equally frightening to ordinary people who have lost everything in a fire. Some of the more common terms will be described later in the newsletter.

## IN THIS EDITION

- Fire related definitions by Wendy Goonan, *Native Plants - APS NSW January 2003*
- Bill Tulloch Memorial Lecture given at SGAP Regional Conference 2002 courtesy SGAP Qld. Region *Bulletin, March 2003*
- Birds-Habitat Restoration by Penny Paton, *Environment SA, Vol.9, No 2 2002*
- Will Acacias be lost to Australia? by Dick Burns, *Eucryphia (APS Tas.) April 2003.*
- Wind taught pruning by Leigh Murray, *Journal ANPS Canberra Vol. 13, No. 5 March 2003*

.....and much, much more.....

## **FIRE RELATED DEFINITIONS**

*Provided by Wendy Goonan, Parramatta & Hills District Group with thanks to Gillian Handley, Native Plants (APSW) January 2003, pp 6-8*

The following terms are often used in relation to bushfire management and in the reporting of fires, with many of these definitions coming from the NCC Bushfire Policy, or the Australasian Fire Authorities Council Glossary of Rural Fire Terminology.

**Back-burning** : burning an area ahead of an advancing wildfire in order for that fire to run onto burned ground. This is usually expected to stop a fire in its tracks, but in extreme fire weather and with high intensity fires the back-burned area may be jumped by embers blowing ahead of the fire, fireballs, or simply re-burnt by the advancing fires. All these situations occurred during the 2001-2002 fire season.

**Broad acre burns**: prescribed burning, for the purpose of reducing fuel levels of "extensive areas of land in relation to the total size of the affected natural area in any one year". This is done less often now, as more is understood about the ecological effects of fires. It is also recognised that broad areas of burned landscape may sustain a fire within months of being burned and are therefore not always useful as a fire mitigation strategy.

**Bush fire** : any fire occurring in vegetation.

**Containment, control or fire line, fire break**: a natural or constructed barrier or fire edge used in fire suppression or prescribed burning to limit fire spread.

**Ecological burns**: any burn that is performed for the purpose of conserving or promoting biodiversity.

**Fire mitigation**: any activity that reduces damage or the risk of damage from fires.

**Fire prevention**: preventing fire from occurring. This is an all but impossible task, although steps can be taken by land managers to reduce the rate of arson.

**Fire suppression**: fire fighting, extinguishing. Activities include application of water and fire retardant chemicals, clearing firebreaks and back-burning.

**Fuel management**, the modification or reduction of flammable matter for the purposes of reducing the intensity or rate of spread of a fire.

**Fuel**: Any material that can be ignited and sustain a fire, measured in tonnes/hectare.

**Ground or surface fuel**: leaf litter and twigs, needles, bark, seed cones, grasses, low shrubs.

**Suspended fuel**: foliage and stems of plants up to a few metres from the ground, generally in the understorey, less than 1cm in diameter.

**Hazard reduction**: The reduction of fire hazard through fuel management techniques which include burning, slashing, trittering, hand or mechanical clearing of fuel.

**Pile burns**: burning of a pile of vegetative material in a cleared area. This is often done as part of bush regeneration activities (eg. burning a pile of weeds), and is included in the hazard reduction plans of the BFMC.

**Prescribed burns**: a planned fire ignited by the land owner/manager in accordance with a fuel management plan or for ecosystem management purposes.

### Websites to visit:

Australasian Fire Agency Council-  
[www.ausfire.com](http://www.ausfire.com)  
NCC - [www.ncc.nsw.gov.au](http://www.ncc.nsw.gov.au)

### Did You Know ?

Callistemon is derived from the Greek "calos" meaning beautiful, and "stemon" meaning thread, referring to the stamens. Hence the name is a reference to the beautiful flowers.

Callitris is also derived from "calos" with the ending "tris" coming from the Greek "treis" meaning three, referring to the three fold arrangement of leaves and cone-scales.



## OUR COVER

*SENNA acclinis* (F.Muell.) Randell. Drawing by Graham McDonald  
Text by Graham McDonald.

FAMILY: Caesalpiaceae.

DERIVATION: *Senna*: from the Arabic 'sana', used for species that have purgative and laxative components in leaves and pods;  
*acclinis*: meaning straight, possibly referring to the seed pods.

COMMON NAME: None.

PRONUNCIATION: sen-A a-KLY-nus

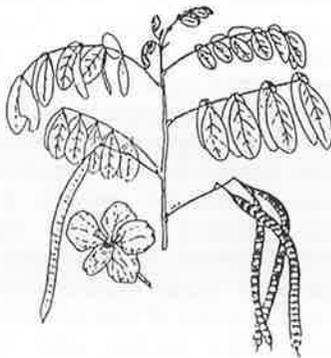
*Senna acclinis* is a rare shrub growing to about 2 metres tall and 0.5 metres wide. It is sparsely branched with leaves in clusters towards the ends of the branchlets. The leaves are pinnate usually with 5 – 6 pairs of leaflets. There are small glands (1.5mm long) located between the first and second, and occasionally between the third pair of leaflets. Leaflets are elliptic to oblong-elliptic measuring 1 – 2.5cm x 0.5 – 1.2cm. They are dark green and glabrous on the upper surface and pale green and glaucous below.

Inflorescences are terminal panicles of yellow flowers resembling (superficially) those of the Easter Cassia (*Senna pendula* var. *glabrata*), but they are a paler yellow. These shrubs flower most of the year. Pods are narrow flattened and brown about 12 – 15cm x 0.5cm containing up to 30 seeds separated by nearly transverse septa. They are drawn out into a short sharp point. Seeds are hard, shiny, dark brown and rhombic in shape, measuring 4mm x 3mm.

*Senna acclinis* occurs in dry rainforest types (dry vine scrubs) and is widely scattered from west of Mackay through the eastern parts of south-east Queensland into New South Wales. It is classified as 'Rare' under the 1992 Nature Conservation Act.

This shrub is easily propagated from scarified seeds and is an extremely hardy long-lived species. It does require good light for best performance. For the best flowering display, several plants should be group planted.

Watering is usually not required.



## BILL TULLOCH MEMORIAL LECTURE

given at SGAP Regional Conference 2002

Presenter: *Robert Kooyman*,

### Evolution, Ecology, and Social Ecology: exploring human interactions with plants and nature.

#### Introduction

Both ecology and quantum theory suggest that "things derive their being and nature by virtue of their mutual dependence and are nothing in themselves" (Nagarjuna, Buddhist sage). This reveals the essential and universal interconnectedness of all things (and supports the concept of the web of life, and the idea of life as a participatory activity in a participatory universe).

Ecosystems are complex adaptive systems, as are the individuals that inhabit them. Complex adaptive systems manifest emergent properties depending on the nature and constituent elements of the system and their interaction with a range of chance factors. The critical goal of the biological sciences (in this age of decline) is to develop predictive capacity within the setting of complex adaptive systems to help define a future for all species.

This is similar to economists and social scientists studying complex dynamical / adaptive systems, (such as human societies and their emergent monetary / economic systems), who seek to balance the current demands for continued economic expansion and human development

with the need to build (and protect) social and natural capital for human survival.

As is evident by the title of this talk and the introduction so far, I have no desire, nor inclination, to be constrained to any one area or aspect of ecology, biology, or philosophy in this evening's discussion. Unashamedly we are here to celebrate our shared interest in, and love of, things that photosynthesise. We do so knowing that collectively we bring a wide variety of values, needs, expectations and desires to this relationship with the plant world, and in so doing we demonstrate that, like all animals on the planet, we are wholly dependent on them (in one way / form or another). This reality has inspired a variety of human responses, from worship, to respect, to love, to the desire to control, to hostility and open warfare.

#### The 'war on plants'

The 'war on plants' and plant communities, and their supporting ecosystem processes and dependent synusia (including the fauna) continues at a gathering pace, and is reason for grave concern. This battle with nature apparently finds fulfilment only in the subjugation and control of nature, and mani-

fects as the destruction of natural diversity and the pathology of glorification of the ordered and simple.

