

# INDIGENOTES



Open shrub to small tree, growing 2-4m. It has a small flat brown seed, wind dispersed. Blooms December to January. Can be used as a shark repellent and also emits a chemical useful as a sunscreen.

A drawing of Sweet Bursaria (*Bursaria spinosa*) by Janie Christopherson from *Move Over Rose, Here Comes the Blue Devil* by Bob McDonald.



# So What's Interesting About The Sweet Bursaria?

Walkers wandering through their favourite woodland patches throughout the year, mostly pass *Bursaria spinosa* or "Sweet Bursaria" without giving it a second glance. However, around Christmas time, when the woodland's spring flower colour parade is but a withering memory, it tends to attract their attention. This is a response to its sweet "pittosporum" like scent and the attractive panicles of small star like white flowers blanketing the bushes.

The botanical inquisitiveness of the walkers is subsequently prompted enough to engage in a closer inspection. This often leads to the muttering of the name "Christmas Bush" amongst the group. Commonly at this point, little further interest is shown. Consequently, the profusion of insect and bird life humming around these plants remains undisturbed, as the walkers continue on their merry way, decidedly disinterested in any further examples of this "take it for granted" shrub.

*The following summary explores some of the reasons why this shrub should be considered anything but uninteresting!*

## Common Names Galore!

Its abundance across southern Australia has resulted in a variety of common names. These include "Christmas Bush" and "Sweet Bursaria" which were discussed earlier. However the names, "Blackthorn" and "Prickly Box" were initially used by the early graziers, who were frustrated by its persistence in snagging the wool of passing sheep or bloodying browsing cattle with its sharp spines. The name "Native Box" relates to colonial pastoralists using it as a hedging plant often as a substitute to the more sinister invasive weed species "Boxthorn" (*Lycium ferocissimum*). "Boxwood" is another common name, which has been applied to the small tree specimens of this plant, because not only do they have an attractive box-like bark, but they also provide a source of quality, attractively figured, craft wood.

## Why the *Bursaria spinosa*?

"Bursaria" derives from the Greek word "bursa". This word was used to describe a sack, pouch or purse-like structure. The applicability of this word to this plant is obvious, given the many purse like seed capsules that are prominently displayed from late summer onwards. Children are intrigued when they can relate this plant to the professions of "Ship's Bursar or School's Bursar". They are often amused with the knowledge that these jobs relate to this botanical name. The implication is that these positions control the "purse" or the financial matters,



for a boat or a school respectively.

"Spinosa" refers to the spiny/thorny nature of the most common subspecies, namely *Bursaria spinosa* var *spinosa*, which is typically located in harsher conditions. *Bursaria spinosa* var *macrophylla* is a broader leaved, non-spiny subspecies growing in moister less demanding woodland environments.

## Horticultural Attributes

English and Californian horticulturalists have landscaped with "Sweet Bursaria" for more than a hundred years, describing it as "charming" and "delightful". This is in recognition of its pleasant summer floral display, coupled with its handsome tessellated box-like bark. These attributes make it a useful specimen plant or alternatively, a hedging plant. A row of closely planted "Bursaria" seedlings will produce an impenetrable formal hedge, if regularly clipped. A natural, taller and more open hedge results if they are allowed to grow unchecked. This informal hedge provides excellent bird nesting sites and spider web locations.

Indigenous plantings of "Bursaria" can perform "anti-personnel" functions. Their spiny nature directs pedestrian movement in the landscape, assists in minimising the vandalism of new plantings and protects the native feathered and furry creatures from marauding domestic pets.

Following weeding of the vicious "boxthorn" weed that is often located in open paddocks and grassy communities, "Bursaria" has proven to be the ideal replacement plant. Its tight, spiny form, similar to "boxthorn", provides a reasonable habitat substitute for the many creatures that would have adapted to the earlier protection offered by the "boxthorn"

bushes.

## Ecological Considerations

Sheep and cattle browsing in degraded woodland communities (bush runs), cause the demise of many native shrubs, herbs, grasses and groundcovers. This is a consequence of the persistent grazing not only of the native understorey plant's foliage but also their young succulent seedlings that may have germinated. Depending on the stocking rates and how long the grazing continues unabated, the ecological values of the woodland community may diminish rapidly. Just prior to the stage when natural regeneration loses its ability to heal the land, the degradation signs are typically, browsed "Bursaria" shrubs standing as solitary sentinels amongst a plethora of introduced pasture weeds and erosion scars.

However, all is not lost! With a little education and attitudinal change by the land manager, accompanied by an effective stock control fence, installed after the de-stocking of the bush run, natural regeneration can begin to operate to restore the original woodland community. Important in this natural regeneration process, is the role of the tolerant "Bursaria" remnants. These not only provide critical habitat for the recolonisation by insects and birds, but also provide a protective framework for young native seedlings to germinate and grow from the native seed stored in the soil.

Each "Bursaria" bush offers a nectar and larval food source for birds, beetles, butterflies, moths, wasps, bees, ants, etc. This in turn, allows pollination, seed dispersal and nutrient cycling processes to be initiated. These are the building blocks for successful natural regeneration of degraded woodland communities.

## Hill topping Sites

Hill topping sites have recently been recognised for their role as foci for mating of butterflies. They provide sites, proud of the lower sea of exotic pastures, for butterfly mating. This mating process brings together a mixture of genetic material from sparse and frequently isolated butterfly populations. These degraded rocky outcrop remnants, often consist of only a framework of hardy *Acacia* spp. and "Bursaria" trees and shrubs along with a few species of native grasses, sedges and groundcovers.

However, degraded as they are, they still provide a stable set of physical and botanical features recognisable sufficiently enough by the male butterflies, that they will comfortably use these sites to attract passing females for mating. This stability is essential, as the male butterflies will otherwise abandon these sites, following substantial changes to the site's vegetation. Local butterfly extinctions and the subsequent loss of pollinators for local provenance plants are the result.

## The Bright Copper Butterfly

This butterfly relies on "Bursaria" for its larval food. It is often seen in the upper suburbs of Hobart or on these "hill-topping" sites, following the pupation of its caterpillars. This butterfly has a symbiotic relationship with black ants that attend its caterpillars protecting them from predators, in exchange for their honey-like fluid secretions.

## Spider Web Sites

"Bursaria" bushes provide an intricate architecture of thorns and twiggy foliage, which is much sought after by numerous species of spiders for constructing their webs. When the bushes are flowering, their sweet nectar attracts a myriad of insects, only to be entrapped in these 3 dimensional spider snares.

These spider webs also have an important role in attracting a diversity of indigenous birds. In order for successful nest building to be completed by a number of our native birds, such as Grey Fantails, Crescent, Black Headed and New Holland Honeyeaters, Tasmanian and Brown Thornbills, all our Robins etc, they are reliant on the collection of spider web spinings to knit their nests together. Bursaria not only offers a safe location for nest building, but also supplies source of essential ingredients.

## "Aesculin" An extract from the leaves

The glycoside named Aesculin found only in sufficiently high concentrations within the leaves of "Bursaria" proved very important to the World War 2 military forces. Originally, before the W.W. 2, Aesculin was only extracted in very low concentrations from the bark of the English "Horse Chestnut" trees (*Aesculus hippocastanum*) following the felling of the tree. This destructive process was curtailed when it was discovered that this active agent could be extracted from the dried "Bursaria" leaves, after hammer milling and solvent extraction.

Aesculin provided the active ingredient for a sun screening lotion. This relieved the sunburn problem particularly for the fully exposed turret gunners of the W.W.2 Bombers. It also proved a valuable bacteriological reagent in the testing for tropical diseases for Australian Forces in the tropical theatres of war. An associated use was for effective treatment of blood vessel disorders of our servicemen including its use as an agent to manage haemorrhoids.

In summary, for the many reasons discussed, it does earn its place in any woodland revegetation project. It also has enough stories for memories to reflect on that it may be worth more than a second glance particularly if it is in flower.

