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DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT

Western Wildlife

LAND FOR WILDLIFE

NEWSLETTER OF THE *LAND FOR WILDLIFE* SCHEME

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AUSTRALIAN BUSH HERITAGE FUND

by Cameron Gardiner

A SIGNIFICANT portion of Australia's wildlife habitat exists on privately owned land. Such land is often out of reach of government protection, but increasingly threatened by subdivision, clearing and development.

The Australian Bush Heritage Fund (*Bush Heritage*) has established a national approach to the raising of funds to buy and protect private lands of outstanding natural significance and high biodiversity value.

Bush Heritage aims to purchase land of high conservation value, to preserve this land in perpetuity as Australia's heritage. In doing this a range of criteria are used to select areas that are threatened by inappropriate development and/or poorly represented in the national reserve system.

The story of Bush Heritage started in 1990 when prominent environmentalist Dr. Bob Brown used his USA Goldman environmental prize money and borrowed from supporters and the bank to purchase two privately owned forest blocks beneath Dry's Bluff at the edge of Tasmania's Great Western Tiers. To raise money and pay back the loans, the Australian Bush Heritage Fund was created. Funded by donations nationally Bush Heritage has gone on to establish a diverse range of nature reserves around the country.

(Photo by Australian Bush Heritage Fund)

Presently Bush Heritage has 12 reserves nationally and land holdings of more than 2500 hectares and is continuing to buy and protect examples of our disappearing ecosystems. In the last eighteen months the number of properties has doubled and the area of land has more than doubled.

Some examples of protected reserves include:

- Redgum grassy woodland on the Brogo River in the Bega Valley, New South Wales
- Fan palm forest, habitat for cassowaries and threatened plant species in the Daintree, Queensland
- Erith Island being the first island to be managed solely for nature conservation in Bass Strait

Management plans for reserves are prepared by two professional ecologists on Bush Heritage staff. Emphasis is also placed on local voluntary land management committees, involving neighbours and local experts who may also contribute to land management planning. Cooperation is also sought with neighbouring landholders, to build awareness and a cooperative approach to land management that will benefit a wider area than simply the reserve itself.

In 1996 Bush Heritage purchased 333 hectares of wandoo woodland with mallee and ephemeral wetlands and over 200 species of flowering plants in southwest Western Australia near the town of Kojonup. Recently confirmed on the reserve is the existence of the shy feather flower. This species has been declared "Rare Flora" under the Wildlife Conservation Act of Western Australia. It is critically endangered and is listed as the rarest plant in the Katanning District.

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EDITORIAL

Greetings everyone!

WEEDBUSTER WEEK occurs in October, and there are a number of weedy articles in this issue, including good news for bridal creeper haters! Weeds are a major cause of degradation in bushland and I hope EVERY *Land for Wildlifer* will make at least one attack on weeds during this month.

People going north towards Geraldton in summer always remark on the way the fence posts are encrusted with snails; slugs are proving to be quite a problem in canola - did you know that there were no slugs in Western Australia before Europeans brought them in? Read Shirley Slack-Smith's article to learn more about these often overlooked creatures.

Land for Wildlifers in the Northern Agricultural Region will be sorry to hear that Robyn Stephens is leaving us. She is hoping to spend more time with her family. We will miss her knowledge, commitment and common sense, and hope that she keeps in touch. The position will be taken up by Fiona Falconer of Coorow, to whom we offer a big welcome. Fiona is one half of a farming partnership, and has been active in Landcare since its inception. She is also very knowledgeable about local flora and fauna. As someone who has designed several successful NLP/ NHT projects, if your year 2000 grant application involves revegetation, you might like to contact Fiona for help with species selection and project design.

Recently there has been a lot of interest in covenanting land for conservation purposes, so that as well as Agriculture Western Australia's scheme, which has been going for many years, both the National Trust and CALM have now commenced their own programmes. We will bring you more details of all of these when they are available. However, in this issue is an article about 'Bush Heritage', a national project which buys land to make into private nature reserves. They own a very nice piece of wandoo woodland at Kojonup.

Finally, is anyone else concerned about the dieback in flooded gums (*Eucalyptus rudis*)? Coming up through Moodiarrup recently, I thought they looked as though they had been hit by Agent Orange. I asked one of CALM's senior entomologists, Ian Abbott, what could be done but, as you can see from his article, the answer is 'not much, because we don't know much'. If you can help with information which might help lead to more understanding of the problem, please get in touch.

Best wishes for an excellent finish to the season,

Penny Hussey

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There is no shortage of places all around Australia in urgent need of Bush Heritage's protection. How much we can do depends on the support we receive and our success depends on the donations from the public. Land acquisition provides an excellent example of how Bush Heritage can achieve conservation outcomes in a way no other organisation can.

Bush Heritage is still not a household name, and important wildlife habitat continues to be lost every day. With further community support Bush Heritage can offer huge scope in nature conservation through purchasing land of high conservation value. If you would like more information please telephone 1800 677 101 or visit our website at bushheritage.asn.au;
mail GPO Box 101, Hobart Tas 7001.

Cameron Gardiner is Fundraising Manager for Bush Heritage, based in Hobart.

LETTER TO THE EDITOR

Dear Editor,

I was pleased to see the story on nesting boxes working. It should inspire more of us to give it a go.

However, I must take issue with the naming of Port Lincoln ringnecks as "28s". They are a different race, although they do fly in mixed flocks. We find that the red caps also join the flock as they frollick in our bird baths together.

The ringneck has a black nose band, while the 28 has a red band. When they flock together, the 28 call loses much of its distinctive clarity, taking on an accent of its neighbours. Where they exist as separate communities, the "twen-tee-eight" is very clear.

Yours sincerely,

Geoff Brand, Whitby.

Thanks Geoff – you raise an interesting point here, what should this common bird be named? We consulted the very newest birdbook, "Handbook of Western Australian Birds: Volume1" by Ron Johnstone and Glenn Storr, published by the WA Museum in 1998. (For WA birds, this is 'the bible'!) The official name for this parrot is Australian ringneck, Platycercus zonarius *(Shaw). However, it has two races,* P.z. semitorquatus, *the twenty-eight parrot, and* P. z. zonarius, *the Port Lincoln parrot. From Perth and across the Wheatbelt, they hybridise.*

Distribution of Australian Ringneck – from Johnstone & Storr.

FLORA

"DIEBACK" IN FLOODED GUM

by Ian Abbott

FLOODED GUM (*Eucalyptus rudis*) is widespread in southwest WA along watercourses. Because its timber has scant commercial value it has been little studied, and so not much is known about its ecology. The overall impression gained from a cursory look at roadside trees near Dardanup or Kojonup is that the species is heavily infested with insects. In spring the crowns are sparse, most leaves are brown, and there are many dead branches and branchlets.

This damage is caused by a species of leafminer closely allied to jarrah leafminer. After October, the larvae fall to the ground and pupate. The crown then sheds the brown leaves, reshoots and looks at its best until the following spring, when the cycle repeats.

Examination of flooded gum specimens collected as early as 1834 and held in major herbaria indicates that this leafminer was first recorded in Metropolitan Perth in 1897. It then dramatically increased in incidence. A change in disturbance (? fire) regime from the disappearance of Aboriginal land management practices around the 1860s to extensive European settlement in the 1890s (following the goldrush) may be responsible.

A study of damage to foliage by fungi and insects to the 8 native tree species present in the southern jarrah forest (within a 50km radius of Manjimup) showed that flooded gum was, after jarrah, the species most affected, with an average of 23% of leaf area destroyed. It also had the lowest proportion of leaves alive after one year (47%).

Foliage of flooded gum had the highest levels of N and P and the second highest level of K of all 8 eucalypt species. Whether leaf chemistry is associated with high damage levels has not been conclusively determined.