Are we really comfortable with the idea that it is not the meek who shall inherit the earth, but the simple minded sycophants of the status quo? The technocrats, bureaucrats, politicians and those who worship at this altar of self-interest are the global environmental terrorists, and the least deserving of our support. Uncomfortably for all of us, and as a consequence of our own self-interest and participation in this socio-economic dream-world, we stand among them. They are us, and tragically, we continue to support the decline of ecosystem processes and evolutionary potential by failing to question our own social values, including the sensibilities we bring to our relationship with 'nature' and the ethics of 'our engagement and relationship to/with nature.

### *The plants fight back*

But just in case you think of this as a one-way relationship, think about this. Plants can and do fight back, and they often manipulate and control us. Like it or not, plants involve us in their sexual activities and in the dispersal, care and nurture of their off-spring, and remind us constantly of our complete dependence on them.

They intoxicate us (and myriad other fauna species) with exotic scents and the promise of sweet nectars. They provide us with most of our foodstuffs and our pharmacopoeia. They are the source of much of our current energy (fossil

fuels) and are the masters of solar energy extraction and storage. They audaciously and captivatingly display their sex organs for all to see and often in such profusion that we find the scene(s) almost overwhelming, and behind it all, they remain the masters of deception and the 'unfulfilled promise'.

They can move across landscapes and continents at incredible speed, taking up opportunities wherever they encounter them along the way, and all the while they compete among themselves (and with us) for resources and space.

Plants are agile, vagile, athletic, fast, gregarious, communicative, and (when operating within their ecological amplitude and tolerances) inclined to organise themselves into recognisable communities and associations in complex adaptive systems (ecosystems). All this from what some would ungraciously describe as just a bit of wood that learned to stand up. Tragically, and in spite of their incredible abilities, they are losing the war.

### *The search for meaning.*

#### *Defining the ethical.*

Just how do all these factors come together in our lives, and just where do we derive meaning in all this?

We should be comforted by the fact that this is a shared journey of shared experience through both space and time, but as far as I am aware, the discussion of ethics is a uniquely earth based phenomena, and even more explicitly, a profoundly and uniquely human one.

Ethics are, after all, of little use to plants and animals and even less useful to the inanimate aspects of the biosphere. In short, there is (apparently) no universal discussion or focus on matters ethical beyond that evident in humans (at least on this planet). So when we call for a 'planetary ethic', the question which should perhaps be addressed first is - what do we mean by ethical, and how do we define the range and application of this planetary ethos?

Given that the term ethics is generally related to the development of principles and rules to govern and direct human conduct, and is therefore often referred to as the science of morals, it is clear that the development of a planetary ethic requires a commonality, a common theme and understanding, otherwise it will have no basis whatsoever (have a look at - The Sacred Depths of Nature by Ursula Goodenough, 1998).

### *Unifying themes: cosmology and the development of a planetary ethic*

The need for a planetary ethic is perhaps self evident when we realise that at present our global conversations on topics as varied as global climate change, genocide and ethnic cleansing, species extinction, habitat preservation / conservation, human population growth, human rights, animal rights, hunger, poverty, disease, nuclear and other weapons of 'mass destruction', pollution, the state of the environment including the oceans, and on and on, are a muddled mess of international, national, cultural,

and religious self interest and manoeuvring (read Ursula Goodenough).

Trapped between self-interest, the politics of power, guilt, and a predisposition to the abdication of responsibility, we are left disempowered and poorly informed. Without a common or shared orientation, we do not even speak the same 'language' (E.O. Wilson in - Consilience), nor do we know how or where to begin the discussion, or how to listen to the story of others. We lack even the motivation to respond. (see Ursula Goodenough for more reading)

Yet, beneath it all, we do share a unifying story, we have access to a shared world view which is free of cultural constraint and which provides us with a consensus view as to how things are. Our scientific account of 'nature', the epic of evolution, the cosmology of the universe, the formation of stars and planets, the dominant cosmic themes of life - this great story is the one true story, and it has the power to unite us. Beyond even the potentially massive contribution of unity there is another possibility, that of absolute personal fulfilment.

This story can give us the greatest of all gifts, the ultimate prize - better than enlightenment, more profound than self-realisation, more meaningful than the attainment of any (so-called) spiritual culmination point or state - what is on offer here exceeds all these factors combined thousands of times over - simply put - it offers us the chance to feel at home in the universe, at home on this beautiful

planet, and at home in our 'country', (try Stuart Kauffman, Murray Gellman, David Tacey, Ursula Goodenough, Fritjof Capra, or try Einstein's recognition of 'cosmic religious feelings').

### *Exploring 'connection to country'*

For Australian Aboriginal people the land was, and is, an extension of themselves (and they are an extension of 'it'). The land represents their primal origin and source as well as defining their present social existence. This is a spiritual bond that civilises and restrains their behaviour towards the world, and recognises their expanded identity in the natural realm.

Aboriginal people have long been ecologically committed because they felt the environment to be part of themselves, intrinsically related to their innermost human and emotional reality, not because they laboured, like we do today, under moral constraints about what we think we *should* do or feel about the environment. Tragically for us we find ourselves disconnected from such a reality, and all the poorer for it. (read David Tacey, Murray Bookchin).

### *Stability: holy grail or just an illusion?*

In our shared cultural setting we tend to find ourselves enamoured of stability and in fear of change. Given that we are hurtling through space at break-neck speeds on the edge of an expanding galaxy on some unknown trajectory, spinning wildly on our planetary axis and all the while circling a thermo-nuclear

power plant which has a limited life and is not always predictable (read stable), such a state of mind and such expectations of stability may for some seem unwise.

Fortunately for us, embedded in these longer time-scale cosmic processes are long periods of relative (earthly) stability. Time enough for evolutionary and ecological processes to do their work, and time enough for them to adapt to changing environmental conditions (on the earth).

Well, at least that has been the general background theme. The reality here is that there have been a number of punctuations (read small and large scale extinction events) in this pattern of stability, and the fossil record would suggest that evolution has operated in concentrated fits and starts in response to such 'events' (read for example, E.O. Wilson).

### *The Gondwanic journey: rafting north*

One of the more sedate planetary processes of great interest to botanists, palaeobotanists, biogeographers, conservation biologists, and just about everyone if they took the time to think about it, is continental drift. The whole of the Australian landmass (once part of the ancient super continent, Gondwana) continues to 'drift' (or raft) northwards. This is one of the slower journeys we take on the planet, and in fact we in Australia travel 'just a little further north each year', though the few millimetres involved largely go unnoticed until the volcanoes in Papua New Guinea erupt and

remind us of the pressures exerted by colliding land masses.

This Gondwanan fragment known as Australia has drifted lazily north for upwards of 120-160 million years (Ma), since Gondwana began to break up and Australia separated from Antarctica. After separation, this rafting landmass we call home took with it the ancient gondwanic rainforest flora (the 'southern' flora) and set sail to the north. As the distance between Antarctica and Australia increased the southern ocean began to form, and most importantly, the circum-polar oceanic currents began to exert their control over 'our' climate (read for example, Robert Hill - History of the Australian vegetation).

### *The fossil record and the 'archaic' flora*

Evidence of the consequences of climate change and oscillation throughout geologic history are available to us in the sediment records of ancient lake and riverbeds, estuary and ocean floors, and sedimentary strata in the landscape around us. Scientists have for many years explored this remarkable sediment and fossil record, revealing to us some of the complex history of this land and its unique assemblage of species.

From being dominated by cool, wet gondwanic rainforests, replete with ancient gymnosperms, the Australian landscape is now largely dominated by a dry adapted flora, albeit a dry adapted flora that evolved from those ancient rainforests - rainforests which survive now in only a few small (and well

watered) pockets in the upland cool mountain forests and surrounding lowlands of the tropics and subtropics, and at higher latitudes in moist, fire protected sites.

### *Threatened Species and archaic rainforest taxa*

Any discussion about threatened species and their conservation management necessarily requires some understanding of the species habitat, including the ecosystem(s) of which it is part, the species autecology and general biology and ecology, its evolutionary history, and genetic and biogeographic relationship to other species.