**Phil Watson**

# “The Great Salinity Debate: Part II - Why the recharge-discharge model is fundamentally flawed”

by **Christine Jones**, Rangelands Officer,  
DLWC, PO Box 199a, Armidale NSW 2350  
e-mail: [cjones@dlwc.nsw.gov.au](mailto:cjones@dlwc.nsw.gov.au)

The recharge-discharge model which has been used to describe the changes in water balance since European settlement is based on false assumptions concerning i) the nature of pre-European vegetation and ii) the way water moves in the landscape. The use of this flawed model as a basis for strategies to combat dryland salinity underpins the poor success rates achieved to date.

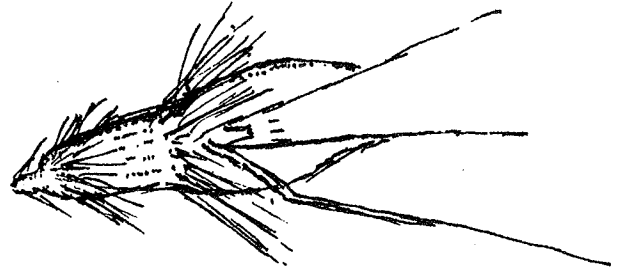
## Native vegetation

We hear a lot about the clearing of native vegetation in relation to dryland salinity. Most people assume that the words “native vegetation” mean “trees and shrubs”. Contrary to popular opinion, the historical record clearly shows that in the early years of European settlement many of the higher rainfall areas of temperate Australia were grassy woodlands, that is, widely spaced trees with a grassy understorey.

The explorers and early surveyors described the richness and diversity of this vision splendid, with grasses frequently up to their horses' bellies. Many of the hills were recorded as being grassed to their summits, having only thinly scattered trees, or being treeless. The descriptions of the grassy vegetation were remarkably similar across the temperate parts of eastern, southern and south-western Australia, and the comment was invariably made that, unlike many parts of America where clearing was a pre-requisite, here most of the land was immediately ready for grazing or the plough.

Early settlers could not have anticipated the rapid deterioration in the quality and diversity of groundcover and the decline in soil quality that accompanied European style grazing and cultivation. In parallel with the loss of grassland habitat was the extinction of 20 previously common species of small marsupials and the near extinction of a myriad of others. The significant role that these native fauna played in soil enhancement is not widely recognised. In combination with the cessation in aboriginal burning and soil disturbance regimes, the widespread loss of the thousands of small animals that loosened soil, buried organic matter and consumed emerging tree seedlings, produced massive changes to the ecology of the Australian landscape. So much so that today's “remnant vegetation” probably bears little resemblance to the plant communities in existence 200 years ago.

Europeans were caught unawares by the sudden explosion in the numbers of trees and shrubs which followed settlement. In 1848, Thomas Mitchell, Surveyor



General for NSW, described “*thick forests of young trees, where, formerly, a man might gallop without impediment, and see whole miles before him*”. Observations of regrowth were reported many times thereafter by other observers across southern Australia. For example, Howitt (1890) described the tree regrowth in Victoria “...*After some years of occupation, whole tracks of country became covered with forests of young saplings...and at present time these have so much increased, and grown so much, that it is difficult to ride over parts which one can see by the few scattered old giants were at one time open grassy country*”. Subsequent generations found it necessary to clear this regrowth in order for agricultural activities to proceed.

The changes in the quality and quantity of the groundcover since European settlement have had enormous implications for water balance in the Australian landscape. The diverse perennial grassland communities which proved so productive for early settlers could respond to rain at any time of the year. Furthermore, the soil organisms which proliferated in response to the high root biomass and the activities of the grassland fauna, produced humic materials and microbial gums which glued soil particles together, creating a crumb structure which resisted erosion. Soil microbes also produced plant growth hormones which stimulated root growth and enabled plant roots to penetrate clay subsoils. The many pore spaces in these healthy, living soils enabled them to hold large volumes of water.

**The movement of water in the landscape**  
Dryland salinity is the result of a water cycle that is out of balance. The salt is an unwelcome fellow traveller with rising groundwater, and even though serious in its own right, salinity is merely an indicator of a more deep-seated problem. It is therefore extremely important that we look very carefully at what is happening at the landscape level, sooner rather than later.

**In comparison with pre-European times, there is now LESS water entering aquifers in the HIGHER parts of the landscape (and hence LESS fresh groundwater available to feed springs and streams),**

**MORE runoff and lateral subsurface flow on undulating country (which may be intercepted by dams and contour banks and may not necessarily reach rivers other than in periods of high rainfall) and MORE recharge to water tables in the LOWER parts of the landscape (Fig.1, Part B).**

This is almost the opposite of the widely accepted recharge-discharge model on which most salinity "solutions" are based. The recharge-discharge model depicts MORE water entering deep drainage in the higher parts of the landscape with the removal of the original native vegetation, which is assumed to be trees, which in turn are assumed to be deep rooted. This excess water then apparently travels underground, collecting salt along the way, to emerge as discharge at the break of slope or in low-lying areas (Fig. 1, Part A). Although the model appears seductively simple, there are no biological or physical mechanisms by which these processes can occur at the landscape or regional scale.

### **"Recharge" in the upper catchment**

**Imagine that you're standing on the side of a fairly steep hill in the pouring rain. The hillside is completely bare. Where does the water go? Straight down the side of the hill, taking soil with it. Not directly into the soil and into "deep drainage" as the recharge model tells us will happen if there are no trees. Any water that does infiltrate will also run downslope on top of the subsoil as lateral flow, under the force of gravity. If there are rocky outcrops, some water will seep through cracks, but this will only account for a small percentage. The remaining water has no mechanism for becoming recharge until it reaches the lower parts of the catchment.**

Now imagine that there are trees on the hill, but no grasses or other groundcover. Where does the water go? Again, straight down the side of the hill, perhaps a little more slowly. If there's leaf litter, at least some of the rain will infiltrate, but it will then also travel as lateral flow unless the soil is high in organic matter.

Finally, imagine that the hill is covered with dense tussocky perennial grasses which have deep, fibrous root systems. The soil is well mulched and you can't see any bare ground. Where does the water go? The V-shaped grass architecture, in combination with high levels of organic matter both in soil and on the friable soil surface, will facilitate the rapid infiltration and storage of rain as it falls. The chance of water moving downslope will be significantly reduced. The water held in pore spaces between soil aggregates in the root zone will be available for later use by the grassland plants and the soil community of invertebrates and microorganisms.

A small amount will slowly percolate through the subsoil (or enter cracks in the parent material) and provide clear, filtered water for springs and streams. It is

extremely important for future generations that this process continues. When the water runs on the top of the ground instead, or on top of the subsoil, we get into the all too familiar flood/drought cycle, with rivers carrying either too much or too little water, while freshwater aquifers are shrinking.

### **Recharge in the lower catchment**

The conventional recharge-discharge model has provided landholders in the lower parts of the landscape with a scapegoat for their own inappropriate (although unintentional) land management practices. Where there are annual crops or pastures, or where perennials are overgrazed, enormous amounts of water enter the groundwater below the break of slope. Despite this, the tendency has been to point the finger at others higher in the catchment and blame them for all the recharge.

Certainly, some water has travelled downslope, but the lower parts of the landscape normally account for the major portion of the total land area, as well as for most of the recharge if conventional cropping or conventional grazing are the major land uses. The fact that the eruptions of saline water are often at the break of slope doesn't necessarily mean that all of the water came from above – it simply means that the rising groundwater put backward pressure on any water moving downhill and there was nowhere else for it to go. This phenomenon can be demonstrated by placing a piezometer above the high water mark on the beach. As the tide comes in, the water level rises in the tube. If you were only observing the water level in the piezometer and couldn't "see" the tide coming in, it would be natural to assume that the water had moved downslope from the sand dunes behind.

In the lower parts of the landscape, fibrous-rooted perennial grasses and associated organic components will again hold most of the rainfall in the root zone, where it can increase the productivity of a wide range of enterprises. Remember, a pulsed grazed native pasture base will be more nutrient and water efficient than a high input introduced pasture and will complement, rather than compete with, cropping, viticulture, horticulture or silviculture. If the main land use is grazing, a diversity of cool season (C3) and warm season (C4) perennial native grasses will provide year round productivity, stability and drought tolerance, provided the management is appropriate (refer Part I this series). A small amount of water will still go through to deep drainage, but that's what was happening 200 years ago.

