LAND FOR WILDLIFE NEWS

Newsletter of the LAND FOR WILDLIFE scheme

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Promising early results for revegetation trials using rhizobia (nitrogen-fixing bacteria) (see Page 11)
Photo: Pam Clunie

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LAND FOR WILDLIFE VOLUNTARY WILDLIFE CONSERVATION

Victoria The Place To Be

Land for Wildlife News
Vol. 5, No.5
Aug/Sept 2003

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See page 16 for a list of where Land for Wildlife Extension Officers and Contacts can be found.

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Editorial

Dear Land for Wildlifers,

I'm happy to say that this edition of the newsletter includes quite a few property profiles, several of which have been written by landholders. It is great to hear about the amazing efforts and committment of landholders in both protecting what remnant vegetation they have as well as rehabilitating degraded habitats. These days our ability to try and 'restore' habitats to what was previously there is improving. This is because our understanding of the composition of vegetation communities has improved as have our revegetation techniques and access to indigenous plant stocks. The importance of considering where to access suitable plant material is discussed in an article on Page 4. As an example of improving revegetation techniques, there is also an interesting article on Page 11 regarding the promising results from rhizobia trials - these nitrogen-fixing soil organisms can potentially improve the success of revegetation projects. Who knows what may be possible in the future?

We will be running the Open Property Scheme again this year to celebrate Biodiversity Month. I hope you are able to make it to one of the many properties open during September across the State.

This year, to celebrate the International Year of Freshwater, the Threatened Species Day (7th Sept) run by the Threatened Species Network will be focussing on species in freshwater habitats. Contact the TSN Coordinator Julie Kirkwood (03 9341 6507) or check out the website, www.wwf.org.au/tsn closer to September to find out about a planned wetland walk.

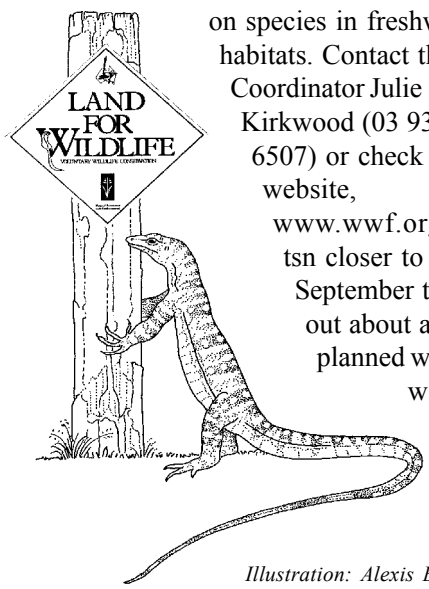

Illustration: Alexis Beckett

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www.dse.vic.gov.au/notes/

We recently held one of our Land for Wildlife Extension Officers workshops in Creswick. Besides discussing the program and issues, it is a wonderful opportunity for members of our team to get to know each other, and share their great experiences and advice.

Pam Clunie, Statewide Coordinator
Land for Wildlife

Visit the Land for Wildlife Web site at www.dse.vic.gov.au

and enter via 'plants and animals', 'native plants and animals' and then 'Land for Wildlife'

LFW MEMBERSHIP	PROPERTY AREA	RETAINED HABITAT	HABITAT UNDER RESTORATION	NEW PROPERTIES SINCE LAST EDITION
5854	562,405 ha	133,351 ha	23,200 ha	117

Figures include reductions to areas due to de-registrations of properties. Current at 21 July 2003.

Letters to the Editor

Dear Editor

Recently received the 10 year Land for Wildlife certificate and badge etc. Thank you. Can't believe it is 10 years since Barry Clugston signed me up.

Appreciate very much the Land for Wildlife newsletter and have every copy received so far kept for future reference.

For the last five years, I have felt very privileged to have been able to observe a pair of Wedge-tailed Eagles which nest on the side of a hill near my property. They have reared seven chicks in that period, twins last season. I help out as much as possible providing rabbits which they happily pick up close to my house. The parents seem to chase the young ones away not long after they fly and are mature. They vanish after a month or so, I assume this is normal.

All the best for the future. Yours faithfully,

Ian McDonald, LFWer, Casterton.

Dear Ian

Thank you for your letter and I'd like to congratulate you on your long-term commitment and contribution to nature conservation in Victoria.