A knowledge of the evolution of the Australian flora and fauna is thus critical to the development of an understanding of what it is we think we may be doing when we embark on 'managing' threatened species. Knowing something about a species origins, preferred habitat(s), and ecology and biology can inform our recovery efforts and help direct our actions. It can also fill us with awe and wonder as we contemplate the long evolutionary history of the current Australian flora and fauna; a remarkable history of climate change, latitudinal change, continental isolation, interactions between the evolving flora and fauna, soil formation processes, increasing aridity and interaction with fire, as well as the history and impacts of human occupation.

What good fortune it is to live and work in one of these small pockets of moist forest refugia, the south-east Queensland and northern New South Wales area. We are

surrounded and bounded by ancient forests, and reside in an evolutionary and biodiversity 'hotspot'. Everywhere you turn, everywhere you look, you can see the evidence of the ecological and evolutionary significance of this area.

Certainly, every-time you undertake 'work on the land' in this area, you are likely to make contact with **threatened species or their habitat. This is at once a source of great joy and a dilemma for managers and agencies charged with protecting these species and ecosystems, as our presence, our land and resource use patterns, and our uniquely destructive potential have combined to drive many species and ecosystem types in this area into the 'threatened' status.**

#### **Threatened Species of the Wollumbin volcanic caldera area**

1. A brief history of time, chance, and evolutionary process, and the unlikely odds of us being here to discuss it at all.
2. The concentration of rare, restricted, endemic, and threatened species in the Wollumbin caldera area - Why are they all here?
3. 'Archaic' flora of the caldera area - *Araucaria cunninghamii*, *Nothofagus moorei*, *Eucryphia jinksii*, *Eidothea hardeniana*, and families such as Proteaceae, Cunoniaceae, Trimeniaceae, Winteraceae, Elaeocarpaceae. What is this so-called 'archaic' flora, and where did it come from?
4. The role of science in providing

information, understanding, knowledge related to - evolutionary biology, conservation biology / ecology, threatened species and ecosystems. How do scientists and researchers find out how these systems, processes, and species operate?

5. Botanic Case Studies in the archaic and threatened - *Uromyrtus australis*, and *Eidothea hardeniana*. Mystery, intrigue, adventure, mind numbing tedium, discovery, collaboration, research, data entry, analysis, revelation, evaluation, review: the science of chasing trees through the forest (they can be fast, long lived, unpredictable, incredibly beautiful, sometimes dangerous, and some can change form)



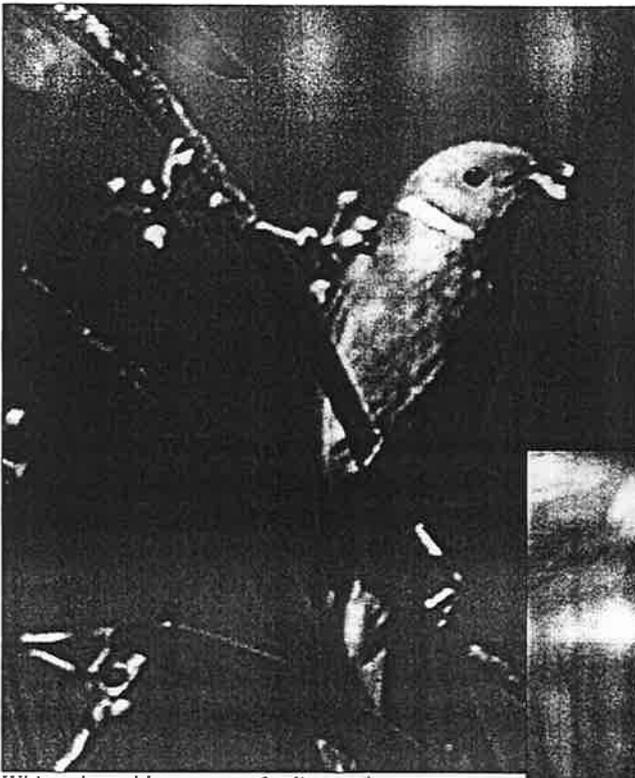
- References and further reading** (indicative list only, most of the authors below have a number of publications that are worth reading and that allow you to follow the development of their thinking, and that of those who influenced them. A most informative and enjoyable process that I heartily recommend):
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# Habitat Birds Restoration

By Penny Paton



*White-plumed honeyeater feeding on lerp – an example of an 'increaser'.*



*Male rufous whistler.*



*Southern whiteface.*

**M**any land managers are asking for information on how they can manage their properties for birds, and more specifically, (if they are involved in habitat restoration) what methods will favour native birds. Like most ecological questions this is complex and we don't have all the answers. However, given that people are asking questions, it is desirable to attempt to give guidance even if this is based on imperfect knowledge.

## What birds am I trying to attract?

We can look at this problem at several scales: the landscape, the groups of properties and the property level. The scale we choose will depend on the type of birds we are talking about. Some bird species have a small home range and are able to live their entire lives in just a few hectares, eg superb fairy-wrens. Clearly, revegetation on a single property is more likely to benefit the birds that have a small home range and to be less effective at improving habitat for long-range migrants, birds that have large home ranges or nomadic species.

Another important factor to consider in habitat restoration for birds is that some species are much easier to provide for than others. Attracting nectarivorous birds (those that feed mainly on nectar) is generally much easier than attracting insectivorous birds (those that feed on insects). Also, a few species are what some scientists call 'increasers'. For whatever reasons, these birds do well even in (or sometimes because of) degraded habitats and in revegetation sites that can never exactly mimic native vegetation. Examples of increasers are grey shrike-thrush and white-browed scrub-wren.

As well as increasers, there are threatened species and 'decliners' – bird species that are generally in decline across temperate southern Australia. These species tend to be smaller birds, most are ground and/or low-scrub feeders and dwellers that feed on insects, and include flycatchers (eg robins), which are over-represented. Attracting these species back into areas, through revegetation and habitat restoration, is a much harder proposition and requires planning and execution at the groups of properties scale or the catchment and landscape scale.

## Principles for Planning Revegetation/Habitat Restoration

### Principle 1 : Bigger is better

Revegetation/habitat restoration needs to be implemented over much bigger areas than it is currently done – both in terms of block size and total area. Much of southern SA has less than 20 percent remnant vegetation (and sometimes less than 10 percent) and recent research in fragmented landscapes shows that for biodiversity conservation of certain habitat types, the remnancy figure should be much higher. Ideally, sites should be 10ha or larger and rectangular or round – unless they are corridors.

### Principle 2 : Revegetate the most cleared habitat types – Woodlands

Planning for revegetation should take into account the pattern of land clearance. Land clearing has occurred preferentially on the more fertile soils, so that some habitat types are rarer than others. Birds that depend on these preferentially cleared habitats – even for a portion of the year – will be more at risk. Attempts should be made to restore or revegetate these areas first.

### Principle 3 : Protect existing habitats

The protection and enhancement of existing native vegetation is more beneficial than revegetation, because revegetation cannot mimic native vegetation. Generally, remnants support more diversity and numbers of birds than revegetation. Also, revegetation and habitat restoration close to remnant vegetation is more likely to attract a diversity of bird species than programs that are isolated. In particular, more woodlands need fencing.

*Cont. on p.30*

**Principle 4 : Mimic natural habitats in revegetation**

If revegetation is the appropriate course of action, a combination of tubestock planting and direct seeding is probably the best option. The scale of the problem of vegetation clearance and fragmentation in many areas is such that broadacre direct seeding is required. However, in areas where little native vegetation exists, direct seeding on a large scale may be impossible due to lack of seed source, so tubestock planting would be more important, at least in the early years.

**Local is Good**

Use plants that occur naturally in the area (local native species) as these will provide more resources for local wildlife, such as food, shelter and nest material. Collecting seed as close to the revegetation site as possible will protect the integrity of local gene pools.

**Layers are Good**

Species choice in revegetation need to include a range of species as well as different strata (trees, shrubs and groundcovers) and to try and mimic areas of native vegetation with a similar soil type as well as a similar aspect and slope.