### **Discharge**

The rate of movement of water in underground aquifers depends on many factors, but in most situations takes between 300 and 1000 years to travel one kilometre. For water to travel 50 km underground could take up to 50,000 years. If you have saline discharge on your property, the chances are that recharge also took place there. The good news with respect to this local hydrology scenario is that landholders can have some control

over their own destiny where dryland salinity and other land degradation processes are concerned.

**In some places freshwater aquifers are drying up while saline water tables are expanding. How could those two things be happening at the same time? It can be explained quite easily if the recharge-discharge model is in fact upside down. The conventional model states that recharge occurs high in the catchment and discharge occurs lower down. The available evidence suggests that there is very little true recharge at the top (albeit too much lateral flow, which adds to the discharge at the bottom) and that both recharge and discharge are occurring in the lower parts of the landscape. Unfortunately this has resulted in some of the freshwater aquifers beginning to backfill from enlarging saline aquifers below.**

**The current situation**

The recharge-discharge model as shown in Fig.1 (Part A) is being taught in schools across Australia today. A whole generation of children will grow up believing that it

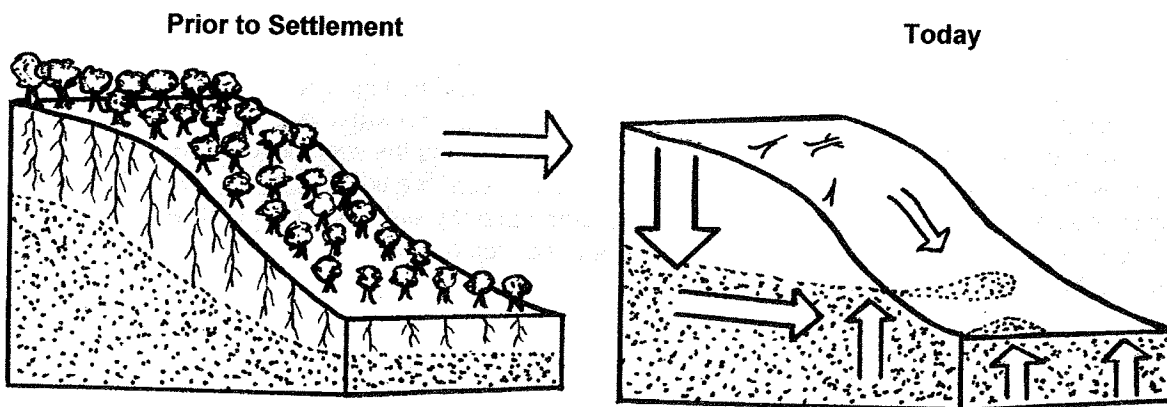
is their duty to plant trees in the upper parts of the landscape to "prevent recharge". Meanwhile, dryland salinity will continue unabated.

Furthermore, our children are being led to believe that all trees have deep tap roots, as depicted in salinity models. The tap root of the seedling tree degenerates over time, and although some fine roots may occasionally follow rock fissures, most mature trees of the species commonly found on hillsides do NOT have a tap root. More usually, up to 90% of the root mass is concentrated in the top 50 cm of the soil profile. Once the water has run off a hillside covered in trees, there is no way the trees can get it back.

The recognition of urban salinity as a mostly local hydrological phenomenon has clearly demonstrated that we don't need a fool on the hill, or even a hill, or even an agricultural landscape, to encounter water balance problems. In the urban context, dryland salinity results from the combined effects of activities such as watering shallow rooted lawns (all short grasses are shallow

**Fig.1. A: the widely promoted recharge-discharge model of dryland salinity B: a more realistic model**

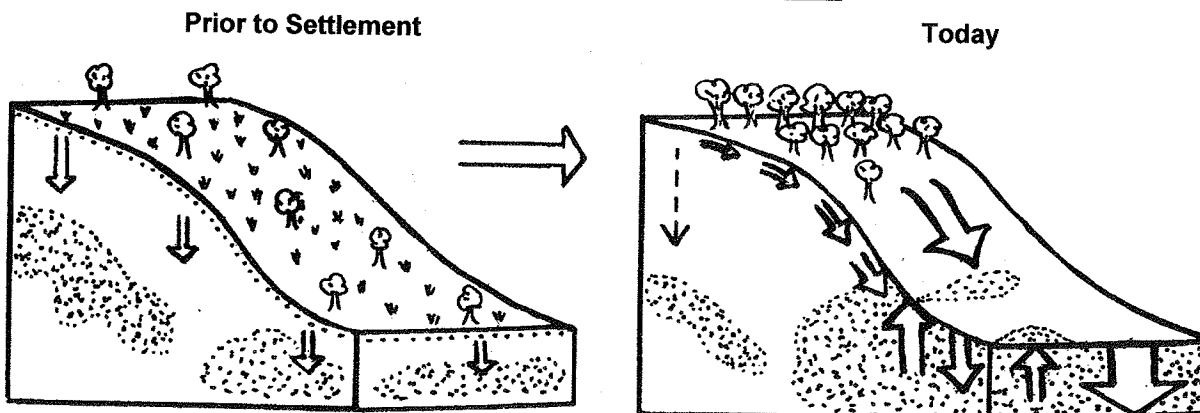
**A: the widely promoted recharge-discharge model**



Deep rooted trees USE large amounts of water and keep water table in balance.

Tree removal results in water table recharge in upper catchment and discharge in lower catchment.

**B: a more realistic model**



Healthy perennial groundcover, fibrous root mass and associated humic materials HOLD water where it falls with some percolation to groundwater.

Loss of healthy groundcover in both upper and lower catchments results in more runoff, lateral flow, recharge and discharge. Replenishment of elevated aquifers may be reduced.

rooted) and rain falling on impermeable structures such as rooftops, paths, driveways and roads, and becoming runoff. That is, urban salinity is the result of excessive runoff added to excessive recharge *in situ*.

I fail to see much difference between this and the expression of dryland salinity in agricultural landscapes. Planting trees on a hill 20 km away will do little to resolve the problem in either the agricultural or the urban context. Trees and shrubs form an integral and ecologically valuable component of grassy woodland vegetation and I am by no means dismissing their importance. My concern is with the promotion of broadscale tree planting (mostly same-age monocultures) as a panacea, not only for dryland salinity, but for all land degradation problems. In a healthy perennial grassland soil, there may be 50 tonnes of biomass (roots, soil organisms and humic materials) below ground for every tonne of biomass above ground. In forests, there is far more organic material above ground than below. The fact that we can only see the biomass above ground may explain the distorted image many people have of these respective plant communities.

We certainly do have to mimic the native vegetation to restore hydrological balance, but let's get the facts right. The vegetation of the temperate zone was almost exclusively perennial 200 years ago, but Australia was not a forest. The majority of aboriginal people were not forest dwellers. Neither do we have to be. How many rural communities will be lost in this mad rush to return Australia to a land of trees we never had?

The aboriginal people lived in a diverse and dynamic grassy ecosystem. So can we. Grasslands produce more food than forests and the intuitive response would be to manage the landscape to favour grassland species. To refer to the pre-European vegetation as "natural" or "pristine" totally ignores thousands of years of prior habitation, exceptional observational skills and active management to achieve desired outcomes. Australia has been mismanaged for the last 200 years. Now it's crunch time.

In our low and variable rainfall environment, the increasing reliance on high water use plants or engineering solutions to "dewater" soils makes neither ecological nor economic sense. We can restore water balance and improve soil health, nutrient cycling and productivity if current agricultural and horticultural activities are conducted in an appropriately managed perennial groundcover base. That's the topic for the next issue.

**Acknowledgments:** The compilation of this article would not have been possible without the vision, critical thinking, historical perspective and encouragement provided by many people. While all errors in interpretation are mine, I am particularly indebted to Allan Savory, Darryl Cluff, Greg Martin, Stephen Hailstone, Wal Whalley, Pam McGregor and Bruce and Suzie Ward.

This article was also in the *Stipa Newsletter* No. 14

## EMR Journal Now Into 2nd Volume

The second (i.e. 2001) volume of *Ecological Management & Restoration* (EMR) is out now out..well, at least the first issue, with the second one due soon (August). Articles in Issue 1 that will be of interest to IFFA members include an interview on 'Land for Wildlife' in rural Victoria and a feature on a rehabilitating soil erosion (from tourist tracks) at Uluru. A review of the impacts of horse riding in urban conservation areas by Jill Landsberg (and others) will also be of interest – as will an evaluation of alpine roadside restoration by Keith McDougall. A comment piece by Sue Briggs calls for the establishment of landscape level decision-making structures if we are to have any real hope of solving landscape-level problems.