Landholders interested in the flooded gums on their properties (or elsewhere) should look for the following:

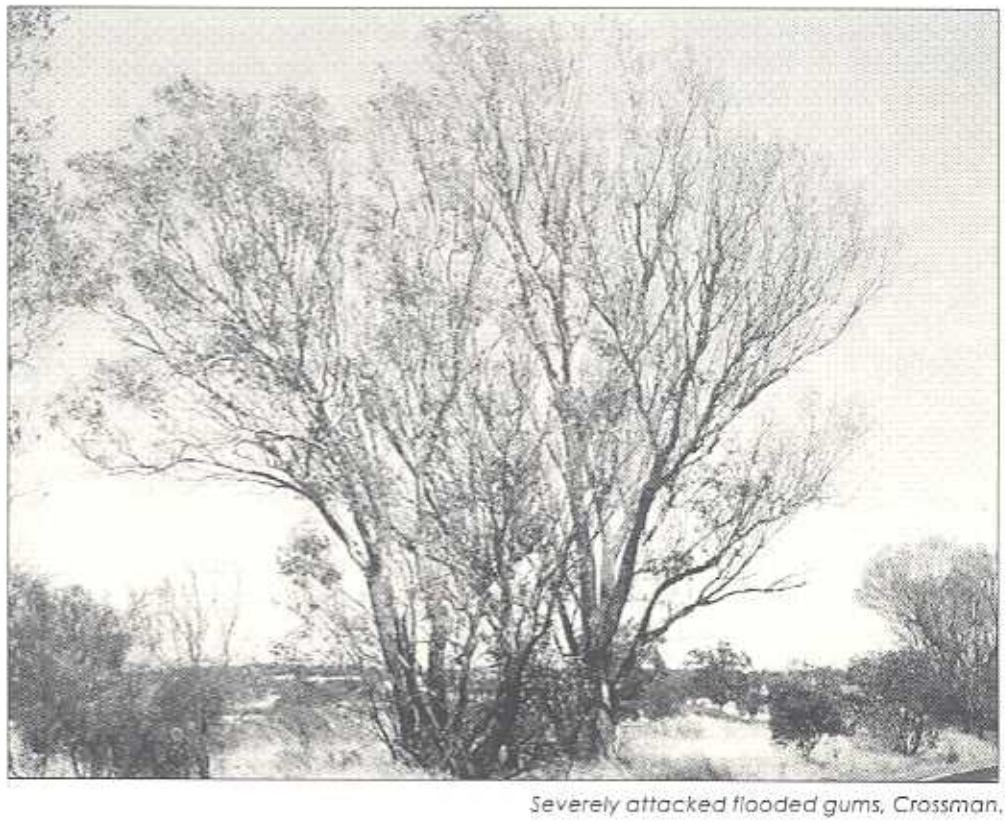
- ▷ Are there any trees apparently resistant to leafminer attack? The best time to check this is in October. "Resistant" trees should have crowns which are green, dense, large, with few dead branches.
- ▷ Does any particular type of fire intensity/season of burning appear to influence the browning of flooded gum crowns?
- ▷ Does any land management practice appear to influence browning of crowns? Possible factors include grazing by stock, camping by stock and fertiliser application.
- ▷ Is regeneration present; if so, is it abundant? Is it as damaged as foliage on mature trees?

At the moment there is no cost-effective method of control known. For a "special" tree – in a garden or driveway, for example – it would be possible to apply a systemic insecticide into the soil around the tree during April or May, but this would have to be repeated each year.

It would be very useful if any reader could contribute relevant observations and suggest factors that could be tested. This might eventually lead to a practical solution.

Ian Abbott is a Senior Principal Research Scientist and Science Adviser to the Director of CALMScience, at CALM, Crawley. One of his interests is in forest entomology and he can be contacted on 9442 0309.

Further reading: Abbott et al. (1993) For. Ecol. Manage. 58, 85-110.



Severely attacked flooded gums, Crossman.

FAUNA

SNAILS AND SLUGS IN THE BUSH

by Shirley Slack Smith

Native Snails

ALTHOUGH we realise that there is still a great deal to learn about the native snails of WA, we do know that there has been, and in many areas still is, a great diversity of species. But it is undeniable that, in certain areas, some species are close to extinction and some may even be beyond recovery.

Because our native snails are so well adapted to the environments in which they live, many people do not even suspect that they exist. Only by being in the right spot at the right time is it possible to see them out and about. They have developed the ability to withstand our dry, hot climate by burrowing into the ground or hiding deep within crevices to protect themselves from drying out. Such snails become active only when their surroundings become damp enough to allow them to emerge, feed, mate and lay eggs.

Because snail species, like all others, differ from one another in their requirements, some will have a much shorter period of activity than others and might even have to wait for more than a year before they can come out of aestivation. Even then, they might have only a couple of weeks before they have to retreat again. So it is no wonder that their presence can go undetected, and that information on them is so hard to come by and so scrappy. There are so many aspects of their lives about which we know nothing. How do the snails of the Kimberley plains, for instance, protect themselves from the floods which so often accompany the only heavy rainfalls of the year?

It is fortunate for us (and hopefully for the snails) that they leave behind their hard calcareous shells when they die. Even when we can't find any living snails, these shells may enable us to detect their previous presence and to gain some information on the habitat preferences of particular species. But the presence of dead shells does not necessarily mean that the snail species is still living in that place. Dead shells persist for long periods on calcareous soil, particularly if they are not burned. Conversely, a

A native snail, Bothryembrion sp., under wattle thicket at City Beach.

flourishing population in a moist area may go unsuspected because the acidic conditions cause the dead shells to disintegrate.

We find that some species are widespread, though their distribution might be spotty. Other species seem to be of much more restricted distribution and may even be confined, for instance, to single hills. In the absence of any more detailed information we can only guess, at present, that some widespread snail species are tolerant of a wide range of environmental conditions and/or that they have great powers of dispersal. It does also appear that some species, at least, are restricted to certain vegetation assemblages. As these assemblages are often reflections of the chemistry of the soils in which they grow, it is perhaps not unreasonable to wonder whether the snail species differ in their requirements for the minerals which they obtain from their food and so, ultimately, from the soil.

From the little that is known about the lifestyles of any of our native snail species, we can make a few tentative generalisations. Most do not seem to eat living plants but depend on damp leaf litter, or perhaps the fine threadlike mycelia of the fungi which decompose it, for their food supply. Because they are hermaphrodites, most snail species exchange sperm during mating. Then later, when the snails have built up their food reserves, they excavate some sort of depression into which a batch of eggs is laid. The laying of egg batches may proceed as long as the weather conditions remain favourable, or it may be very brief, and the snail may return to its state of aestivation even when it seems to us that conditions are still damp enough to be suitable. Perhaps this behaviour pattern prevents the wastage of eggs which would hatch, emerge and be vulnerable to desiccation after the weather has changed. Perhaps the snails are better than we are at detecting slight changes in the environment.

Alterations to the Environment

There are many ways in which the environment of an area can be changed by our activities, and this change is then reflected by changes in the animals and plants native to that area. The changes might be caused by the application of fertilisers which change the soil chemistry and so favour the survival of a flora different from that native to the area. They might also be due to a burning regime which may produce the same effect when severe. But even a moderate burn also causes long-term changes in the composition of the litter. Litter dependent animals such as snails are particularly vulnerable to the direct or the indirect effects of burning, and are even more so if the burning occurs during their period of activity.

Introduced Plants

The introduction, deliberate or not, of plants foreign to an area causes drastic or subtle changes to the environment of both plants and animals. Relatively sedentary animals such as snails are affected by changes in the composition of plants and their litter, either directly

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or through changes in the composition of the fungi growing in the decomposing litter. These changes can be rapid and severe when native bush is converted to pasture or cereal or other crops. The disappearance of most native snails from household gardens is probably due to the planting of foreign plants which cannot serve as food for native snails. The spread of such plants into national parks and reserves and into any areas of natural bush causes similar problems, as they compete with native plant species for space and so lessen the food supply of the native snails.