**Patchy is Good**

Tubestock should be planted at irregular intervals, as different bird species require different niches - generally canopy feeders are not fussy about tree/shrub density, but ground-feeders require spaces between trees and shrubs. Try and duplicate the patchy nature of natural landscapes by introducing patchiness into revegetation



*Scarlet robin - a bird that is declining.*



*Diamond firetail - declining in distribution.*



*Black-chinned honeyeater - declining in distribution.*

– looking at remnant vegetation nearby will help in choosing species to group together and in achieving appropriate planting distances.

**Different bird foods are Good**

When choosing plant species think about what food source they may provide the birds. For example, callistemons, banksias, grevilleas and some eucalypts will provide nectar for honeyeaters and lorikeets: acacia seeds will attract rosellas and bronzewing; and native grasses will provide food for finches. Try and include species that provide for a range of bird groups. If you are particularly interested in providing for nectar-feeding birds, find out when the different plants flower and include species that flower at different times of the year, eg *Banksia marginata* is summer - flowering, *Callistemon rugosus* flowers in spring and *Eucalyptus leucoxylon* flowers in winter (in some areas).

**Principle 5 : Leave dead trees standing**

Dead timber – both standing and fallen – is an important part of the habitat of two declining bird species in the Mt Lofty Ranges – namely the hooded robin and the brown tree creeper. So, leaving dead trees and dead timber in areas of revegetation, or adding logs to such sites would be beneficial to some birds as well as other fauna. Similarly, rocks and coarse litter are likely to increase microhabitat diversity and be beneficial to fauna.

Contact Nature Conservation Society of SA, Temperate Woodlands Campaigner, Penny Paton on (08) 8344 8891 or email: paton@chariot.net.au

Table 1. Decline of bird populations in the Mt Lofty Ranges (after Paton et al. 2000)

<b>Birds no longer seen<sup>1</sup></b>	<b>Decline in distribution and abundance<sup>2</sup></b>
<b>Woodland habitats</b>	<b>Woodland habitats</b>
Spotted quail-thrush	Restless flycatcher
Bush stone-curlew	Jacky Winter
Regent honeyeater	Hooded robin
Swift parrot	Yellow thornbill
Glossy black-cockatoo	Southern whiteface
King quail	Brown tree creeper
Brown quail	Black-chinned honeyeater <sup>3</sup>
Red-chested button-quail	Diamond firetail
Azure kingfisher	
<b>Decline in abundance<sup>2</sup></b>	<b>Heaths and swamplands</b>
<b>Woodland habitats</b>	Southern emu-wren
Scarlet robin	Chestnut-rumped heathwren
Crested shrike-tit	Tawny-crowned honeyeater
Rufous whistler	Beautiful firetail
Dusky woodswallow	Sources: <sup>1</sup> Ford and Howe (1980)
Tree martin	<sup>2</sup> Paton et al. (1994)
Red-rumped parrot	<sup>3</sup> Chapman (1994)

## WILL ACACIAS BE LOST TO AUSTRALIA?

by Dick Burns, courtesy *Eucryphia* April 2003, pp.7-9

### Some background

The International Code of Botanical Nomenclature provides rules governing the naming of plants. It is an extremely strict document. The Code ensures that only one name for a plant is accepted world-wide. Without it, botanical names would be as useful as common names are between States of Australia. The Code controls how a botanical name can be formed and, relevant to the present issue, what should happen if two names for one plant exist, and what should happen if name changes are proposed:

- If two names for same species are found in the literature, the Code states that the first properly published name is the one that has to be accepted (hence the recent change of *Bracteantha* to *Xerochrysum*).
- When a new genus is described, one species in that group is selected as the type species. No matter how many subdivisions of that genus occur subsequently, the original genus name remains with the group that contains the type species. As well, one specimen used in that original description is selected as the type specimen. For example, the type species for *Eucalyptus* is *Eucalyptus obliqua*, named from a Bruny Island collection. So when it was decided that the bloodwoods should be separated from stringybarks, peppermints, etc. because *E.obliqua* is, in the stringybark group, the new name had to apply to the bloodwoods. And if a taxonomist decided that the mainland *E.obliqua* is different to the Tasmanian form, Tasmania would retain *Eucalyptus*.

The genus *Acacia* was originally described by a Philip Miller in 1754. This was well before the current Code was formulated (1862) and only a year after Linnaeus published the binomial system that is used for all living things. According to Dr. Bruce Maslin, one of Australia's major experts on *Acacia*, "Miller's concept of the genus was very broad" and "one of the species included in Miller's paper, *Acacia nilotica* (which occurs in Africa and Asia and as a weed here) was subsequently selected as the type species for the genus." Thus if the genus is divided, under the normal provisions of the Code, the name *Acacia* would be applied to the group containing *A.nilotica*. I've always believed that the rules of the Code were meant to keep the process straightforward and as simple as possible.

However, any of you who check on the naming of this type species (eg. *Flora of Australia* vol.11A, p.204) will see that the name *Acacia*

*nilotica* was generated in 1813 not 1754. Some Australian species were named before 1813. The process is obviously much more complex.

### The problem

You may remember in the 1980s there was a proposal to split the genus *Acacia* into three genera. Because of the Code, most Australian species would have to be assigned to a separate genus, *Racosperma*. This subdivision of *Acacia* was not accepted by most botanists because there was insufficient justification for the split. However since that time, more evidence has come forward, including genetic information and structural and evolutionary analyses. The major botanists in the field now accept that a splitting of the genus into at least three genera is justified. Dr. Judy West warned us of this at the 2001 ASGAP Conference in Canberra.

There are about 1350 species of *Acacia* world wide, with the majority in Australia (approximately 955 species). *Acacia nilotica*, the type species, belongs to a group of about 160 species that are found in Africa (73 sp.), the Americas (about 60 sp.), Asia (36 sp.) and Australia (9 sp. mostly in northern Australia). A second group containing 231 species is distributed through Africa, the Americas, Asia and with 2 species in northern Queensland. It is proposed to call this group by the genus name *Senegalia*.

Most Australian species occur in the third group. The 960 species in this group (with the majority being Australian species) will become *Racosperma* under the proposal. (The reasons for forming these groups are many and my botanical skills are not adequate to attempt to summarise them. There is a detailed discussion in *Flora of Australia* vol.11A, pp.3-9)

So if the rules of the Code are applied with *Acacia nilotica* as the type species, over 1000 names will have to be changed. And it gets worse. Botanical names have gender, and because the genus name is treated as a noun and the species as an adjective, the two words have to be of the same gender. For example when *Phebalium* was examined recently, *Phebalium squameum* (masculine) became *Nematolepis squamea* (feminine). *Acacia* is feminine, but *Racosperma* is neuter despite the same letter ending. *Acacia axillaris* would become *Racosperma axillare*, *Acacia dealbata* would become *Racosperma dealbatum*, and so on. Every complete collection or list of the 19 Tasmanian species would require 53 name changes. (some species are divided into subspecies.)

### The effects

All the experts know that the change will be disruptive. One taxonomist has been quoted as

saying that we learn to live with it. Others, including Dr.Maslin, Dr.Judy west & Dr.Tony Orchard are seeking a less disruptive means for resolving the issue.