The August issue includes a forum piece on the Australian water reform process, an especially interesting article on a program in the Kimberley combining ecology with Aboriginal cultural recovery; and articles evaluating rehabilitation works on the Williams River and subantarctic Macquarie Island. A comment piece about the value of partnerships between practitioners and scientists is provided by Victorian academic, Sam Lake, and is well worth reading – and Katherine Williams and John Cary show us how people's perceptions of native grassland are likely to be instrumental in increasing or decreasing its chances of conservation so we'd better do some work on improving the 'image' of grassland.

Issue 3 articles include a rundown on Grassy Box Woodlands Conservation Management Network by Suzanne Prober, Kevin Theile and Erica Higginson; a philosophic yet practical article on the national expansion of 'Land for Wildlife' by Sally Stevens – and articles on a new germination method for *Persoonia* spp. and methods of rhizobial inoculation. As always, all three issues include many short notes, abstracts, conference and book reviews of interest.

The editor reminds readers that if you intend subscribing – make sure you tell them you are a member of IFFA so you can take advantage of the 20% affiliate discount (i.e. 3 issues for \$49.50 instead of \$59.50). Full sets of the 2000 volume are still currently available at the discount price. This discount offer applies to all subscribers/ members of IFFA. All subscription details are on the website: [www.blackwell-science.com/emr/](http://www.blackwell-science.com/emr/) or you can just write to Rae Smyth, Blackwell Science, P.O. 378, Carlton, Vic, 3053.

The journal is also seeking contributions from practitioners – especially project reports. So SEND YOUR IDEAS FOR SHORT NOTES OR ARTICLES, BOOK REVIEWS ETC TO THE EDITOR: <teinm@ozemail.com.au> or post to P.O. 14 Woodburn NSW 2472.

# Sage advice for weed workers

An essay on how not to become disconsolate

**H**ere are some thoughts for weed workers feeling a little down at the enormity of the problem and thinking of reaching for a sedating dose of St John's wort. They are a guide for battling the negative comments of others and, dare I suggest it, your own occasional dark thoughts?

## Can't go out anymore?

If you are a bit of a bushwalker, fisher, boatie or 4WDer, chances are you will never forget work when you are out in the bush. It seems to be increasingly difficult to find weed-free bush for these recreational activities (is there a link perhaps...?). Ever get the feeling that friends don't want to go walking or camping with you any more because what was once pretty bush to them is now a mass of strangling engulfing weeds? You have opened their eyes to the horrible reality. The same goes for pleasant country drives that always seem to turn into games of 'spot the indigenous plant'! Solution: only go on holidays to big cities with no remnant vegetation or go overseas where you don't know which plants are the weeds!

## The world is stuffed!

The hole in the ozone layer is getting bigger, the greenhouse effect is changing the weather and Australia has one of the worst extinction records on the planet. What hope have we got?

It is important to try and keep things in perspective and not get weighed down by all the negatives. It has taken Europeans 200 years to substantially stuff up the Australian environment so it is going to take a bit longer than a 3 year funding period to fix it. We have to be prepared to take a longer time frame for planning our work. Perhaps 40 or 50 years for some projects is more realistic but not a popular time frame for politicians.

One way of slowing the 'stuffing up' process is to prevent new weeds getting into Australia and to stop bringing in more of the weeds we already have. Over the 25 years to 1995, 65% of Australia's new weeds were deliberately brought in as ornamentals. If 10 years ago someone had wanted to bring in a small warm and fuzzy animal as the latest fad in pets for small children, the idea would have been quashed by the authorities for fear of rabies or the animal's potential to escape and become the next rabbit. Why not the same for the latest garden fad? Fortunately, quarantine laws have changed recently so plants not on the permitted list have to undergo a weed risk assessment. About time! But they still sneak in.

## Biological warfare with weeds

Let me put a hypothetical scenario to you. Someone is really annoyed with Australia and decides that biological warfare is the go. They fly a small plane across southern Australia dropping little packages of parasitic weed seed out the window. In 25 years, this parasitic plant could cause billions of dollars of damage and stuff-up our export markets. To be prepared for this, and less sinister types of events, we need contingency and rapid response plans for new and emerging weeds. NRE is creating such plans. Meanwhile some plants still slip through the quarantine net and end up in nurseries and garden centres.

An example of this is Mexican feather grass, *Nassella tenuissima*, sometimes sold as *Stipa tenuissima*, *Stipa tenacissima*, pony tail grass, or angel's hair among other names, and sometimes mistakenly sold as a native grass. Mexican feather grass (MFG) is closely related to serrated tussock (*N. trichotoma*), Australia's worst pasture weed, costing over \$45 million per year. Serrated tussock looks to be a minor weed compared to MFG which estimates indicate could establish over about 65% of NSW, 70% of Vic, the southern 20% of SA, 20% of Tas, up to 20% of SW WA, and southern Qld. It's out there now being sold, promoted in gardening books such as *Beth Chatto's Gravel Garden*, and being ordered from overseas over the internet, despite being banned entry into Australia. In cooperation with the nursery industry we are attempting to track down and destroy all plants sold and prevent any new marketing. Will we get them all?

Hawkweeds are another potential disaster. Entry of orange hawkweed (*Hieracium aurantiacum*) into Australia is also banned, yet it was found in gardens and spreading along roadsides in the alpine village of Falls Creek in Victoria over the last couple of years. Observant locals have found it spreading into the surrounding Alpine National Park. This pretty orange-flowered daisy and other related hawkweeds have invaded huge areas of the New Zealand high country. Orange hawkweed can be found listed in *The Aussie Plant Finder* a directory of plants and where to buy them in Australia.

To help combat these threats, a draft national strategy on invasive garden plants called *Garden Plants Under the Spotlight* was released in February 1999. This draft was developed jointly by the Nursery Industry Association of Australia and various government agencies including the Cooperative Research Centre for Weed Management Systems (Weeds CRC). It aims to educate gardeners, government and the industry.

## Weeds are too far gone so why bother?

Weed management is all a matter of priorities and how resources are allocated. If society sees health and education as a higher priority, then that is where government will direct funding resources. How can we get the protection of our natural areas higher up the priority list? How do we get people to value bushland more than being able to plant the latest pretty flower from overseas in their garden this spring? Salinity has been getting lots of press recently and huge government financial support with a \$700 million boost towards solving the problem. If the Weeds of National Significance \$20 million allocation is the equivalent for weeds, as Rick Roush of the Weeds CRC recently suggested, is salinity a 35 fold greater problem than weeds?

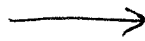
At a local level, people are still out there spraying the same patches of weeds year after year with no improvement. I think the definition of insanity is doing the same thing over and over again and expecting things to change. With our weed management, we have to understand why the weed is there in the first place and why it persists at that location. We have to be prepared to look for new technologies. How did we survive before herbicides were invented? What will supersede them? Let's start looking now.

Biological control has been proven and still has great potential so long as we are realistic about what it can achieve and how much it costs. The Weeds CRC in association with other agencies has recently developed two biological control agents (a rust and leaf hopper) for one of the 20 Weeds of National Significance, bridal creeper (*Asparagus asparagoides*).

## Keep clean areas clean

Until we can improve our current resourcing for weeds and technologies, our only hope for some places may be in keeping the clean areas clean. Prevention is cheaper and easier than repairing already infested sites, but is made harder by weeds such as the South African weed orchid (*Disa* or *Monadenia bracteata*) and pampas grass (*Cortaderia* spp.) which can be spread long distances by wind, by other weeds carried by birds from local gardens, and by seeds carried on vehicles, bushwalkers' boots etc. But it is a challenge worth taking. Managing disturbance and vectors will be part of that challenge.

Managing the human vector, particularly those that dump their garden waste in bushland and along roadsides, will mean working with local government to ensure tip facilities and transfer stations are accessible at an affordable fee, when the community is most likely to be driving around



with a trailer or ute full of prunings and mower clippings looking for somewhere to put them. It means improving kerb-side collections and encouraging home composting.