Introduced Vertebrates

Grazing mammals cause change through their selective consumption of plants, by affecting the pattern of litter accumulation and by the compaction of the soil so that the germination of native plants is inhibited.

Rodents are often active predators on native snails and their activities may be particularly significant in rocky areas where fire and flood do not cause high mortalities. Few birds native to WA seem to be important snail predators, but species such as the blackbird, introduced into south eastern Australia, seem to have had an important effect there.

Introduced Snails and Slugs

Many species of snails and slugs have been brought to WA from other areas, and a number of these have survived and flourished. Most of the successful introductions came originally from the Mediterranean countries (eg *Theba pisana*, the rounded Mediterranean white snail, and the tall conical species *Cochlicella acuta* and *Cochlicella barbara*). Others came from more northern European areas (eg the amber snail *Cochlicopa lubrica*) or are widespread throughout Europe (eg the brown garden snail *Helix aspersa*).

It is no wonder that *Helix aspersa*, which is largely confined to areas close to household gardens, is so successful. We cultivate plants introduced from Europe which are

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Mediterranean white snail aestivating at Dongara.

highly acceptable to European snails as food. *Theba pisana* has spread widely along the coastal areas from Shark Bay to Esperance (even in bushland), but has not penetrated very far inland. It is very resistant to desiccation but seems to prefer areas with calcareous soils, perhaps because it needs a high level of calcium in its diet. Similarly *Cochlicella acuta* is found only in calcium rich soils along the coast but the closely related *Cochlicella barbara* is more tolerant of soils further inland containing less calcium. Except in the cooler moister areas in the south-west of the state, *Cochlicopa lubrica* seems to be confined to shade houses or similarly sheltered habitats, as it seems to need a more humid environment.

However, it is the introduced slugs which have been so successful in their new land. All the slugs which are found in WA have been introduced from Europe except for some species now found in the north of the State which originated in more tropical areas.

Not only do they flourish in household and market gardens, but they are abundant in cereal crops, pastures and even in virtually unaltered bushland. These slugs seem to have been spread by man more efficiently, though unwittingly, than were snails. This might have been due to their ability to burrow into sand and to secrete themselves in small crevices such as those in the bases of flowerpots. Some species, such as the tropical vaginulid slugs now found in the Pilbara and Kimberley regions, seem to be aided by their remarkable ability to recover from severe dehydration, a useful attribute for a migrant species.

Introduced snails and slugs may affect native species by competing for food or some other environmental resource. Most of the introduced snails are herbivorous and some may eat living plants, preferring the tender, sweet growing tips. However these species mainly seem to eat the damaged leaves of some native as well as introduced living plants. Like the native snails, most introduced species generally seem to depend on leaf litter (or on the fungi that grow in it) for their main food source. In addition, some of the snails and many of the slug species have been found to be omnivorous or even entirely carnivorous, and are reported to eat snail eggs and juveniles as well as other small invertebrates. The level of their impact on native snail species has not yet been investigated.

As with native species the introduced snails and slugs have limits to the degree to which they can tolerate their adopted environment. These limitations, together with the historical contexts of their introductions, have determined which species have survived and spread. As with all such transplanted species, some have flourished to a degree undreamed of in their native land. Western Australia seems to have very few native animals which eat snails and slugs. This is probably one of the reasons why the Mediterranean white snail, *Theba pisana*, can reach such large numbers in the wheatfields around Eneabba that it gums up the harvesting machines and renders the wheat unsaleable.

Shirley Slack Smith is Curator of Molluscs at the WA Museum. Most of her work has been with marine molluscs - "sea shells". She can be contacted on 9427 2700

ECONOMIC ASPECTS OF BIODIVERSITY

USING SHEOAK TIMBER

by Graeme Siemon

THREE species of casuarinas growing in the south-west or Wheatbelt regions of Western Australia have considerable potential for use as specialty timbers. They are the WA sheoak (*Allocasuarina fraseriana*), rock sheoak (*Allocasuarina huegeliana*), and swamp sheoak (*Casuarina obesa*). Another species that has potential is karri sheoak (*Allocasuarina decussata*), an understorey species in the karri forest, but it is unlikely to be used commercially because of increasing environmental pressures.

WA sheoak is a secondary species in the jarrah / marri forest of the south-west and about 2000 tonnes is harvested each year. Rock sheoak occurs on granite soils in a band from Kalbarri to Esperance, including the Wheatbelt. Swamp sheoak occurs through the south-west near the coast and adjacent to inland salt lakes (it also is found in south-west NSW, north-west Victoria and South Australia. The salt tolerance of swamp sheoak is a great advantage for salinity-affected areas. There is no commercial harvesting of the last two species.

Sheoaks have advantages of attractive colour and figure, the prominent broad rays characteristic of oaks, and low shrinkage which makes the timber stable in use.

Uses of WA sheoak since early settlement included furniture, decorative woodwork and turnery, flooring and panelling, roofing shingles, and beer barrel staves. Current uses include outdoor furniture, where a Perth firm has achieved excellent export sales, and laminated flooring.

CALM research into rock sheoak and swamp sheoak from the Wheatbelt studied wood properties and possible utilisation, including sawmilling, drying and gluing behaviour. The research showed that these species are commercially useful. Rock sheoak has an attractive deep red colour and distinctive broad rays in the quartersawn timber (i.e. sawn at right angles to the growth rings). Swamp sheoak is straw-coloured to creamy-brown, and although the rays are less prominent, features such as tight knots give it appeal.

Both species have greater shrinkage in both tangential and radial directions than does WA sheoak, and both are heavier than that species. Working and gluing properties are good.

For planting in Wheatbelt areas, both rock sheoak and swamp sheoak have potential for later use as specialty timbers for furniture and craftwork. Other species such as jam (*Acacia acuminata*), York gum (*Eucalyptus loxophleba*) and brown mallet (*E. astringens*) are also being assessed by CALM, and other research will follow.

Dr Graeme Siemon is a Scientific Adviser in the Forest Resources Management Program, CALM, Como. phone 9334 0410

Bedroom suite in sheoak by Gold Seal Furniture (a Division of Good Sammy Industries). Manager Bruce Barrett says "The grain pattern and medullary rays of sheoak are typical of the character only these great hardwoods possess. In some instances the pattern can look almost like snakeskin."

EDITOR'S NOTE: We have little knowledge about how fast sheoaks planted for revegetation are growing - ie. how soon will they reach millable stage? Can anyone help, please? Measure your sheoaks' diameter at breast height and correlate it against location and time since planting (see e.g. from York, below). This will greatly assist planning for commercialisation of these timbers. Send the info to Penny Hussey, please.

Species	Location	Year planted	Year Measured	Diameter at breast height
Swamp sheoak	Saline seep	1993	1999	1.4 cm
Rock sheoak	Granites	1993	1999	2.3 cm

Nb also: if you wish to grow for timber, planting will have to be denser than usual, to cut down on side branches.

PRACTICALITIES

A simple device to prevent small vertebrate animals from drowning in swimming pools.

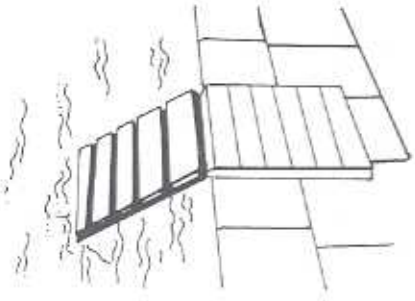
by Michael Tyler

Each summer people ring us up, distressed that animals have drowned in their swimming pool. Honey possums quite often die this way. This article is reprinted from Herpetological Review 29 (1), 1998.

This article describes a simply constructed wooden raft proven to have assisted the escape of small animals from swimming pools.