The difficulties stated by the Aussie plant lovers such as us include the following:

- It is difficult for untrained plant enthusiasts to keep abreast of all the name changes. Many of us were concerned when the earlier *Acacia/Racosperma* shift was proposed, and relieved when it did not eventuate. We seem to be going through a period of higher than normal frequency of alterations to botanical names. To some it becomes just too hard to learn the new names. For others it appears a bit farcical; we try to argue for the use of scientific names in preference to common names when the common names appear more stable. Some in APS say that they will ignore the new names, but that would simply lead to subsequent publications becoming less and less comprehensible.
- Acacias are icon Australian plants. Our national floral emblem is *Acacia pycnantha* and our official colours, gold and green, are derived from the golden wattle colours. I don't know if any other country has an *Acacia* in its emblem, be that as it may, Australia requires special consideration. Australian acacias, are ubiquitous, being found in almost all Australian environments, from desert or coast to subalpine habitats. They make up nearly 20% of our flora.
- I have the impression that we are a special nation in another way as well. Countries such as the UK and USA seem not to have the culture of "growing natives" that is so prevalent here. It is probably not an important scientific point, but the interest shown in the country's flora by its citizens must not be overlooked by international decision-makers.
- Despite what I wrote in the first dot point, we are slowly succeeding in establishing the use by Australians of botanical names in preference to common names (or at least the generic name becoming the common name). Everyone can recognise callistemons and banksias but when I started learning about native plants, they were both bottlebrushes. Many gardeners outside APS now speak of acacias rather than wattles. So much gain will be lost if *Acacia* is replaced.
- If each of us has only one plant book that lists Tasmanian species, we would only have 53 words to change. But of course this is not the case. Few enthusiasts would attempt to alter the genus/species and subspecies names for the 955 odd Australian species. But the staff in herbaria will have to. Herbarium collections contain more than one

specimen of each species. The task would be monumental and hinder valuable research work.

- In 2002 the *Flora of Australia* volume on *Acacia* were published along with the associated interactive electronic key called 'WATTLE'. These significant, definitive publications would be rendered out-of-date if *Racosperma* were recognised.
- The above points sound selfish. Having accepted that a name change is necessary, what we seem to be saying is "OK as long as it's not us who cops it." However more than half the species growing overseas will also have to change their name. As well, Australian acacias are grown for various purposes in about 70 other countries. All interested people in all countries will have to cope with the 1000-plus name changes.

#### Possible solution

There is provision within the Code for changing the type species in special cases. I don't know the details, but this apparently has already been used in the case of the tomato, a species of *Lycopersicon*.

The way out of this impending disastrous situation is to ask the international committee that has the authority to adjudicate in such matters to select a different type species for *Acacia*. To cause least disruption, this would have to be a species from within the largest (Australian) group. Drs. Maslin, West and Orchard are preparing a paper arguing this case. It will soon be considered by the international committee. Their case will be strengthened if they can demonstrate public support for their position. This article will provide some such support.

#### References:

*Flora of Australia*, Vol 11A, *Mimosaceae, Acacia* part 1. (2001) Melbourne: ABRIS/CSIRO Pub.

Gledhill, D. (1985) *The names of plants*. Cambridge University Press.

Maslin, Bruce (2002) unpublished paper submitted to Australian plants, and personal communication. ©

Marion & John Simmons write:

We would like to express our considerable concern and to make known to interested native plant growers, botanists, horticulturists and *Acacia* enthusiasts that the move to split the genus *Acacia* and rename the majority of Australian *Acacia* species is again on the drawing board....this proposal can only be disruptive and confusing to many..... We urge members to support the botanical specialists who propose to argue the case for the retention of the name *Acacia* for our Australian icons.

**WIND-TAUGHT PRUNING** by Leigh Murray  
Courtesy ANPS Canberra Region Journal Vol.13  
No.5 March 2003 pp.11-13

When some of the first plants at our Tuross Head holiday house were decapitated by strong winds, I had to learn to prune. With a small block of land, a need for screening, and a drought, there's been plenty of scope to learn more. This is what I've learnt in four years:

To withstand wind, plants have to have strong trunks and branches, not much soft growth to act as a sail, and be fairly vertical. Pruning helps to achieve this. It also helps plants withstand drought, flower more and longer, grow more densely and fit into tight spaces.

#### Tip pruning

As soon as new plants are obviously growing, I pinch out the top pair of leaves on each branch (starting with one, next time a couple, next time more), doing this as often as necessary to keep soft growth to a minimum and train the plant into a compact form. And when plants are bigger, frequent tip pruning encourages more flowers and a longer flowering period.

#### General pruning

As plants grow, I cut back soft growth (to just above a node), sometimes cutting shrubs back by up to a third after flowering - although if I tip prune enough, or cut back slightly and often, usually I don't need to cut back harder. Until I get experience with each species, I prune only a little (a branch or two, or a few tips) and watch how the plant behaves.

#### Leaning plants

I try to prevent plants leaning away from prevailing winds or towards the light. Sometimes I remove entire branches (near the trunk, just above the swelling at the trunk junction). Usually I just remove leaves or branchlets dragging the trunk over, looking at the results of each cut before doing the next, assessing how much the plant has moved upright. If a tiny leaning plant doesn't yet have side branches, I trim off half of any leaves weighing down the stem. Each pruning helps the plant stand more upright, and it's repeated until the trunk is near vertical.

#### Destructive forces

Last year a mini-tornado hit Tuross, with winds clocked at over 150km/h. The garden stood up well, mainly by good luck and slightly by good management (lots of pruning). A four metre *Eucalyptus lansdowneana* lost two metres off the top; a *E.leptophylla* was blown over. Both trees had just had a growth spurt and were in need of tip pruning - the wind beat me to it. Only light

pruning was needed to tidy up the *E.lansdowneana*. It's now fine, if slightly lopsided. We cut off the *E.leptophylla* near its base. It soon shot lots of new growth. But after surviving the drought for months on only small servings of 'grey water', it succumbed. One trip we arrived to find a trail of devastation along part of our east boundary. Large branches were broken off the six *Melaleuca nesophila*, three *Banksia integrifolia* and four *Acacia implexa* that screen the area. The biggest tree, a 5 metre *Acacia implexa* with a trunk of over 100mm diameter, was decapitated and bent over at 90 degrees about a metre above the ground. While I was clearing other branches, my partner sawed it off just under the bend, leaving only bare wood (I'd intended to ask him to leave a little foliage). Thinking the tree was a goner, I used it as an in situ stake for a bird bath. But a month later in the midst of the drought, it burst into leaf, all the way up that bare woody trunk - so his pruning was OK after all.

#### Coppicing

We planted a *Eucalyptus bridgesiana* with the intention of coppicing it so that it retained its gorgeous juvenile foliage (heart-shaped, silvery leaves). It grew so rapidly that we had to do this only a year after it was planted, to control its height and to cut off the adult foliage that was just starting to show. We sawed it off about 100mm above ground level. It soon sprouted a flush of juvenile leaves. In the two years since, we haven't needed to coppice it again - it's been pruned often enough to keep it low and juvenile. Another eucalypt we've had to coppice was a three year old *E.sideroxylon rosea* that was found knocked over. We cut the trunk off about 70mm above the base. It now has several trunks (I removed a few) and its growing strongly.

I've planted eucalypts on our northern boundary, smack bang in the view. Mainly mallees they were chosen because if they get too big they can be coppiced. Eucalypts with a lignotuber (a swelling at the base of the trunk) can be coppiced once they're established, and this is a good way to achieve a lower, multi-trunked tree or shrub. Banksias often have lignotubers too. A few eucalypts are said to respond poorly to coppicing (eg. *E.astringens*).

#### Resents pruning

Very occasionally a book entry states that a plant 'resents pruning'. Some examples are the closely related *Eucalyptus rhodanthe* and *E. macrocarpa* (which are said to dislike ordinary pruning but accept coppicing happily), *E.gracilis* and *Myoporum floribundum* (which should be pruned as little as possible.)

### Deadheading

To attract wildlife to our new, smallish garden, every flower counted. So I began to deadhead (remove old flowers), especially on long-flowering or repeat-flowering plants such as *Grevillea 'Honey Gem'*, *G. 'Superb'*, *Callistemon citrinus* and *Brachyscome multifida*. With other plants deadheading seems to make little difference (eg. *G.arenaria*); it's tip pruning that inspires them to produce more flowers. Following expert advice, I also cut off the stems of fading *Anigozanthos* flowers (close to the base, along with nearby leaves) to improve future flowering.

### Training

With pathways close to our side boundaries, there's only a narrow space for screening plants. *Melaleuca nesophila* was chosen for one of these areas because it's described as suitable to espalier (ie. training flat against a structure). Basically, these plants can be pruned to suit the space. Ours are flourishing with frequent pruning. I'm also hoping to train *Myoporum floribundum* to a flat shape by removing unwanted branches while they're small. Some shrubs can be trained into small trees by removing lower branches to leave a clean trunk (thereby taking up much less ground space); I've done this with *Grevillea shiressii* and *Acacia rubida*.