Barry Clugston was one of the original Land for Wildlife Extension Officers and was located in Horsham. While Barry left the department in 2000, I'm sure during his time with the scheme he had many great experiences and met many enthusiastic landholders.

It is interesting to hear of your observations of Wedge-tailed Eagles. I was recently sent two other letters from Land for Wildlifers about this species. While gazing out a window, Gary Willey from Gruyere observed an eagle swoop down and attack something that later turned out to be an Echidna. Similarly, John O'Brien, Land for Wildlifer at Armona, recently observed two Wedge-tailed Eagles kill and devour a Galah.

Wedge-tailed Eagles have a wide distribution across Australia. They occur within many different types of open and lightly wooded habitats which are suitable for foraging as well as providing trees for nesting. These eagles are carnivorous, eating both live prey and carrion. While Rabbits and Hares are main dietary items, they will also take large lizards and many of the larger species of bird and mammal. They may hunt alone or in pairs for larger animals, and kill their prey with their talons and by crushing smaller prey.

Illustration: Dawn Harris

Birds tend to bond for life and once a pair has established, they occupy a home range the size of which is likely to depend on the density of prey. Nests act as territory markers and there can be several close to each other. Nests are usually in one of the tallest trees in an area. You've no doubt seen Wedge-tailed Eagle nests before since they can be very large and prominent.

When breeding, nests are defended by the adults, who both play a role in looking after the young. One to three eggs can be laid, although there are usually two. Breeding behaviour can depend on both availability of food and climatic conditions; for example no breeding may occur in times of drought. Young birds depend on their parents for about six months after they fledge and leave once the next breeding season approaches. Young birds can disperse widely.

Wedge-tailed Eagles are certainly beautiful and conspicuous birds. They can be very sensitive to disturbance during the breeding season, and can sometimes desert nests. Sadly in the past these eagles have been persecuted because of some peoples' belief that they predate heavily on lambs. Studies have shown this not to be the case.

It sounds like the Wedge-tailed Eagles on your property are doing well Ian! Probably a combination of plenty of food, suitable habitat and your respect for their space during the breeding season. I hope they continue to thrive on your Land for Wildlife property.

The Editor

Practicalities *handy hints and ideas*

The Importance of Selecting Your Plant Stocks

Many of us strive to both protect existing remnants and 'recreate' habitats that used to be present. Our newsletter often includes inspiring 'property profiles' about landholders' wonderful efforts in doing both.

Victoria now has a system to describe vegetation communities. Known as Ecological Vegetation Classes (EVCs), they are identified by the species that occur within them, including plants in different strata e.g. trees, shrubs and groundcovers. We now recognise the importance of ensuring that these EVCs, and all their components, continue to exist. Private landholders can play a very important role in protecting and enhancing these habitats, many of which are threatened.

Since it is close to impossible to truly 'recreate' complex habitats, we should give priority to protecting what we've got. Fencing remnants can protect them as well as encourage regeneration. This may be all you need to do! Natural regeneration can save on effort and is a way of trying to encourage re-establishment of vegetation that was originally there. Of course, you'll need to sit back and see what happens next – there may be weed issues, or maybe only certain species will regenerate.

Your property may have limited existing native vegetation to work with or may be missing particular components (e.g. native understorey); this is where active revegetation may be needed.

Each area in our landscape was once unique because of its specific vegetation composition. Most areas have now experienced great changes, with the loss of some plant species, and the introduction of species from other parts of Australia and other countries. There is now a strong community interest in restoring natural ecosystems, using appropriate plant species that are truly 'native' to these ecosystems.

The terms '**native**' and '**indigenous**' are quite commonly used these days. Both can mean that *the plant belongs to or originates from an area* - it has not been introduced. As you can imagine though there are many different scales you can refer to – e.g. Australia, Victoria, a bioregion or a local landscape. People often use the term 'native' for somewhere in Australia, and 'indigenous' for plants native to a certain area.

These terms are often used in nurseries. In the past, nurseries tended to propagate a small number of species native to Australia that were common, highly ornamental and easy to grow. Nowadays, there are many nurseries that propagate and sell an extensive and diverse range of native plant species. When you visit a nursery, plants may often be grouped simply as 'exotics', 'natives' or 'indigenous'. If you want stock for revegetation activities, it is best to go to a nursery that specialises in this line of work.