The device consists of two units comprising tongue and grooved wooden planks attached to a 4x4x50cm square section wooden frame. The two identical components are connected by a continuous brass hinge, permitting the ramp to adjust to changing water levels. The ramp is equipped with closely spaced bars to provide purchase for a creature leaving the water. To minimise the angle at which the device touches the water, an empty plastic water bottle has been atached to the undersurface by means of a plastic strap.

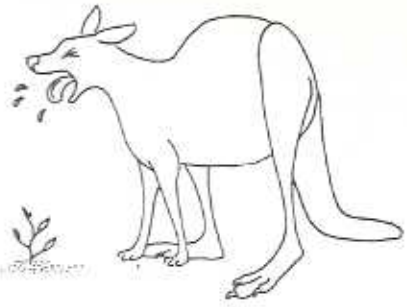
The positioning of the device is vital to maximise access for trapped animals. The direction of pool water flow towards the skimmer box means that a weakened animal will float towards, and often into, the skimmer box, where ultimately it will drown. The device is therefore placed over the skimmer box as shown in the diagram.



Device in position: the right-hand portion is placed directly above the skimmer box.

Undersurface of the device showing the framework upon which the boards are mounted, and the plastic water bottle in place.

Grazing deterrant



For all those frustrated people trying to revegetate, but whose efforts are being continually thwarted by grazing kangaroos and rabbits – here is a 100% organic, non-toxic recipe for deterring grazers, as suggested by a fellow landholder.

"Finely chop up a quantity of hot red chillies (make sure they are finely chopped, otherwise the seed might germinate and result in a weed problem), and then spread the resulting powder around the base of new plants. It will deter kangaroos and rabbits like nothing else will."

In addition, we suggest that when spreading the powder, make sure it doesn't quite touch the stems of the plants. Apparently it works wonders on snails and slugs as well, but doesn't affect domestic pets other than to give them a nasty surprise!

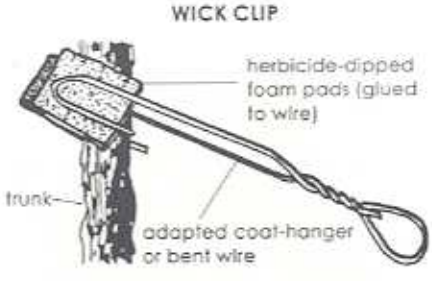
Thank you to Matt Warnock for his innovative solution. Do any other landholders have any interesting home remedies they would like to share with other readers? We'd love to hear from you if you do!

Emma Bramwell

A simple technique for killing woody weeds

The Feral Teatree Eradication Group of Bremer Bay has come up with a very simple piece of equipment to apply herbicide to standing shrubs. Invented by Mr T. Bierne of Cosy Corner, it consists of a herbicide-dipped foam pad glued to an adapted coat hanger and then clipped onto stems.

The group soaked the pads in 1 litre of Triclorpyr ("Garlon") in diesel, then clipped them onto the stem base as close to the ground as possible. It works for stems from 20 mm to 100 mm and above (below that size hand pulling is better). Leave in place for 5-7 days, when first effects show, then recycle onto a new plant.



Although this was used with Victorian teatree (*Leptospermum laevigatum*) in coastal scrub, it would probably be equally effective on other shrubby weeds such as eastern states acacias and tagasaste.

For further detail of this technique, or more information about the FTTEG, contact M. Jeffery on (08) 9837 4190.

WEED ALERT

PEST OF BRIDAL CREEPER RELEASED

By Tim Woodburn

MOST Land for Wildlifers *will be aware of bridal creeper, one of the most significant environmental weeds in the southwest of WA. CSIRO has recently released a biological control agent.*

CSIRO and the Cooperative Research Centre for Weed Management Systems have been studying the possibility of using natural enemies for bridal creeper for some years now. Bridal creeper is a much less vigorous plant in its native range, South Africa, where it never forms impenetrable blankets of vegetation, as it does here.

The first insect to be imported from South Africa for detailed study of its specificity in Perth, was the bridal creeper leafhopper *Zygina* sp. This small, whitish insect is only 2.5mm long. Females lay about 200 eggs singly just below the leaf surface. The eggs hatch within about a week, and the nymphs feed on the undersurface of the leaf by sucking out the leaf cell contents. Adults feed in a similar way. This causes a silvering of the leaves, and reduces their ability to photosynthesise. The insect has many generations a year and thus it is hoped that field populations should build up rapidly in Australia.

The specificity testing showed that the bridal creeper leafhopper is a very specific insect, and is only able to complete its life cycle on the weed. Cultivated asparagus, a close relative, is at no risk and neither are any Australian plants. After careful consideration by 21 State and Federal bodies, the bridal creeper leafhopper was approved for release into the Australian environment by the Australian Quarantine and Inspection Service and Environment Australia.

The first releases were made in South Australia, which funded the survey work in South Africa for many years. Subsequent releases have been done in WA, Vic and NSW. CSIRO is developing release strategies for the distribution of this insect by community groups and expects to have these in place in time for next year's growing season.

Biological control of this weed will be a slow process due to the biology of the weed. Although it blankets vegetation during autumn to late spring, about 90% of its biomass is in fact underground in the form of fleshy tubers. It is the running down of the reserves in these tubers which will take many years. This may well work to our advantage, however, as the decline should be a gradual one. This will allow the bush to regenerate at a slow pace. A rapid decline could pose revegetation problems for land managers.

Other potential agents are being studied in quarantine. In Canberra, host testing is progressing well for a rust fungus that really impressed the scientists by the damage it causes in South Africa (*see WW3/4 – Ed*). Two further insects are under investigation in Perth, a leaf beetle that attacks new growth, and a seed wasp that feeds on developing seeds within the fruit of bridal creeper.

The insects have been released at a few trial sites in WA – the photos were taken during a weed management workshop at Kojonup in August – but by next year millions of insects should be ready for release. It is hoped that community groups will take responsiblity for spreading them onto infestations in their local area. If you are interested in helping with this, please inform your local *LFW* Officer, or ring the author direct. (*There will be a reminder in Western Wildlife next year- Ed.*)

Tim Woodburn is an entomologist at CSIRO's Centre for Mediterranean Agricultural Research, Floreat. He can be contacted on 9333 6647.

Tim Woodburn explains the program at Kojonup (photo: David Lamont)

Participants at the workshop studying bridal creeper leafhoppers (photo: David Lamont)

WEED ALERT

TAGASASTE – ENVIRONMENTAL PROBLEM

By Kath Mathwin

MANY people enthusiastically promote tagasaste as a cure-all perennial shrub for all revegetation sites. Kojonup landholder, Kath Mathwin, raises some points of concern.

Tagasaste, sometimes known as tree lucerne, *Chamaecytisus prolifer*, hails from the Canary Islands and is being planted in ever increasing quantities throughout farming areas in WA. Originally recommended only for gutless sands (where it doesn't use as much water as the original vegetation), it is now being established systematically and diligently along contour banks, fenced off creeks etc. These plantings use direct seeding or seedlings, both available very cheaply as tagasaste seed is easy to collect and germinates and transplants very readily.

It is now moving out quickly and relentlessly, establishing itself along our roadsides, down our rivers and creeks and into our reserves, utilising its own super-efficient seed spreading system. Apparently tagasaste seeds can last for 50 years, certainly they are still coming up in our garden 30 years after the last tree was cut. Nothing can grow under tagasaste (except bridal creeper and a few weedy grasses), no wildflowers. Few of the native birds or animals gain any benefit from it.

Is anyone assessing the long-term effect of this planting and spreading? Authoritative sources feel that it has the potential to become the worst environmental weed in our district.

Is anyone asking "Why plant tagasaste at all?" Especially along contour banks and waterways where it cannot be grazed to prevent seeding, does not benefit wildlife or farm production and where so many other fast-growing species could be substituted.

Is it because it is easy to grow? Or is it just fashionable? Or because people don't know what else to plant?