### Hedging

Some plants form dense shrubs with regular pruning, making ideal hedges. We have an informal hedge of four *Grevillea 'Coastal Glow'* - a splendid wind-breaking screen 2.5m high and wide, 6m long. It's a mecca for birds because with frequent tip pruning, it's in flower for most of the year.

We also have the broad leaf *Grevillea arenaria*, which would make a marvellous, bird-attracting hedge of about 2m high; it needs only a little tip pruning. The more vigorous *G. 'Coastal Glow'* needs pruning a few times a year with secateurs or if time's short, hedge shears - as does *Westringia 'Wynyabbie Gem'*, another good hedging plant.

### Pruning for drought

Following the advice of John Knight (curator of the Eurobodalla Regional Botanic Gardens) that plants should be pruned to reduce their moisture needs during drought, I cut off most of the new growth on our shrubs and smaller trees; this greatly reduced wilting. I didn't cut back harder because I couldn't water well afterwards (owing to water restrictions).

### Tools

I have a small armoury of pruning tools: secateurs, hedge shears, pole pruner, saw and

ladder, plus finger and thumb for tip pruning. I use secateurs for general pruning, hedge shears for the vigorous plants (some grevilleas, melaleucas, eucalypts) and the pole pruner for the tall stuff (with ladder if necessary). My partner does big branches or trunks, with an ordinary jack saw (we steer clear of pruning saws now - they can bounce back and 'bite'.)

### Don'ts

Things I don't do: leave stubs at eye level, remove *all* of the foliage on a branch, prune heavily when a plant is stressed or can't be watered afterwards, and cut back damaged stems before an ailing plant recovers (I tried this a few times, with only bad results). (A recent TV program said not to prune back into living tissue on plants that have died back because they send chemicals to the damage site to protect against bacterial and fungal attack.)

### Flow-on effects

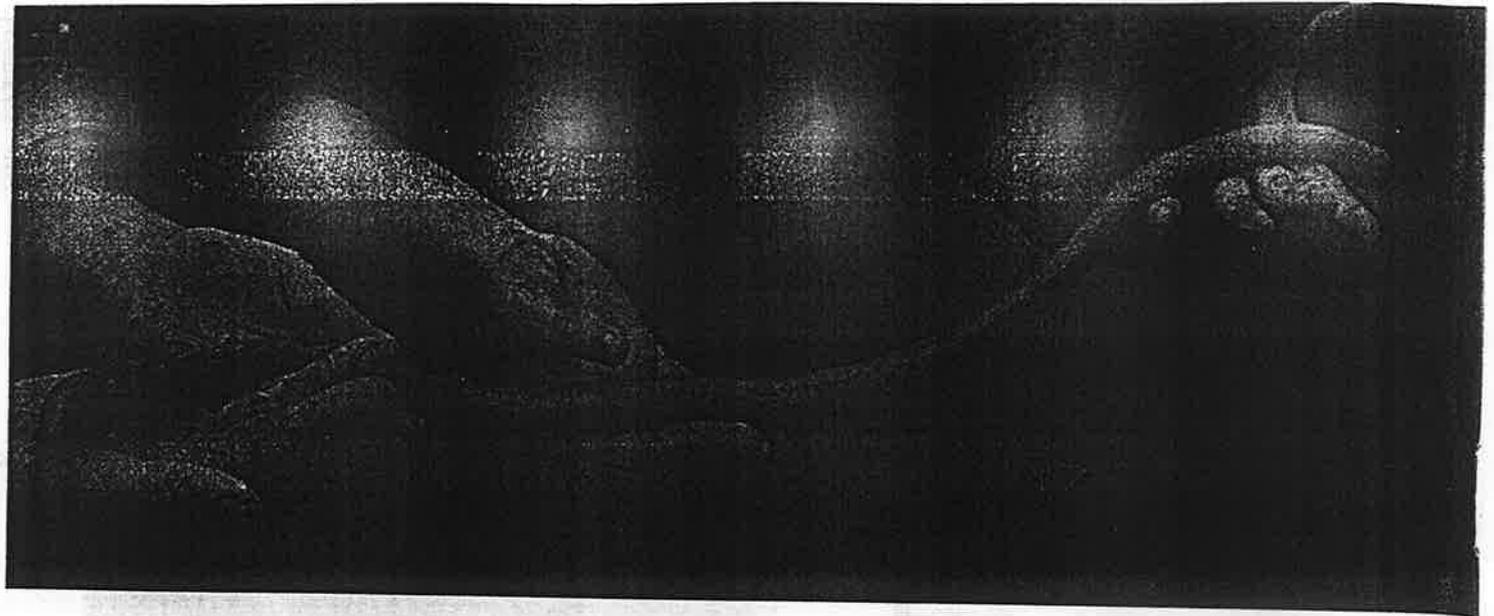
The Tuross winds turned me into a pruner, an inveterate tip pruner. Now our Queanbeyan plants - which used to lead a gangly, woody, unpruned existence - are beginning to benefit too. They're responding well to repeated light pruning by bushing out and flowering more.

©

### EDITOR'S COMMENTS:

Leigh has dealt well with all the types of pruning possible. However it is important to adapt management practices to the specific location and situation, as well as the nature of the plant. In our situation in the mallee, we have poor soils (non-wetting sands), and mallee species have shallow root systems and lignotubers, which doesn't make for heavy pruning. However in our woodlot we have planted Western Australian species mostly *Eucalyptus occidentalis*, these have been pruned of their low branches in the first five years, in an effort for the species to grow vertical. These plants provide shelter and are a haven for birds and other fauna, and have fared well in all our wind storms including a mini-tornado. They have been watered weekly only in their first year of life, and have adapted well to the conditions. They are now 12 years old, and stand taller than any mallee species, apart from the magnificent but declining pink gum, *Eucalyptus fasciculosa*. It will probably be another five to ten years before these trees can be coppiced. The disadvantage of pruning, and having vertical trees, means they flower and set seed high up in the branches, making seed collection difficult unless you're standing on the tray of a truck.

Plants adapt to different locations as they fine-tune growth to climatic and natural conditions, (eg. drought, temperatures and frost) in order to survive. We must consider this before pruning.



# The Earthworm and the

## CONSERVING INVERTEBRATES IN VICTORIA

*They may not be well known, but two strikingly different animals in Victoria are now recognised as indicators of overall habitat conditions for a much larger group of invertebrates.*

**WILDLIFE CONSERVATION** is, in the minds of most people, about mammals, birds, reptiles, amphibians, and sometimes fish. Spineless animals — invertebrates — are often not given a second thought.

It is interesting to look at two threatened Victorian species that many people would not consider to be on par with bilbies or the Gouldian Finch in terms of conservation status: the Giant Gippsland Earthworm and the Hemiphlebia Damsselfly. The former reflects changes to the land and the latter changes to inland waters since European settlement.

When European settlers moved south-east from Melbourne into the undulating hills of South Gippsland, they were confronted by a tall and wet eucalypt forest, tree ferns, and Lyrebirds; in fact, the region was popularly called 'The Land of the Lyrebird.' Today, there are no remaining tall wet forests, and no Lyrebirds. The land was cleared and converted into pasture, and the region is one of the richest dairy areas in Victoria. Yet at least one interesting native species of animal remains in South Gippsland, the Giant Gippsland Earthworm.