How often do we see a bird poo halo forming under trees? These clusters of weeds with fleshy fruit have been carried by birds from local gardens and deposited beneath prominent perching branches. Can we put a curfew on home owners for their gardens like we do on their cats? Will home owners one day be responsible for the plants that escape from their gardens? How often do we see Spanish heath (*Erica lusitanica*) or bulbill watsonia (*Watsonia meriana* var. *bulbillifera*) spreading along roadsides where slashers and graders have spread seeds and corms? How are we addressing the training and timing of roadside management?



Trucks loaded with hay still roar from one State to another with no covers. Drivers behind them and the road edge are rained on by seeds and other plant fragments being blown off the trucks. Who is to say that the hay hasn't been harvested from a paddock full of Chilean needle grass (*Nassella neesiana*), serrated tussock or Paterson's curse (*Echium plantagineum*)? Lets get those trucks covered and stop moving contaminated fodder around. The purple belts of Paterson's curse around major towns and cities are an indicator of the amount of contaminated hay being moved around and used by unsuspecting horse owners in agistment paddocks.

#### Hygiene and hi gene!

Hygiene is very important to prevent weed spread and even our own personal hygiene needs more attention. How many weed scientists have accidentally contributed to the spread of weeds by seeds in their trouser cuffs, shoelaces, camera bag, vehicle tyres and the like? Be more observant and thorough and remove seeds before moving to the next property or area. Just remember the frog scientists who have been unknowingly spreading a deadly virus around frog populations during research expeditions.

Then of course there is the worrying aspect of gene pool pollution from the hybridisation of non-local Australian plants with indigenous plants. How much revegetation is going on out there using non-local indigenous plant material? To what extent are we polluting our gene pools? What plants are really acceptable and what can be considered local provenance?

#### Finally

I think we will have to accept that some irreversible change has taken place and that we will have to tolerate some level of weeds in our natural areas. That is not to say that after 10 years these plants are considered part of the bush and 'native'. They should always be known as weeds in case our technology or resources improve to the point where we can do something about them. We just have to decide what we will tolerate.

#### Jim's gems

Randall Robinson in Victoria has been kind enough to share with me some of the survival tips that the late Dr Jim Willis, former Assistant Government Botanist in Victoria, passed on to him. Let's call them Jim's Gems, fine reflective words from a great gentleman and botanist.

- Pace yourself
- Appreciate everything you see
- You are not alone
- Keep focus on what you love
- Maintain balance in your life
- View everything as education
- Remain positive

Kate Blood

Environmental Weed Education Officer,  
Cooperative Research Centre for Weed  
Management Systems

This is an amended version of an article that originally appeared in the NSW Weed Society newsletter, *A Good Weed*, October 2000.

## Coming Events: Grassland Conference

The Stipa Native Grasses Association is convening its Second National Conference, "Our Valuable Native Grasslands, Better Pastures Naturally". Last year's was excellent and this year's promises to be even better. It will be on September 27th-28th at Dookie College, Victoria. The program includes Wednesday 26th September - Native grasses ID afternoon; not part of the official conference program but all welcome to attend and there's no charge. **Thursday 27th. September - PRODUCTIVE USE OF NATIVE PASTURES**

History of Australian native grasslands; How it was, how it is (Ian Lunt)  
Farm scale economics of native grasses (Jim Crosswhaite)  
Personal experiences managing native grasses (Bill & Debbie Hill)  
Grazing management and its influence on root depth of native grasses (Meredith Mitchell)

Effective pasture cropping (Colin Seis)

Harvesting and sowing of native grass seed (Andrew Briggs)

Managing Terrick Terrick National Park (Mark Tscharke)

Managing grassy woodland remnants on farms (Geoff Tonkin)

Seed Collection and provenance (Cathy Waters)

Native grass seed industry (Peter Wlodarczyk)

Ecology of repair and management of native grasslands (Colin Hocking)

In the evening Cocktail Party and Poster Session followed by the Conference Dinner.

#### Friday 28th September - WATER USE

Soil water balance: past lessons for future learning (Christine Jones)

Salinity in the Goulburn Valley Region (Mark Cotter)

Approaches to managing the water balance of grasslands (Bill Johnston)

After lunch there will be workshop sessions discussing issues that have been brought up over the 2 days and a tour of local properties and sites of interest.

All this including 2 nights accommodation, meals and conference proceedings for only \$280 if you register before 1/9/01 (5% off if you are or become a Stipa member). The registration form and more details can be found at <http://www.stipa.com.au/announce.html> or contact Mike Byron at [conference@stipa.com.au](mailto:conference@stipa.com.au)

## Spring in the Bendigo Bush

Saturday 1st to Sun 2nd September, The Bendigo Wildflower Show. A spectacular display of native flowers on show at the Golden Square Bendigo Field Naturalists Club, High St, Golden Square. 10.00 a.m. - 4 p.m.

## Bloody foreigners: ecology of alien plants Part 2.

### Why is it weedy at this site?

### Weed replacement not weed control

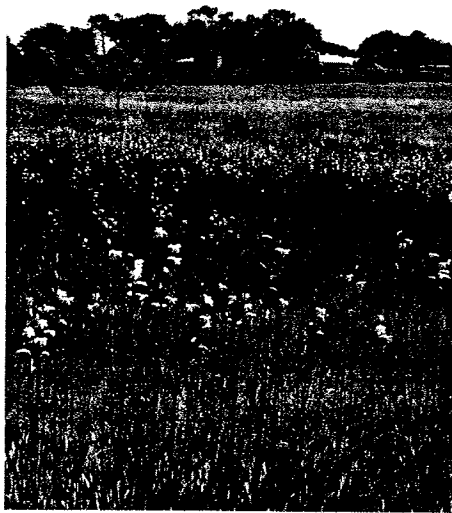
#### Why is this species weedy at this site?

When you are considering controlling a weed species on any site, you must **consider why this weed is present at this site, i.e. why are the conditions favourable?** Altering the growing conditions may diminish the species' competitive ability, thereby preventing its spread and possibly causing it to die back. Eventually it might disappear from the site or become a low-impact species. In any case, altering the growing conditions will assist in lessening regrowth, thereby lowering both ongoing control costs and the negative impacts of treatment.

Growing conditions include light, water, spatial requirements, nutrients, soil condition and temperature. Therefore in we should adopt practices that emulate the natural order for these conditions. For instance:

1. Generally attempt to keep bush tracks narrow and well shaded rather than continually spraying edges (makes wider bare areas for weeds). Foot traffic also moves weeds (*Paspalum*, wandering jew, etc.).
2. Maintain shade as much as possible in forest, shrubland and over streams where appropriate. Planting dense low shrubs as border strips can ringfence groundcover weeds (e.g. *Crassula*, *Watsonia*, *Chasmanthe*). Establishment of taller native species can often be enough to suppress some weed species.
3. Try not to divert water away from forests or into new drainage lines (e.g. roadside drains). Attempt to maintain normal flow patterns.
4. Try not to disturb groundcover and seedling species, as their density helps keep weeds from establishing.
5. Generally prevent the movement of fertiliser and nutrient into natural areas. This can be done by fencing and planting riparian and buffer strips to absorb nutrients, excluding livestock (to avoid nutrient transfer) and instructing topdressing contractors and farmers to avoid over-runs when applying fertiliser. This applies particularly to aquatic habitats.
6. Maintain humus levels where appropriate, by retaining mulch and minimising disturbance and grazing by livestock.

Many weeds are early-successional species that take advantage of bare ground and lack of competition after disturbance. Their disappearance or minimisation can be accelerated by encouraging the next successional stage, e.g. Paterson's



course is replaced in natural areas when grazing is removed, allowing for native regeneration. Some disturbance (e.g. fire at the right time and place) is important in maintaining biodiversity but disturbance events of the wrong type, at the wrong frequency, in areas close to sources of weed propagules are the ones to avoid. In native forests for instance, burning gorse or broom or spraying using a non-selective herbicide results in damage to non-target species, and more gorse or broom seedlings appearing than native plant seedlings. The benefits are only visual and short-lived and the long-term effects are usually negative.