Authorities cannot be totally ignorant of its weed potential as there are attempts to produce infertile plants – why, unless they recognise the problem? So why is planting being encouraged so? *Why is anyone allowed to plant it without a licence and a written guarantee that they will be responsible for the total eradication of any growth occurring outside the licenced area?*

If we liken the spread of salinity, acidity and general depletion of biodiversity to a fire, trickling, running and raging through our whole farming area, we could liken the well-intentioned planting a tagasaste to some small attempt to quell the flames; before we do any more splashing, should we make sure that we are making the situation better, not worse - *that it is water we are splashing, not petrol?*

When our grandchildren live in a world of tagasaste, will they look back and point an accusing finger at someone, as we do at Mr Austin over the release of the rabbit? – Could Governments, Departments and Shire Councils have done more? Should individual farmers have taken responsibility, or the plant nurseries and seed merchants? – Whose fault will it be? Who was so foolish, so greedy, so apathetic, that they allowed this to happen? With all the experience of major and minor disasters with imported plants and animals that we have already had in this country, how can we have learnt so little?!!!

Tagasaste has been seen on road verges at Kojonup, Bridgetown, Boyup Brook, Mt. Barker, Albany, Moora, Wongan Hills, and is rife in the Hills forest and roadsides east of Perth. Doubtless also in many other areas.

All that is needed to deal with tagasaste is an axe – the wood is very soft – or a chain saw which is much quicker. Just cut the trees off below the lowest branch, don't worry about the stumps, termites deal with them quite quickly.

The time to do it needs to be as late as possible before the seed sets, eg October or November. Once it is getting hot they don't regrow from the stump. The best thing to do with the trees is to put them over the fence for stock to deal with, otherwise just let them lie. They will look a bit untidy for a while, but soon rot. Do not cart the whole lot somewhere tidier just in case there are some seeds ripe enough to germinate in a new spot and make things even worse!

The next year lots of seedlings may come up - they can be sprayed, pulled up, or ignored for a year or two until they flower (by then most of them will have droughted out with the summer weather) then, before they set seed, they can easily be cut with secateurs or an axe. From then on it is just a matter of checking on them each year. Everyone could be asked to be responsible for their own boundaries.

For the extensive infestation along rivers and in reserves, a more professional approach may be needed, but even the "cut, let lie and keep checking" system will probably be the best in the end, as major seed-germinating disturbance can be avoided that way.

This article is reprinted from the Newsletter of the Environmental Weeds Action network.

REVEGETATION

WATTLE I PLANT?

AS nitrogen-fixers, wattles should be a vital part of all revegetation plans. If you want more than boring old *Acacia saligna*, plan NOW to collect seed for next year's planting.

There are many wonderful wattles to use, choose as many as you can that grow in the appropriate soil type. It does not really matter if you don't know the names, but if you would like to learn them, the key in the newest 'Blackall and Greive' (Part II, 1998) should help. Contact your local Community Herbarium if you don't have your own copy.

There is also a new computer package called "Wattle", which is currently being developed by Bruce Maslin. This system provides both an electronic means of quickly and easily naming your specimens and for selecting appropriate species for growing, based on user-defined environmental, biological or utilisation criteria. A comprehensive package of information will be provided for each species, including pictures and its role in revegetation. A prototype of the "Wattle" system was recently published on CD for plants in the Kalannie-Goodlands LCDC; you can use this to give you some ideas for your project.

The first phase of the main "Wattle" project will be published on CD during 2000; in the meantime a working copy of the program is available at the Reference Herbarium in Perth.

As you drive around your district, make a note of wattles that are flowering exceptionally well. Keep a note of these sites where you won't forget them, on the fridge, say. Plan to collect the seed between the end of October and the beginning of December. Wattle seed ripens very quickly and pops off in all directions, so you need to keep an eye out and be ready to collect at any point during this time. Rope in all your friends – the more seed the merrier!

Remember to get a licence from CALM if collecting from Crown land (your *LFW* Officer can help with advice) and permission from the owner of the land on which the plants are growing.

Start collecting large paper bags – booze bags are good. I like to use long-handled linen shopping bags which hook over the shoulder, and have a wide mouth for sweeping seeds into. Keep these in the car, along with an old tarpaulin or opened-out chaff bag. As soon as you note some wattle pods turning brown, start collecting. Spread out the tarpaulin on the ground below the bush and sweep the seed off into your container or onto the tarpaulin.

Dry in a warm, windless place. Make sure the pods are covered, or as they pop you'll lose half of your collection.

Provide some seeds to your nursery operator for growing on, and keep the rest for direct seeding.

Penny Hussey

ROADSIDES DEMONSTRATE ORIGINAL UNDERSTOREY

For water management, it is important that all dolerite dykes be densely vegetated, but it is a waste of time and money to put in seedlings which are unlikely to grow.

If at a loss to know what should be in the understorey of grazed woodlands – like this strip of mostly regrowth wandoo and salmon gum on a dolerite dyke at Wyening in Victoria Plains Shire – it is worth looking at the nearest roadside. Here it can clearly be seen that there was a dense ground layer, even directly under the tree crowns. There are at least ten different species at this site, including wallaby grass, spear grass, curly grass, dianella, purple olearia, konnors, donkey orchids, Acacia bidentata, paperlily, and yellow everlastings.

This site requires fencing to remove stock pressure, then revegetating using the roadside as a seed source. You will need permission from the Shire (owner of the roadside) and CALM (collecting licence) before you do this. Carefully, in November, use secateurs to cut handfuls of grass with seed-heads, wattle seeds, berries from the dianella, etc, and fill bags full of the cut material plus leaf litter, sticks, and other plant litter. If you can include a few cryptogams (eg lichens), so much the better. Spread the material into the area to be revegetated, concentrating on sites where protruding boulders will minimise the effect of soil wash from summer storms.

Then, give it time!

Nb: be very careful not to damage the area you are collecting from. Effectively, a casual glance should not be able to see where you have been working! Park safely and always be aware of traffic.

Penny Hussey

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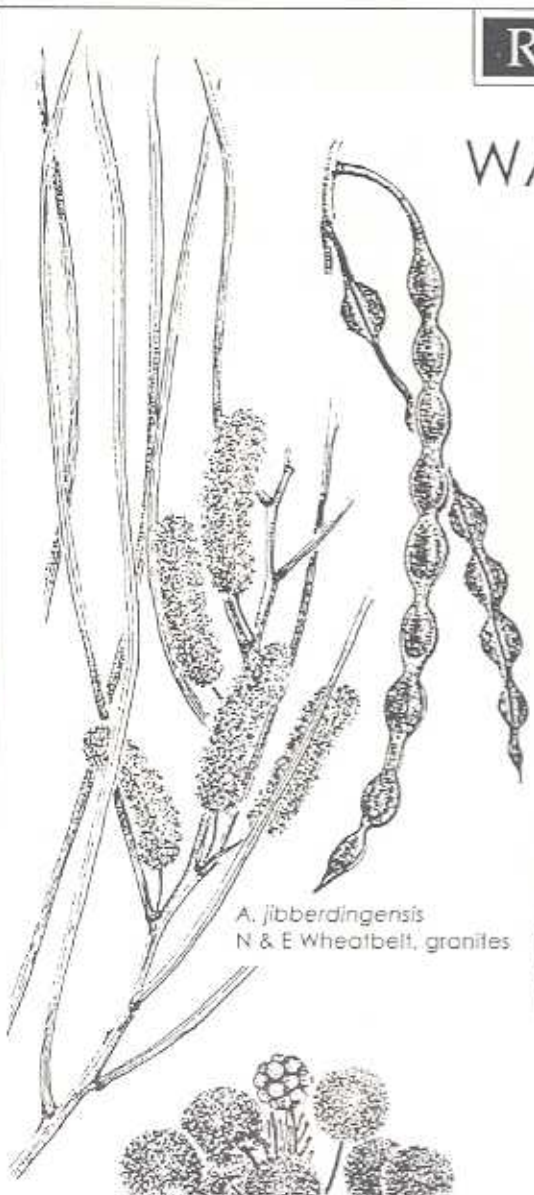
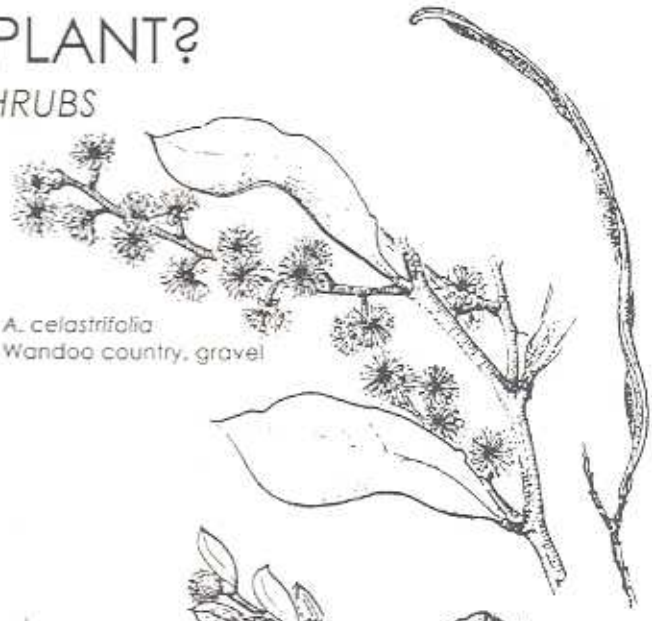
REVEGETATION