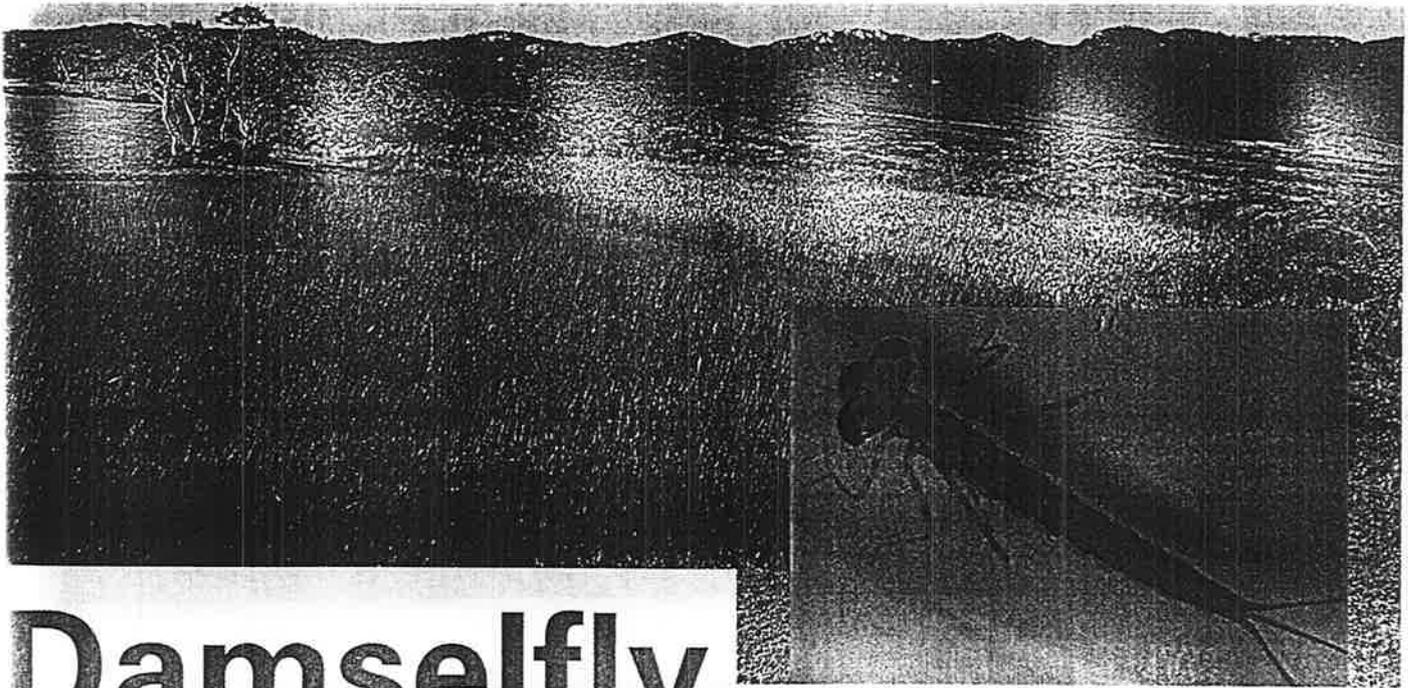
This large earthworm species was discovered during land clearing, and some settlers, in ignorance, mistook it for a snake. The Giant Gippsland Earthworm can contract and expand its body length, but relaxed individual adults can measure nearly one metre in length. It lives entirely underground (often to depths of up to 1.5 metres, or deeper) and is quite fragile in that damaged individuals generally die. It is a slow-growing species, taking several years to reach adulthood, and the breeding rate is very low. The species is restricted to a small region of South Gippsland (approximately 100,000 ha):

within this region, its distribution is very patchy and it is restricted to pockets near streams, soaks, and springs. Anecdotal evidence suggests that it was formerly more widespread within this region, but did not survive in areas where there was major soil disturbance (such as ploughing).

### Tracking worm proves difficult

The Giant Gippsland Earthworm seems to have survived in areas where subsoil damage has been minimal, such as slopes that were too steep to plough. Thus its subterranean habitat has prevented this species from becoming extinct. It survives primarily on private land and in the absence, in many cases, of native vegetation cover. Its subterranean habit and its fragile nature make it a difficult species to manage because its distribution can only be determined by listening for them moving through tunnels or by digging them up. Local landowners are very keen on assisting with protecting the Giant Gippsland Earthworm on their own farms, but we are still lacking non-destructive techniques to map potential Giant Gippsland Earthworm habitats and to count them underground without digging them up. Hopefully development of new technologies will enable us to do so in the near future.

In contrast, the Hemiphlebia Damsselfly (*Hemiphlebia mirabilis*) is an aquatic species with adults that have a total length of about 24 mm. Among the damsselflies, this species fits into a taxonomic group of its own because it is one of the most primitive living species: it has been described as a 'living fossil'. It lives near swamps and billabongs where the immature stages live in water and are predators. It only breeds once a year, and it is thought that female damsselflies lay their



# Damselfly

by Alan Yen

**top left:** Settlers in Victoria first stumbled across the Giant Gippsland Earthworm (*Megascolides australis*) during early land clearing. On average, relaxed individual adults measure about one metre in length. The worm lives entirely underground and takes several years to reach adulthood.

**above:** The Hemiphysalis Damselfly belongs to an aquatic species that fits into a taxonomic group of its own because it is one of the most primitive living damselfly species.

eggs into aquatic vegetation. Its distribution is more geographically widespread than that of the Giant Gippsland Earthworm, but numbers of individuals at any one locality may be much lower. It has been found in Victoria (Goulburn Valley, upper reaches of the Yarra, Yea and Wilsons Promontory National Park) and Tasmania (Mt William and Flinders Island). Since its discovery in 1868, it disappeared from some known locations for many years due to degradation of the original vegetated floodplain habitat by vegetation clearance, wetland drainage, river regulation and livestock grazing. The main populations are located in seasonally flooded heathland swamps with emergent sedges within Wilsons Promontory National Park. The main threats to the populations in this National Park are inappropriate fuel reduction burning in heath surrounding the swamps, although some form of regular burning is probably required to prevent replacement of the heath by dense Tea-Tree scrub.

These two species of invertebrates are focal species for conservation. One represents the terrestrial environment and the other aquatic habitats. Both occur in habitats that have experienced major change since European settlement. The Giant Gippsland Earthworm is a survivor of a once very wet and tall forest that has been converted to highly productive farmland. The issue here is to maintain the subterranean habitat of the Giant Gippsland Earthworm and maintain compatibility with high value and sustainable agriculture. Changes to the distribution and numbers of the Hemiphysalis Damselfly reflect management of some of our water bodies.

## Hidden meaning behind list

Since the declaration of the Flora and Fauna Guarantee Act in Victoria, 40 species of non-marine invertebrates from a wide range of groups have been listed as threatened under that Act and given protection. They include Crustacea such as freshwater shrimps, amphipods, burrowing crayfish, and spiny crayfish (13 species), snails and freshwater mussels (5), earthworms (1), caddisflies (2), stoneflies (5), ants (2), native bees (1), damselflies (1), glow-worms (1), and moths and butterflies (9). In terms of acceptance of the need to conserve invertebrates, many people have no problems in thinking about butterflies. They represent a well-known group of insects (most Australian species have been described and can be identified) that is popular (they are colourful and harmless to human health), and can be used as environmental indicators because of their close association with plants. Less than 25 per cent of the listed threatened non-marine invertebrate species in Victoria are butterflies. This is indeed interesting because it would be expected that any list of threatened species would be dominated by the species that we know most about, which in the case of invertebrates, is the butterflies. The domination of the list by invertebrates from a wide range of taxonomic groups, many of which are not so well known, suggests that there are many more threatened species and that invertebrates are subjected to threats just as much as the better known vertebrates.

Since European settlement in Victoria, the major threats to invertebrates include clearance of native vegetation (including fragmentation), expanding urbanisation, agriculture (grazing, pastures, cropping), and altered hydrological regimes. The threatened Victorian invertebrates occur in aquatic habitats (23 species), woodlands and forests (13), grasslands (3), and caves (1) — all habitats that have been severely disrupted over the last 150 years. The conservation of the Giant Gippsland Earthworm and the Hemiphysalis Damselfly, as well as the other threatened invertebrates in Victoria, is a small step in conserving bigger things because their survival reflects suitable habitat conditions for other species of invertebrates.

**Dr Alan Yen** is a freelance invertebrate ecologist who works on the conservation of non-marine invertebrates including the Giant Gippsland Earthworm and the Eltham Copper Butterfly.

# naturewatch

nature news around Australia

Compiled by Kate Bright



Image: courtesy University of Adelaide

## Western Australia

The Western Australian Government has announced moves to legalise the keeping of some reptiles and amphibians as pets.