Another term '**provenance**' is also used these days – this refers to the geographic area that a plant population is from. This is a new area of research and we aren't yet clear about how to define provenance. While we're still not sure about the importance of provenance for all species, in some cases it is likely to be very important. Plants from a particular provenance may be adapted to certain environmental conditions e.g. soil and climate.

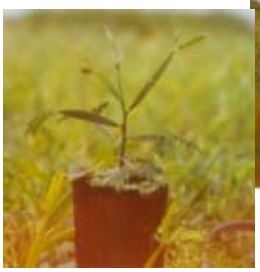
By selecting plants from a nursery, without knowing where the plant material has been collected from, you may be selecting plants unsuitable for your specific local area. A species may be native to Australia, but in fact a weed in your local area! Many popular nursery species, native to only some parts of Australia, are widely planted e.g. Cootamunda Wattle, Blue Gum. Such species can be highly invasive and/or hybridise with other species when outside their normal range.

There are many advantages in re-establishing truly locally indigenous plants. You would be contributing to maintaining the local identity and genetic resources and providing habitat for local wildlife. There are also economic benefits, since indigenous plants will be best suited to the local conditions and are less likely to need time consuming and expensive assistance e.g. soil treatment, watering.

If you've got some existing remnants on your property, you may want to consider collecting seed and propagating your own plants. This can be very rewarding and a great way of maintaining local plant composition, but it all depends on if you have the time, interest and equipment. Also it may be hard to grow the wide range of species needed. There are many things to consider if you want to propagate plants, and many sources of advice – these include Greening Australia, Society for Growing Australia Plants, Landcare and many publications.

If you don't have any remnants, or don't plan to propagate plants yourself, where do you get truly locally indigenous plants? It's worth asking around for advice on nurseries that supply such stock. Ask your local LFW Extension Officer, local Catchment Management Authority, DSE/DPI or Greening Australia to name a few. Some Shires have great indigenous nurseries. If you pop into a nursery that specialises in revegetation stocks, why not ask them where the seed for their plants has come from. They should be able to answer this question. Good luck in your revegetation endeavours!

Pam Clunie, LFW Co-ordinator



Photos: Ben Boxshall, DPI

Bush Detective
Who made this?
Who did this?

Have you ever come across a line of these caterpillars and wondered what they were and what they were doing? Well they are known as processionary caterpillars (*Ochrogaster lunifer*), found in most States in Australia. These hairy caterpillars can sometimes cause skin rashes. During the day they hide together in a shelter of silk and other debris at the base of a food plant (Wattle species). They will move once mature, to find other food plants and a place to pupate. A trail of silk is released from near a caterpillar's mouth; this enables caterpillars to follow each other tip to tail. The caterpillars eventually pupate in a silk cocoon within debris. The adults (Bag-shelter moths) are grey with a yellow striped abdomen which tapers to a white tuft of hairs.

Photo: Dr D. Herbison-Evans Macleay Museum, Uni of Sydney

Photo: Kevin Moschetti

Processionary behaviour may be useful for a few reasons. Lots of caterpillars means lots of irritant hairs on show which may reduce the chances of predation. Following each other can also ensure that the caterpillars don't get lost on their way to a host plant. Staying together also means it might be easier for the moths to find a mate after pupation.

For more info and to view some great photos, please go to www.usyd.edu.au/su/macleay/larvae/noto/lunifer.html

What about the Little Rotters?

Plants and animals store nutrients which are recycled back into ecosystems when they shed part of themselves (such as leaves, bark and branches for plants, and exoskeletons, hair, feathers and dung in the case of animals). Decomposition of dead plant and animal material is undertaken by a plethora of bacteria, fungi and invertebrates. While bacteria and fungi do most of the nutrient recycling, invertebrates play very important roles such as breaking up the material into smaller pieces and increasing surface area for bacteria and fungi to act upon, and by moving these pieces through the litter and soil layers.

The activities undertaken by invertebrates are varied. Some physically break down plant or animal material by consuming it and converting it into frass. Others contribute to decomposition by building burrows that assist movement of water and nutrients into the soil or by mixing the different layers of soil and plant litter. Then there is the microcosm of associated interacting biota: predators, parasitoids and scavengers.