WATTLE I PLANT?

LARGE SHRUBS



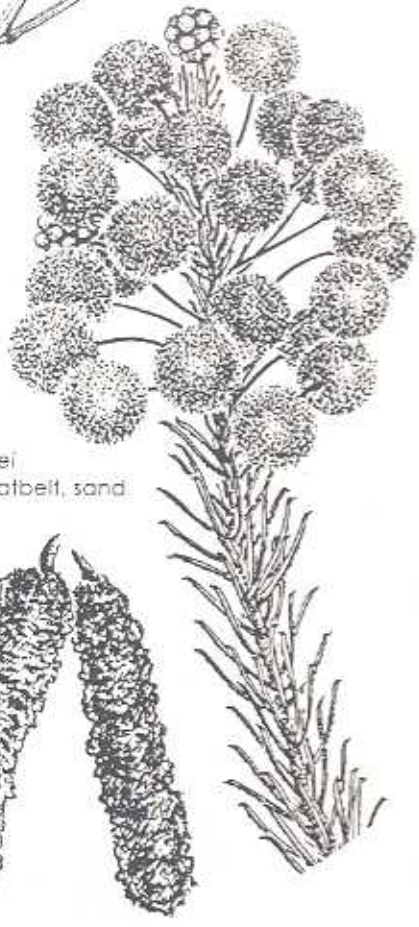
A. jibberdingensis
N & E Wheatbelt, granites



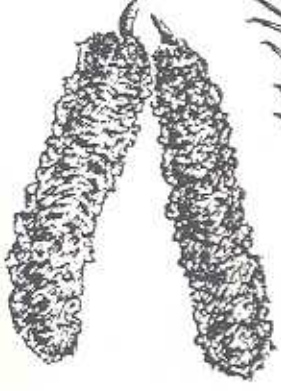
A. celastrifolia
Wandoo country, gravel

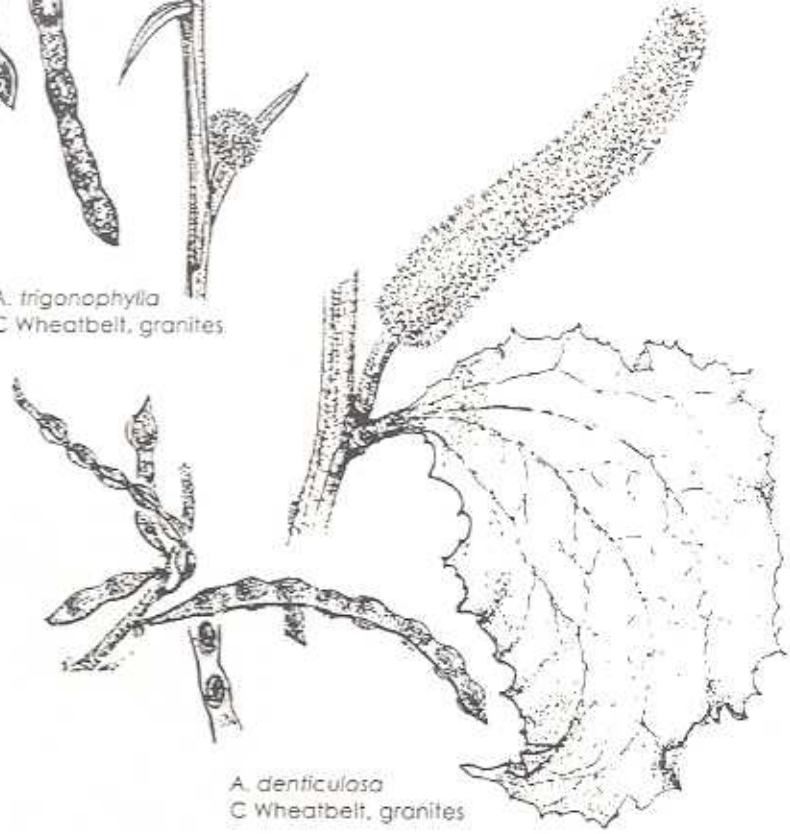
A. ancistrophylla
N, C & E Wheatbelt, woodlands

A. trigonophylla
C Wheatbelt, granites



A. rossei
E Wheatbelt, sand





A. denticulosa
C Wheatbelt, granites

Drawings by Marion Simmons from "Acacias of Australia, Vol II"

FLORA

What's in a name ...?

STURT'S DESERT PEA, that fabulously beautiful adornment of the spinfex country, has been given a new scientific name. What does this mean?

The scientific name is in three parts, the first is the name of the genus, the second the species name, followed by an abbreviation of the 'authority', the botanist who gave the plant this scientific name. For example, oats is *Avena fatua* L. for Linnaeus who invented the modern system of scientific nomenclature. So how does this work for Sturt's desert pea?

The plant was first collected in September 1699 on East Lewis Island in the Dampier Archipelago by the english privateer/explorer William Dampier. But it wasn't described scientifically until 1832 when G. Don wrote a book entitled "A General History of the Dichlamydeous Plants". He named the plant *Donia formosa* G. Don.

In 1950, two botanists decided that it was related to other species in the genus *Clianthus*, a small genus

found thoughout the south Pacific, so they published a note in "Contributions to the New South Wales National Herbarium" naming it *Clianthus formosus* (G. Don) Ford & Vickery. (Note that the authorities who change names add their monikers to the plant's full title.)

In 1990, a botanist was reviewing the large genus *Swainsona*, the purple peas found throughout inland Australia, and decided that our plant was merely a bird-pollinated *Swainsona*. So it became, via the journal "Telopea", *Swainsona formosa* (G. Don) Thompson.

The newest change turned up in "The Western Australian Naturalist" in 1999. Because he considers it quite unique, botanist Alex George has placed it in a new genus, all on its own, named after William Dampier. So you can now call it *Willdampia formosa* (G. Don) A.S. George.

Wow! ..... errrr ..... which?

Any one of these names would be correct, as long as you cite the authority so that an investigating botanist can research the latin description.

Personally, I'll just be calling it, as I always have, Sturt's desert pea!

Penny Hussey

IN BRIEF

DID YOU KNOW ...

why sleeping birds
don't fall off their perches?