Some of the worst weeds sabotage natural succession in sclerophyll forest and open habitats by creating excessive shade, monopolising available water (e.g. *Pittosporum undulatum*, *Chrysanthemoides monilifera*) and in other ways. The overall intention in rehabilitation should be to maintain or reinstate the original growing conditions. This implies minimising soil disturbance other than by natural processes.

Habitat manipulation can sometimes be used as a weed control method in its own right, especially in waterways. For instance, water levels can be lowered to control weeds, or the water body can be drained until the weeds die and then be refilled. Other ecological effects obviously need to be considered. Nutrient levels can be lowered by filtering runoff from farmland.

#### Weed replacement principles

When controlling weeds, it is important to always think in terms of **weed replacement**, not merely **weed control**. When we kill weeds in non-selective fashion we leave gaps. We often kill desirable plants as well, which makes the gaps larger than the area occupied by the weeds. The

first plants to colonise these 'holes' are the fastest-establishing species, which are often seedlings of the weeds we just removed. Rapid establishment is often the most important attribute that makes these species weedy. In many instances where repeated general spraying or mechanical clearance has been carried out, native species cover has declined and weed cover is higher than ever. A cursory look at many roadside strips and reserves will bear this out.

Therefore we generally need to pick the weed control **Method Of Least Disturbance** (the MOLD principle), which is really just "best management practice" by another name. This allows for the surrounding native vegetation to replace the weed, lessening the need for repeat treatments. Non-selective treatments almost always require frequent (and sometimes permanent) follow up. Although initially the method of least disturbance may be more costly, follow up control costs will be lower and the overall costs probably lower, especially in terms of labour. Certainly the ecological effects of the management program will be a lot less. This really gets to the heart of the objective, not weed control for its own sake but an improvement in the ecological state of the habitat. If we keep the habitat (rather than the weed) as the goal, we will find ourselves **replacing** weeds quickly with desirable vegetation. If we think solely about killing the weeds, we will be returning to the sites until nothing but weeds remain. Adopting a MOLD or "best practice" principle is therefore easier to justify if weed control costs are estimated over the medium-to-long term, rather than just at the start of a weed program.

In practical terms the MOLD principle often means integrating biological control with selected traditional techniques; pulling or stem-boring plants rather than spraying; using selective herbicides rather than non-selective herbicides, or weed-wiping rather than applying herbicides by spraying. Spraying ranks low on the list of recommended control options, as it is generally less selective. Biocontrol, because it works gradually and is selective, is a low-disturbance approach compared with chemicals. With the technology currently available, there is virtually no weed species that cannot be killed, controlled or suppressed by methods other than purely squirting spray mix out of a nozzle. If herbicides need to be used, there is a host of ways to apply them. Some of these methods are very selective and will be discussed later in this series.

Jack Crow

Team Leader, Extension Support, KTRI

**Mordialloc Beaumaris**  
**1 Montgomery Street.**



**Conservation League Inc.**  
**Mordialloc 3195**

A 0021849 H

17-5-2001

The Editor,  
Indigenotes,  
c/o P.O.Box 228,  
Preston  
Victoria. 3072

Dear Sir,

The article in Indigenotes April 2001, "Road Reserves are for Roads - Not Trees," strikes a cord in a bayside suburb where residents are experiencing the loss of trees, gardens and open space as a result of the State and local governments program of encouraging medium density residential development.

Approval by planning officers to clear a building site of all vegetation despite the historical or ecological value of mature trees is common. Bayside residents have also found that "many planners appear to see their role as being to facilitate development rather than to protect the environment."

Once a site has been cleared and the occupants move into the expensive "town houses", complaints begin about indigenous vegetation on the fragile strip of foreshore obstructing views of the Bay, but in reality concerned with the impact on property values.

At this point the local community expect that officers responsible for environmental management would support an established policy of preserving conservation and aesthetic values of the foreshore and to firmly and clearly explain that this policy will not be modified for the economic benefit of the owners of expensive bayside property.

Unfortunately there appears to be reluctance on the part of some sections of the council to accept that **all** public land should be managed for the benefit of **all** Victorians and not the economic interests and property values of a minority of residents in this bayside suburb.

Yours sincerely,

*Mary Rimington*  
Mary Rimington  
Secretary

# Resources:

## **NEW GUIDE TO LOCAL GOVERNMENT PLANNING**

Integrating biodiversity considerations in planning and development processes will be assisted by the *Biodiversity Planning Guide for NSW Local Government*. The Guide was recently launched jointly by the NSW Government and the NSW Local Government and Shires Associations. It provides a comprehensive guide to how local government can integrate biodiversity conservation within strategic land use planning. The Guide was prepared by Land & Environment Planning and Environs Australia: the Local Government Environment Network for the NSW National Parks and Wildlife Service. It provides important reference material to take biodiversity into account in strategic planning such as local environmental plans and regional vegetation management plans. It also provides a useful framework for natural resource management and the design of development proposals.

Why prepare a Biodiversity Planning Guide for NSW Local Government? Biodiversity is increasingly becoming an essential consideration in land use planning at all levels. The Guide seeks to improve the integration of ecological and biodiversity considerations in the established legislative land use and management frameworks under the Environmental Planning and Assessment Act 1979 and the Threatened Species Conservation Act 1995. Loss of biodiversity is closely associated with implementation of development projects and changes in land use. Consequently, good design is important and the role of local councils in planning and development approval processes is critical.

The Guide will be used by councils mainly in preparing local environmental plans and developing strategic programs, and also in providing a context for assessing development projects. Although conservation reserves have been established to protect biodiversity, they comprise only a small proportion of total land area. Therefore, biodiversity conservation on private land is essential and must be integrated with the economic use of land. The Guide describes the threats to biodiversity and highlights that majority of threats to biodiversity are closely associated with land use and development, and the activities carried out on land. Local government often plays a key role as an approval authority in and as an information provider.

Local government and biodiversity conservation  
Councils in NSW have clear legislative responsibilities to take steps to conserve biodiversity and are important managers of the development process. Councils are uniquely positioned due to their local knowledge, close community links and legislative responsibilities relating to land use and development. They are therefore key players in the integrating biodiversity considerations in land use decision-making. Already a wide range of legal

and administrative mechanisms provide ways to implement desired biodiversity conservation outcomes at the local government level. Frequently these responsibilities and opportunities are not recognised and applied in practice, or are dismissed as being too difficult to implement. The Biodiversity Guide for NSW Local Government explains how these tools can be applied in practice. It illustrates the wide scope of activities that councils can undertake to promote biodiversity conservation. As a core business function of increasing importance, biodiversity conservation must be integrated with all administrative and decision-making processes.

### ABOUT THE BIODIVERSITY PLANNING GUIDE

The Biodiversity Planning Guide for NSW Local Government is an important asset for council planners and managers. It is available in two versions. The 'In Brief' version introduces and summarises important elements, and is for elected representatives and senior managers and the general public. The complementary 'technical' version outlines in detail planning approaches, how to write plans, legislative requirements, concepts and terms, case study examples, and includes sample planning instruments. The Guide:

- provides a summary of legislative responsibilities and opportunities.
- outlines principles for biodiversity plan making.
- explains how to integrate ecological issues in conventional approaches to land use planning.
- outlines opportunities for integrating incentives with regulatory approaches.
- includes a comprehensive definition of terms intended to enable scientific and ecological terms to be used in statutory instruments and planning documents.
- provides sample plan provisions that can be incorporated in local government planning documents, and tailored to meet local requirements.
- provides technical guidance to staff who may be unfamiliar with ecological and scientific approaches.

Although it does not specifically deal with assessment of development applications, the reference information in the Guide provides resource material and establishes a context for development assessment. An important element of the Biodiversity Planning Guide for NSW Local Government is the inclusion of sample plan provisions. Provisions for incorporation in local environmental plans, development control plans, management plans, contributions plans, or regional vegetation management plans are all included. These can be used by councils and adapted to suit their own local circumstances.

### PRINCIPLES FOR BIODIVERSITY CONSERVATION PLANNING

The Guide highlights the need for well written plans which integrate incentive measures with regulatory controls. It also identifies biodiversity planning principles which can be applied by councils in both strategic planning and development control. Applying the

biodiversity planning principles may require a review of present approaches to new development in urban fringe and rural locations.