The government has announced regulations, introduced under the Wildlife Conservation Act 1950, that will provide the framework for a licensing system that is to be controlled and managed by the Department of Conservation and Land Management

Species on the allowed-to-keep list will include the Western Green and Golden Bell Frog (Motorbike Frog), Western Bearded Dragon, Western Blue Tongue Lizard, Bobtail Lizard, Stimson's Python and South-West Carpet Python.

The number of animals allowed will increase over time.

Environment and Heritage minister, Dr Judy Edwards, says Western Australia is the only state without a licensing system in place for the keeping of reptiles and amphibians as pets, although she is keen to point out that taking reptiles and amphibians from the wild to keep as pets is illegal and results in prosecution if caught

There will be strict regulations governing who can keep what, and who will be eligible to breed

For example, only persons over 18 years of age 'with suitable experience and facilities' will be allowed to keep dangerous snakes as pets. And crocodiles and marine turtles, both of which are classified as reptiles, will be excluded from regulations and will not be allowed to be kept.

There will be five licence categories that will range from Category 1 — (exempt from licensing) involving the easiest and safest to keep reptiles and amphibians (this category will only be used once there is a ready availability of animals), to Category 5 — Expert Keeping Licence, which will cover very difficult to keep and dangerous (highly venomous) reptiles and amphibians

People will have to pay for licences, with the higher categories attracting higher fees

## South Australia

Dame Roma Mitchell. She had a bit of a sting in her tail, that one. Or so think University of Adelaide scientists, who have named a wasp after her

The legal pioneer now has *Pseudofoenus mitchellae* forever associated with her memory, after Dr John Jennings and Professor Andrew Austin from the university's Centre for Evolutionary Biology and Biodiversity conducted a review of the hyptiogastriine subfamily of wasp

Their paper, which appears in the October issue of *Invertebrate Systematics* (CSIRO Publishing), was the first time in 40 years that a revision of the subfamily had occurred, and resulted in the description of 40 new species.

It took almost 20 years to describe and name *Pseudofoenus mitchellae*. In 1982, several specimens of the species were collected by Dr Jo Cardale of the Australian National Insect Collection at Fowler's Gap Research Station in western New South Wales

'Perhaps less than a quarter of Australia's wasps have been described to date and it is certainly not unusual when an expert looks in museum collections to find quite a few undescribed species. In some cases these have been sitting in the collections for perhaps 75 to 100 years,' Dr Jennings says

He says he uses a variety of criteria when naming a new wasp species, which range from looking at a particular characteristic, such as colour, size or hairiness, to naming after the collector or the locality where the wasp was collected. In the case of the Dame Roma wasp, Dr Jennings says he was describing the wasp in March of 2000 when it was announced that Dame Roma had died, upon which he decided to name the species after her

Dame Roma's namesake, measuring a relatively large 5-25 mm long, is unusual in that it preys on the larvae of native bees and wasps and then feeds on the pollen food stores provided for the developing bee or wasp larvae

## EDUCATION/FUN AND GAMES

### Weeding tip of the month

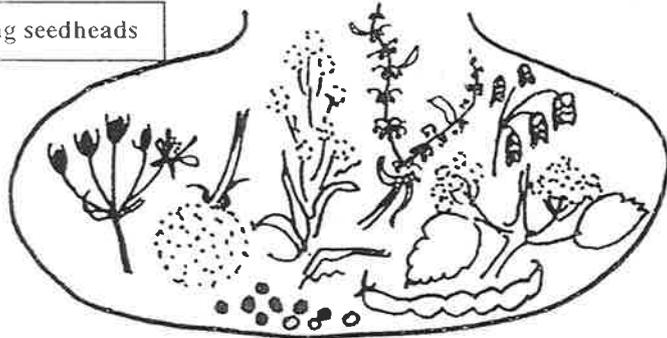
#### Removal of seed heads

Some people are horrified when we ignore privets heavy with seed or, at an earlier stage, smothered in flowers. Shouldn't they be cut off, they ask. But unless you intend removing the entire plant within the week, such action, which is in effect pruning, will only strengthen the roots and make the task of eventual removal more difficult.

Seedheads of herbs, particularly annuals, are in a different category from trees and shrubs. Many herbs seed freely and the seeds germinate more readily than those of the larger woody plants. Experience will tell you which herbaceous plants in the area you are clearing are likely to pose a problem with seed.

Always try to remove the weeds before they set seed. If they are in flower when you find them, you must remove the flowers first of all, to ensure that you do not scatter the seeds. If you are too late for this, and if the seeds are windborne ones, put a bag over the seedheads on the leeward side so that the seeds will fall into the bag and you can carry them out. Note the location and make a point of returning at a slightly earlier date the following year to catch the plant before the seed matures and is again scattered.

Bag seedheads



You may often meet with problems. Imagine that you are just ending a session of work when you come across a weed patch such as fleabane, with the seedheads about to open, and the weeds growing in a region thick with minute native seedlings where great care is needed. What should you do? Ideally, whenever possible, remove the whole plant immediately. If you cannot do this, then quickly cut off the seedheads and bag them to carry out and dispose of. You must return within the week to remove the plants themselves. Some will have been stimulated to fresh growth and you will find new seedheads are forming and flourishing.

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.

## WEB SITES OF INTEREST

#### Environment Australia

Cliff says that there is a lot of free information and fact sheets available at this website.

Try <http://www.ea.gov.au/about/siteindex.html>

#### Land and Water Australia

Also has many fact sheets available, as well as other publications.

Go to [www.lwa.gov.au/nativevegetation](http://www.lwa.gov.au/nativevegetation)

#### Backyards for Wildlife

For information on this scheme and how to make your garden wildlife friendly, go to the Urban Forest Biodiversity Program's website at [www.urbanforest.on.net](http://www.urbanforest.on.net)

## EDUCATION/FUN AND GAMES

### Bird ID for Beginners – Cockatoos and Galahs

These are large birds that can make themselves very obvious at times with their loud, raucous calls. Despite this, their identity can be confused at times.



#### Sulphur-crested Cockatoo

Large (49cm) white bird with loud raucous screech, usually in noisy flocks. Its long yellow crest gives it its name, but this is not always obvious in the distance. Look for yellow under wings, black bill and black feet. Becoming more common in urban areas.

#### Little Corella

Smaller than a Sulphur-crested at 38cm, but still a large white bird with a short white crest. Usually some pink on the face. The white bill usually most obvious feature to distinguish from Sulphur-crested. Usually in large noisy flocks. In the South-East, there is also the Long-billed Corella, which has (you guessed it) a long bill and obvious pink feathers on the throat. It is the same size as the Little Corella.



#### Pink (Major Mitchell's) Cockatoo



One of my all-time favourite birds, mere words cannot describe its loveliness, and a black and white photo has no hope. White wings, underparts, face, neck and underwing a most delicate shade of pink, and a prominent white crest with orange/red and yellow stripes. Its voice is a distinctive 2 note quavering falsetto. At 36cm

the same size as a Galah, whose description sounds similar but they cannot be compared in loveliness.

#### Galah

If the Pink Cockatoo is the height of delicate beauty, then the Galah looks like a cheap tart. Its underparts, face and neck are a garish pink and its upper parts grey. In truth a Galah is actually a lovely bird, but spoilt by over-familiarity, and the use of its name as an epithet of stupidity. Also by its habit of screeching loudly when disturbed. Usually in pairs or flocks.



#### Yellow-tailed Black Cockatoos

Also one of my favourites, but of funereal beauty. Black with yellow ear patches and yellow panels in the tail. A very large bird at 60-69cm. Flies in small flocks with slow measured wing beats and a haunting call, heard more and more over the city.



#### References

Images of Sulphur-Crested and Yellow-tailed Black Cockatoos from *The Birds of Victoria*, by W. Roy Wheeler and Jeremy Boot, published by Nelson 1979. ISBN 0 17 005322 9. Other images from *Australian Birds: an introduction to familiar species – pocket traveller*, published by Viking. ISBN 0 670 04009 6. Excellent value at \$4.95.