Birds fall asleep sitting up – why don't they fall off the perch as they relax? Well, birds have a flexor tendon which runs down the back of the legs and under the feet. When they perch, the tendon automatically tightens and flexes the toes, thus closing the claws firmly around the perch. The sleeping bird's weight forces knobby projections on the tendon to lock into a ridged sheath surrounding it, thus preventing sliding. As soon as the bird wakes and straightens its legs, the tendon relaxes and the grip is released.

DID YOU KNOW ...

why owls can hear so well?

Most birds have round ear holes, but owls have slits which open the full height of their skull. Their feathers are so arranged that they can act as sound-funnels into them. Owls also have very precise muscular ability to individually close or open the slits, so that they can both hear, and accurately pinpoint the location of, the tiniest sound. Who'd be a mouse out at night?

From John Dell, WA Museum.

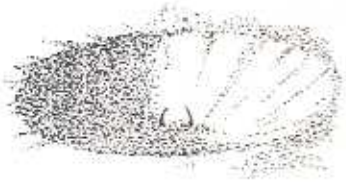
Woylies in NSW

The Genaren Hill Landcare Group in NSW has successfully reintroduced woylies (bettongs) to a 390ha exclusion-fenced area on a property in their district, where woylies had been extinct for 70 years. 12 woylies were taken from Dryandra and reintroduced to NSW, where they are now breeding sucessfully.

For the full story, read: "Bringing Back the Bettong" (1999) by Micheal Sutherland, Chairman, Generen Hill Landcare Group Inc.

BUSH DETECTIVE

Ware – pit trap!

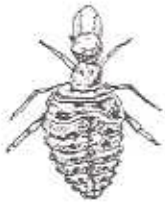


In summer people often notice small conical depressions in sandy soils, often near the base of trees or fallen logs. The pit can be up to 5cm in diameter and 2.5 cm deep, with loose sandy sides. In the base, hidden by loose sand, lurks an antlion, jaws upwards.

Antlion eggs are laid singly in dry soil, and the larvae dig a pit by crawling backwards in a small circle and flipping the sand outwards beyond the edge. Any insect moving within the edge of the pit starts an avalanche of sand. The antlion reacts by tossing sand upwards towards the intruder and causing a greater avalanche so that the insect tumbles to the bottom of the pit. There it is grabbed by the antlion's sharply-pointed, incurving jaws and sucked dry of juices. After eating, the remains are thrown out and the trap reset.

After three to four months the larva spins a silken cocoon, pupates, then emerges as the delicate, winged adult.

It is tempting to think of the antlion larvae as being "clever", but in fact they act by instinct, and can only catch prey in this one way. Put them in a box with hundreds of ants but no sand, and they'll starve to death.



FAUNA

Conserving Carnaby's Cockatoo

By Belinda Cale

Carnaby's cockatoo (or the short-billed form of the white-tailed black cockatoo) ranges over much the south-west corner of Western Australia, extending from the Murchison River to Esperance. Unlike the long-billed form of the black cockatoo which is restricted to the wetter forests of the south-west throughout the year, Carnaby's cockatoo breeds in the wheatbelt and then moves to coastal areas in summer. It is at this time that large flocks of Carnaby's cockatoos may be seen feeding in pine plantations north of Perth.

Although Carnaby's cockatoo is highly visible, flocks of cockatoos are often comprised of mostly old birds and include few young birds. In addition, the species has disappeared from many areas where it formerly occurred and there are concerns for its future. Much of the Carnaby's cockatoo habitat has been cleared or fragmented. During the breeding season Carnaby's cockatoo feeds primarily on the seeds of native vegetation, and unlike many other local cockatoos does not feed on cereal crops or in pasture. Clearing of heathland surrounding breeding sites reduces the amount of food for breeding birds and young. In addition, the lack of eucalypt regeneration in many woodland remnants has led to a gradual loss of hollow-bearing nesting trees. As a result of these changes, Carnaby's cockatoo has undergone a major decline in range, particularly in drier areas and the central wheatbelt. Regional extinctions are likely to continue for some decades since these birds are long-lived, with an average life expectancy of 15 years.

With funding from the Natural Heritage Trust, a recovery plan is being developed for Carnaby's cockatoo. The aim of this plan is to work out ways in which we can ensure the persistence of this endangered cockatoo. Much of the cockatoo's existing habitat is found in agricultural areas and, consequently, the involvement and cooperation of private landholders will be vital to the success of this plan. For example, it will be important to conserve existing woodland, particulary salmon gum and wandoo, where the cockatoos are known to breed. Replanting of heath near breeding hollows will assist Carnaby's cockatoos in feeding their young in spring. In many cases, the revegetation or conservation of areas to assist Carnaby's cockatoos will have added benefits to the landholder in reducing salinity problems.

If you think you have Carnaby's cockatoos breeding on your property or are interested in being involved in the recovery of this cockatoo, please contact me at CALM's Threatened Species and Communities Unit on 9405 5172.

Belinda Cale is a Project Officer with WATSCU at CALM, Woodvale.

REVEGETATION

ARE WE WORKING FOR NATURE?

by Brett Beecham and Avril Baxter

AS humans we are very successful at causing local extinctions of plants and animals. This is a trend that all *Land for Wildlifers* are working hard to change, but just how effective are we? Often working as an individual is not enough, we need to work within whole landscapes to effect a change. Have a look through the following levels of action, at what level are you or your catchment group working?

1 Doing nothing

If things continue as they are, then biodiversity loss and landscape productivity will inevitably continue to decline at an ever increasing rate. The impact of current threats will worsen, and new threats will emerge. For most people this is unacceptable.

2 Ensuring that the current threats to plants and animals do not get worse

If we stop further land clearing and avoid introducing any new diseases, weeds or damaging fauna, there will be no new threats to plants and animals. This is probably harder than it sounds with our need for increased farm productivity.

3 Slowing the decline of biodiversity

Here, the needs of specific plants and animals are not taken into consideration when planning management actions.

Actions at this level include revegetating or encouraging natural regeneration in bushland remnants and connecting the remnants with strips of trees and shrubs often planted in areas of low agricultural productivity, eg saline creeklines.

Within our farming systems we can remove some of the landscape pressures, eg using water where it falls, minimising herbicide and fertiliser drift, controlling some of the major weeds and feral animals and preventing stubble fires from entering bushland.

Most of these actions favour common and widespread species, and do little for species at greatest risk. The decline still continues, but at a slower rate.

4 Taking positive steps to conserve specific elements of biodiversity

This approach targets the needs of a few species, often those considered rare or threatened, or of special interest.

Actions involve very specific tasks such as preserving seeds in a seed bank, or undertaking intensive site specific management tasks such as hand weeding or spot spraying around a rare plant.

The specific needs of the target plant or animal are used to identify important habitat remnants, or design corridors to encourage movement between remnants.

Tasks at the landscape level could include diverting saline water to preserve a freshwater lake.

5 Taking positive steps to conserve all natural populations in an area

The needs of many species are considered in this approach. To simplify the task, a series of "umbrella" or "focal" species are selected that are identified as being at greatest risk to each threat operating in an area.

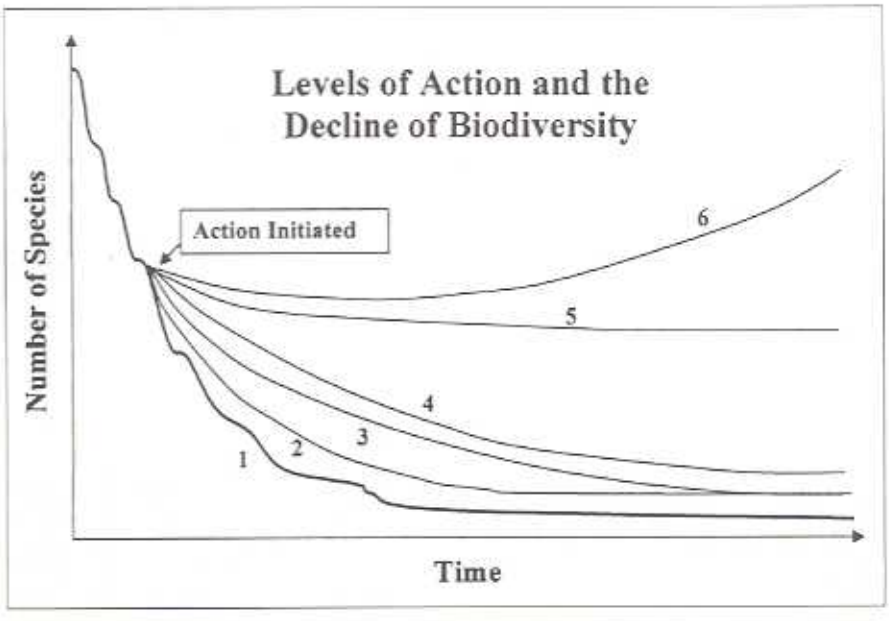
Threats such as altered fire regimes or lack of habitat are managed to a level that meets the needs of the focal species. All other species that are at less risk also then benefit from this management approach.