#### USING THE BIODIVERSITY PLANNING GUIDE

Many councils are already using the opportunities available to them to support biodiversity conservation objectives. The Guide identifies case studies of local government practice in NSW and provides an important reference document for councils wishing to implement the biodiversity conservation principles using both regulatory and incentive approaches. Initiatives that can be undertaken by councils to promote biodiversity conservation include:

- strategic planning of land use and development
- provision of economic incentives
- provision of non-regulatory 'service' functions
- management of community land
- undertaking functions on a joint basis with other regional councils

The Biodiversity Planning Guide for NSW Local Government will provide a framework for future approaches to biodiversity issues by local government in NSW. It will help councils deal with their existing statutory responsibilities. Copies of the Biodiversity Planning Guide for NSW Local Government are available free from the NSW National Parks and Wildlife Service (telephone 02 9585 6678) and a web based version is on the NSW Local Government and Shires Associations website: [www.lgsa.org.au](http://www.lgsa.org.au)

([www.lgsa.org.au/environ/policy/biodiversityInBrief.pdf](http://www.lgsa.org.au/environ/policy/biodiversityInBrief.pdf) & [www.lgsa.org.au/environ/policy/biodiversityedition.PDF](http://www.lgsa.org.au/environ/policy/biodiversityedition.PDF)).

#### Community Biodiversity Network

From: Biodiv-talk: A List-Server on Biodiversity Conservation Issues and Actions in Australia and Internationally. To post to the list, send your email message to:

[biodiv-talk@yahoogroups.com](mailto:biodiv-talk@yahoogroups.com)

## BUSH INVADERS of South-East Australia OUT NOW

A guide to the identification and control of environmental weeds found in South-East Australia by Adam Muyt will be published July 2001. This book is available from us as a for \$A59.95 plus \$A10 postage in Australia and \$A30 overseas airmail. After 30 June 2001 the price will be \$59.95 plus postage. Published by RG and FJ Richardson, in colour, soft cover, section sewn, 304 pages. BUSH INVADERS will be available by July 2001.

BUSH INVADERS will be the first field guide that both identifies serious invasive plants and offers comprehensive details on their removal in a single publication. It will be packed full of information on management issues, control and removal methods, and detailed descriptions of 93 individual entries, plus additional notes on over 50 more taxa, accompanied by hundreds of colour photographs.

For further information, species list and to view sample pages visit: [www.weedinfo.com.au](http://www.weedinfo.com.au)  
RG and FJ Richardson  
PO Box 42, Meredith, Victoria, 3333  
Phone/fax: 03 5286 1533 International +61 3 5286 1533  
E-mail: [richardson@weedinfo.com.au](mailto:richardson@weedinfo.com.au)

## Biodiversity Materials for Teachers

Biodiversity is the latest title in the Issues in Society series - a series for school teachers that provides up to date and diverse information about social issues shaping the world. This booklet explains the concept of biodiversity, its importance, state of Australia's and the world's biodiversity, threats to biodiversity, legislation and international agreements affecting its conservation, and simple actions that individuals can do to conserve Australia's biodiversity. It also contains a useful reference list of statistics as well as a recommended reading list and contact details for relevant organisations and web sites.

Inputs for this booklet came from a range of organisations including the Community Biodiversity Network, the Wilderness Society, Greening Australia and the Australian Museum. An excellent starting point for information on Biodiversity. Available from The Spinney Press Tel: Tel: 02 9555 9319

## Wildscaping Your School

This innovative new web site created by the Gould League provides information on how to design and plant wildlife habitats in your school. It also includes teaching activities and lesson plans that can be used in conjunction with the Wildscape project. A comprehensive list of indigenous nurseries has been published so plants can be bought locally or alternatively, users can order a bioregion plant packs through Wildscape's online nursery and bookshop. Well worth a visit at <http://www.wildscape.com.au>

## EPBC Act Website and FAQs

The Environment Australia EPBC website <[www.environment.gov.au/epbc](http://www.environment.gov.au/epbc)> has recently been revised. A range of NEW information about the EPBC Act is now available, including:

\* More information on biodiversity conservation under the EPBC Act at <http://www.environment.gov.au/epbc/biodivconserv/index.html>

\* Information on compliance and enforcement <http://www.environment.gov.au/epbc/complienforce/index.html>

\* A list of Frequently Asked Questions about the EPBC Act at: <http://www.environment.gov.au/epbc/about/faq.html>

### FAQs currently on the site include:

Environmental impact assessments and approvals

1. What requires approval under the EPBC Act?

2. What is an action?

3. What are matters of national environmental significance?
4. What is a significant impact?
5. What is a bilateral agreement?
6. What are the opportunities for public input to the assessment of projects?
7. Is exploration activity covered by the Act?

### Referring actions

8. Who can refer an action?
9. Can a member of the public refer an action?
10. If I am concerned about an action or proposal, what can I do?
11. Can the Commonwealth initiate assessment or must it rely on a referral?
12. When should an action be referred?
13. Does local government have to refer proposals?

### Approvals

14. What is included in an approval?
15. If the Minister misses a deadline set by the EPBC Act, is the project automatically approved?
16. If there is a change of ownership of a proposal, can approval be transferred?

### Transitional Arrangements

17. What is happening to projects that were being assessed under the EPIP Act?
18. If a proposed action did not trigger the EPIP Act, could it be subject to the EPBC Act?
19. What are the differences between the EPBC Act and the EPIP Act?

From: Sophie Chapple, Environmental Legislation Coordinator, EPBC Unit, World Wide Fund for Nature (Australia) and Humane Society International 15/71 Constitution Avenue, Campbell ACT 2612 Ph 02 6257 4010 Email: [schapple@wwf.org.au](mailto:schapple@wwf.org.au) or <http://www.hsi.org.au/epbcunit.htm>

To subscribe to the EPBC listserver, just send a blank email to: [epbc-info-subscribe@yahoo.com](mailto:epbc-info-subscribe@yahoo.com)

## Community Biodiversity Network Policy/Law Clearinghouse Updated

The CBN has just updated the Environment Protection and Biodiversity Conservation Act section of its Biodiversity Policy and Law Clearinghouse at: [http://www.nccnsw.org.au/member/cbn/projects/Policy\\_and\\_Law/pal00.html](http://www.nccnsw.org.au/member/cbn/projects/Policy_and_Law/pal00.html)

It now includes an updates section, and a virtual library of on-line papers. The library includes an excellent summary of how the EPBC Act has been working over the past year, and an analysis of the enforceability of bilateral agreements, by Chris McGrath.

From: Community Biodiversity Network Discussion Group

## Snippets:

### Melbourne Firewood Merchants Who Stock Sugar Gum and/or Other Plantation Grown Firewood

The following Melbourne woodyards currently, as of March 2000, have stocks of plantation grown sugar gum firewood for sale:

THOMASTOWN FIREWOOD

23 High St., Thomastown 3074.

Contact Peter Daloisio on (03) 9464 1402.

MAX HENSHALL FIREWOOD

8 Kamarooka Drive, Wattle Glen 3096

Contact Max on (03) 9438 3135 or (0419) 583908.

WE CURRENTLY HAVE A NUMBER OF OTHER WOODYARDS WANTING TO PURCHASE AND SELL SUGAR GUM BUT AT PRESENT THEY ARE HAVING TROUBLE IN ACCESSING IT.

From: Liz Hamilton, Co manager, Corangamite Farm Forestry Network

## RELEASE OF VEGETATION MANAGEMENT MODEL

A report titled "Regional Vegetation Management Planning: A Model" has recently been released by the World Wide Fund for Nature (WWF). The report reviews regional vegetation management plans in the Murray-Darling Basin, and concludes that regional vegetation, communities and economies will not be adequately protected long-term by existing plans. Instead, it was found that existing plans will lead to a decline in the extent and quality of vegetation, and to a loss of biodiversity. To obtain copies of the report, contact Alecia Jones at WorldWF on 02 6257 4010.