Threats require action at a landscape scale, and include revegetation to create additional habitat and corridors, long-term and widespread control of feral animals and major weeds, adopting fire management regimes and agricultural practices which minimise adverse affects on the environment.

Further research work is needed to identify the "focal" species for different areas. The ultimate objective is to create viable populations of all species in an area.

6 Reconstructing landscapes and their natural flora and fauna

The next step is to undertake large scale reconstructions of scarce habitat types, interconnect all



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NEW BOOKS

ASSESSING THE CAUSES, IMPACTS, COSTS AND MANAGEMENT OF DRYLAND SALINTY

Lin Martin & Jenny Metcalfe.
LWRRDC Occasional Paper No 20/98 Revision No 1. National Dryland Salinity Program, Canberra. (GPO Box 2182, Canberra, 2601)
$20.00 + postage and handling.
This book looks at four questions:

- Where is the groundwater and salt in my catchment coming from?
- What are the options for mapping the current extent and risk of dryland salinity in my catchmemt?
- What are the landuse options for managing my recharge?
- What are the costs of dryland salinity in my catchment and who bears them?

Very useful reference, written in clear language, explaining everything from 'what an aquifer is' to 'how to use and interpret EM31 data' to 'what does salinity cost Local Government' ... etc. Although national in scope, many of the case studies are from WA. It is mostly concerned with production landcare and economics but also includes bushcare comments where they fit into the mainstream salt picture.
Unless you are already a full bottle on the subject, you will find this a useful reference.

LINKAGES IN THE LANDSCAPE: THE ROLE OF CORRIDORS AND CONNECTIVITY IN WILDLIFE CONSERVATION.

Andrew F. Bennett
IUCN, Gland, Switzerland (obtainable from The Botanical Bookshop, Australian National Botanic Gardens, Canberra.)
Cost $20.00 + postage and handling
This is one for people who are serious about 'bush corridors' – students or advisors, for example. It is a text book, using examples from all over the world to demonstrate how fauna use linear strips of vegetation. It also discusses the design of linkages and how they can be incorporated into conservation strategies at all scales. There is a particularly useful checklist for planning linkages.
It is recommended reading for everyone involved in planning or implimenting large scale revegetation projects that include a 'bush corridor' component. (If you would like to look at a copy before you order, each *LFW* Officer has one.)

HOW TO MANAGE YOUR WANDOO WOODLANDS

B.M.J. Hussey
Land for Wildlife Handbook No 4.
See flier for details.

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remnant habitat areas with purpose-designed fauna movement and habitat corridors, eliminate feral plants and animals from the landscape and reintroduce flora and fauna that are locally extinct.

The challenge is there for the taking – can we aim just a little bit higher - from 3 to 4, for example?

The authors work at CALM, Narrogin. Brett Beecham is Regional Ecologist, Avril Baxter is Land for Wildlife Officer. They can be contacted on 9881 1444.

COMING EVENTS

Wandoo Woodlands Day
Toodyay, 10th October
Joint excursion of WA Naturalists' Club and Toodyay Naturalists' Club.
Contact: Penny Hussey, 9334 0530

Managing Woodlands
Latham, 13th October
Land for Wildlife. Fauna, rehabilitation and revegetation.
Contact: Robyn Stephens, 9971 1437

High Tech Hydrogeological Survey
West Dale, 15th October
Landcare Vision, West Dale
Contact: Judy Schilling, 9647 1012

CSIRO trials
Gabby Quoi Quoi, 15th October
Landcare Vision, Gabby Quoi Quoi.
Soil micro-organisms, lime, summer fodder, fertiliser rates/leaching, perennials.
Contact: Nathan Davey, 9620 1288

Bindoon Show
Bindoon, 16th October

Rural Biodiversity Planning Course
Boyup Brook, 25th October – 18th November (residential)
Green Skills Inc
Contact: 9848 1019

Gidgegannup Show
Gidgegannup, 30th October

Dinninup Show
Dinninup, 3rd November

Margaret River Show
Margaret River, 5th – 6th November

Albany Show
Albany, 13th – 14th November

Bridgetown Show
Bridgetown, 28th November

And the world gets warmer

...In 1998, the average global temperature was 0.66°C above the long-term average, breaking the previous year's record high of 0.43°C. It was the twentieth successive year in which the annual average exceeded the long-term mean.

FUNDING

Natural Heritage Trust Funding for 2000/2001

Guidelines and application forms for the 2000/2001 NHT funding are expected to be available from October 1999. Groups thinking of applying for new projects are encouraged to start planning them now – don't leave it to the last minute. The closing date will be 25th February 2000.

Applicants should aim to integrate their projects with other local, catchment and regional activities – particularly where regional strategies and catchment plans exist – and consist of a range of activities.

BUSHCARE

Bushcare is one of the key programs under the NHT. It aims to support projects that protect, manage and restore bushland, mainly outside the reserve system. The principle objectives are to conserve biodiversity and to restore the productive capacity of degraded land and water.

Bushcare encourages activities that will:

- protect and manage native vegetation – especially areas assessed as having high conservation value
- rehabilitate degraded native vegetation
- strategically revegetate degraded land to restore productivity
- enhance the knowledge and skills of land managers to better manage native bushland.

For *Land for Wildlifers*, use the values identified in your *LFW* assessment as the 'conservation core' of your group's project, emphasising how whatever your group intends to do will enhance these.

Eligibility

Bushcare is primarily focussed on incorporated community groups, although other bodies, such as Local Governments, can apply. Individuals are not eligible.

Funding

Projects have to be submitted on the standard form, the 'one stop shop'. Smaller projects – asking for up to $20,000 - are as eligible as large ones, and more likely to be approved. Equally, projects can have a life of one funding round, up to three. Remember that, although a group will be applying in February, if approved, they are unlikely to receive any money before October.

Further Information

Contact: Keith Claymore
Bushcare Coordinator WA
CALM, Locked Bag 104,
Bentley Delivery Centre, WA 6983
Phone: (08) 9334 0438
Fax: (08) 9334 0278

For information regarding the National Landcare Program and the National Rivercare Initiative, contact:

NLP – Natalie Moore
AgWA phone 9325 0009
NRI – Luke Pen
WRC phone 9278 0376

Managing Wandoo Woodlands

7th – 8th November

Dryanda Woodland Village

Sunday 1.00 pm – 9.00pm
Learn about wandoo woodlands and observe their animals.
Overnight at Dryandra Village, or come Sunday only.
Meals provided, bring your own bedding.
LFW-ers (whole families) you'll love Sunday!
Monday's more serious stuff!

Monday 8.30 am – 3.30 pm
Woodlands in the Catchment, management plans, funding.

Cost: (*LFW*-ers)
Sunday only = $25
2 days = $65

Contact: Avril Baxter, 9881 1444

This Newsletter is a compendium of articles written by many different people. The views expressed are those of the authors, not necessarily those of the Department of Conservation and Land Management.
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