Source: Environmental Defenders Office (Victoria) Email Bulletin please email your details to [edovic@edo.org.au](mailto:edovic@edo.org.au) Homepage: [www.edo.org.au/edovic/edovic.htm](http://www.edo.org.au/edovic/edovic.htm)

## 100 Million Reptiles Killed A Year By Land Clearing Says Leading Scientist

Leading reptile scientist, Dr Hal Cogger from the Australian Museum, has calculated that over a billion reptiles were killed by vegetation clearing in Australia during the decade between 1983 and 1993. In Queensland, annual clearing rates between 1997 and 1999 averaged 425,000 ha. This would have resulted in the elimination - killing - and permanent removal of nearly 170 million reptiles in a recent 2-year period. The situation has scarcely improved since the introduction of the Queensland Vegetation Management Act in September 2000. Permits to clear a further 71,000 ha of native vegetation were approved between September 2000 and February 2001. Dr Cogger predicts that this will result in the deaths of a further 14 million reptiles.

The mega-diversity and ecological significance of Australia's reptile fauna is only recently being appreciated. Australia has 850 species of reptiles - about 12% of the world's entire reptile fauna. Of these, a little over 89% are endemic, found nowhere else but Australia. Infact, 10% of the world's reptiles are endemic to Australia. That Australia's reptiles are a significant component of our fauna is clear - they outnumber birds (784 species, 43% endemic) and mammals 296 (species, 82% endemic) in both species richness and endemicity. "While it is painfully self-evident, it needs constantly to be pointed out that only Australians can carry out the effective conservation of Australian endemic species and that the decline or extinction of those species in Australia means their decline or extinction globally" said Dr. Cogger.

The 'Action Plan for Australian Reptiles' (Cogger et al., 1993) found that about 25% of Australia's reptile species are in significant decline. A significant proportion of the remaining 75% are also facing declines of unknown extent in their numbers and ranges. Professor Cogger identifies habitat loss due to clearing as the most significant cause of the decline. "That vegetation clearance causes a 'loss of biodiversity' is now widely known, but it is not always appreciated that this means animals are directly killed as the clearing takes place or they escape only to die shortly after due to a lack of other suitable habitat" said Nicola Beynon, HSI's Wildlife and Habitats Program Manager. Scientists have also calculated that 7.5 million birds died due to landclearing across Australia in 1999.

HSI hopes that the recent listing of endangered brigalow vegetation on the Federal Environment Protection and Biodiversity Conservation (EPBC) Act will give millions of reptiles and birds a second chance to be saved. Any clearing activities that will significantly impact on the listed threatened Brigalow vegetation will now need the additional approval of the Federal Environment Minister. This includes clearing activities approved by the Queensland Government, if the approvals were given after July 16th 2000 when the EPBC Act came in to force. Brigalow (*Acacia harpophylla* dominant and co-dominant) was listed as an endangered ecological community on the EPBC Act on 4th April 2001 as a direct result of scientific nominations submitted by Humane Society International. This means the conservation of this vegetation is now a Matter of National Environmental Significance and a 'trigger' for the Federal Environment Minister's intervention. 804,264 hectares of this endangered community remains in scattered fragments across the Brigalow Belt, a mere fraction of the nearly 7.5 million hectares that existed prior to clearing.

Dr Hal Cogger presented his findings in "Conserving Australia's Reptiles - are we serious?" an article in the latest edition of 'LifeLines'. LifeLines is a publication by the Community Biodiversity Network which is a project of Humane Society International. The article can be found at:

[http://nccnsw.org.au/member/cbn/projects/LifeLines7.2/SoB\\_Rept.html](http://nccnsw.org.au/member/cbn/projects/LifeLines7.2/SoB_Rept.html).

For more information contact Nicola Beynon at Humane Society International, PO Box 439 Avalon NSW 2107 Australia, Ph (61) 2 9973 1728

## GENETIC EVIDENCE SHOWS SOME ANIMALS USE CORRIDORS

PULLMAN, Washington, March 26, 2001 (ENS) - New genetic evidence shows that some forest species make use of habitat corridors - strips of green space that join larger patches of intact forest - to travel between forest fragments.

The study, published in the April issue of Conservation Biology, is the first genetic study showing that animals use corridors. "Our results show that for habitat specialists, forest corridors increase gene flow between populations relative to isolated patches," said lead author Stephen Mech of the University of Memphis in Memphis, Tennessee. Mech's co-author is James Hallet of Washington State University in Pullman, Washington.

Mech and Hallet assessed corridor use in a managed forest in northeastern Washington state that, like much of the land in the Pacific Northwest, is a mix of closed canopy, clearcut and regenerating areas. To test corridor use, the researchers determined the genetic relatedness of animal populations living in pairs of closed canopy sites. There were three types of site pairs: they were either both in continuous closed canopy, connected by a corridor of closed canopy, or isolated by a clearcut or young regenerating stand. The distance between site pairs ranged from about 1,500 to 4,000 feet, and the corridors were up to about 500 feet wide.

Mech and Hallet found that corridors did increase gene flow in red backed voles: populations connected by a corridor were more related to each other than those that were isolated. However, populations were even more related to each other in continuous closed canopy, showing that corridors do not connect populations as well as intact forest. In contrast, the researchers found that gene flow did not vary with habitat type in deer mice: populations in all three types of site pairs were equally related to each other. This makes sense because deer mice are habitat generalists that thrive in all three types of habitat studied.

Because forest corridors increased gene flow between vole populations, Mech and Hallet conclude that corridors can help connect populations of habitat specialists. This suggests that managers should preserve corridors of forest when planning timber harvests.

From: Community Biodiversity Network Discussion Group

# IFFA activities:

No IFFA Annual General Meeting this month...

## **Southern Peninsula Indigenous Flora and Fauna Association (SPIFFA) Meeting:**

7:30 pm 1st Monday of each month  
Friends Room, Parks Victoria, Hinton Street, Rosebud.

### **From Your Editor:**

I had edited this edition before my recent holiday but technological problems prevented its printing but now you have it in your hands. My ambition is to get another edition out quite soon so please submit any contributions any of you may have ASAP.

Please write or draw as well... Please keep those contributions coming...

Thanks, Lincoln Kern

## **Table of Contents**

<b>So What's So Interesting About Sweet Bursaria?</b>	2
<b>The Great Salinity Debate: Part 2 - Why the recharge-discharge model is fundamentally flawed</b>	4
<b>EMR Journal Now Into 2nd Volume</b>	7
<b>Sage Advice for Weed Workers</b>	8
<u>Coming Events:</u>	9
<b>Why is it weedy at this site? Weed replacement not weed control</b>	10
<u>Dear Editor:</u>	11
<u>Resources:</u>	12
<u>Snippets:</u>	14

## **Membership**

**IFFA membership costs**

**\$40 for non-profit organizations,  
\$50 for corporations,  
\$25 for individuals and families, or  
\$20 concession.**

Membership includes  
up to (?) 11 issues of  
Indigenotes per year.

Members should check the mailing label to ascertain the status of their membership. If people require and invoice, please send a purchase order and we will oblige accordingly. Otherwise we do not issue reminders to members. Cheques can be remitted to the Membership Secretary's P.O. Box as listed. A receipt will be attached to the front page of the following issue.

### Office Bearers:

**President:** Peter Tucker, Flat 7, 7 College Pde., Kew 3101, email: [petertucker\\_iffa@yahoo.com](mailto:petertucker_iffa@yahoo.com)

**Vice-President:** Ken Duxbury.

**Secretary:** Eric Ward.

**Membership Secretary and Treasurer:** Neil Gardiner, P.O. Box 2055, East Ivanhoe 3079, (03) 9499 7048 (ah).

**Committee members:** Geoff Carr (03) 9481 7679(bh), Adam Muyt, Frances Overmars, Roger Jones.

### Editorial team?:

**c/o P.O. Box 228, Preston, Victoria, 3072.**

Editor: Lincoln Kern, (03) 9490 1434 (bh) or (03) 9480 4680 (ah).

Coming Events: ??

**Email: [practical@decl.com.au](mailto:practical@decl.com.au)**

Contributions to *Indigenotes* should be sent to the editor — the deadline for the next issue is 5 September or so. Contributions can be typed or hand written but computer disk copies on PC-compatible format is preferred.

*The views expressed in Indigenotes are not necessarily those of the Indigenous Flora and Fauna Association.*

**IFFA's Australian Business Number:**

**67 101 452 334**