Some of the better known decomposers are earthworms, slaters, cockroaches and millipedes. In all these groups, there are both native and introduced species. In many parts of Australia, the native earthworm fauna is depauperate or else the native species have been displaced by activities associated with agriculture or horticulture. One of the amazing species that has managed to survive, although it is a listed threatened species, is the Giant Gippsland Earthworm. This species is long-lived and grows up to a metre in body length.

One of the lesser known groups associated with plant decomposition is the oecophorid moths. There are several thousand species of oecophorid moths in Australia because it is a group that has adapted to feed on eucalypt leaves. The caterpillars of many species feed on the dead Eucalyptus leaves on the ground, while other species feed on live leaves in the canopy.

Alan Yen, Invertebrate Ecologist

Photos of cockroach, earthworm and beetle from Alan Yen

Did you know.....?

Have you ever heard of legless lizards and wondered how they differ from snakes? Well they may look similar, however if an animal has any sign of a limb present no matter how small, it can be identified as a lizard. Lizards also have a small external ear opening in the head a short distance behind the eye. Snakes don't have such an ear opening. Also if the animal's tail is about as long as or longer than the distance between the snout and the vent (i.e. the tip of the nose to the anus), then the specimen is a lizard.

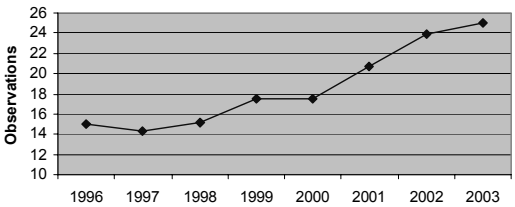
Size is not necessarily a useful method of identification, since some adult snakes may be as small as a legless lizard.

There are at least 10 species of legless lizard in Victoria.

Birds Return as Habitat Improves

In late 1995, we purchased a 10 acre property with residence in South Gisborne. The property was steeply sloped pasture, used for horses, with only two relic trees - a Manna Gum and a Long-leaved Box (or Bundy). The properties adjoining ours were mostly used for keeping horses or cows. The countryside was open except for the usual cypress boundary windbreaks. Within 2 kms was Blackhill Ridge, a heavily wooded area, although with understorey overgrazed and denuded by excessive numbers of kangaroos.

We began revegetating immediately with Manna Gum and Bundy. Over time we've planted 1800 trees, shrubs and grasses, including Swamp Gum, Yellow Gum, Yellow Box, Red Ironbark, Brown Stringybark, Snow Gum, Black, Wirilda, Golden and Silver wattles, kunzeas, correas, grevilleas, hakeas, banksias, hardenbergias, saltbush, hop bush, Chinese brush and Themeda, Poas, and so on. Some Pink and Cup gums (SA natives) were also planted. With no grazing, hundreds of self-sown gums emerged downwind of the Bundy and Manna Gum. Wallaby Grass and some Tinsel Lilies also appeared.



Above: The Purcells' detailed bird surveys show an amazing increase in bird diversity as habitat matures.

Since commencing the revegetation, we began weekly bird surveys. The surveys have shown nearly a 100% increase in bird diversity. In the first year of surveys, around 15 species were recorded each week. As the revegetation efforts began to take hold, observations trended up to 20. In 2003, after six years, observations have increased to 25. The site birdlist now stands at 83.

Our weekly bird surveys have involved marking observations of birds seen or heard on a recording sheet. The survey procedure is not claimed to be rigorous, since it can be clearly influenced by the amount of time spent outside i.e. the more time spent outside, the more likely birds passing through are actually observed. It can also be argued that our expertise as observers has increased. We are now more likely to discern a new call, and to seek out the bird. We'd argue though that the survey data is a fair indicator of diversity.

In the early years the surveys highlighted the predominance of birds of open country; Magpies, Ravens, Mudlarks, Masked Lapwings, Richards Pipit, Eastern Rosellas, Swallows, Yellow-rumped Thornbills, Galahs, Flame Robins (winter), Long-billed Corellas, Yellow-tailed Black and Sulphur-crested cockatoos, White-faced Herons, Wood Ducks, Crested Dove and White-plumed Honeyeaters.

After several years the grevilleas, banksias and correas provided flowers, and we began to see large numbers of New Holland Honeyeaters, Red Wattlebirds, and Eastern Spinebills. The increase in cover resulted in many more birds becoming residents; including Grey Fantail, Silvereye, Common Bronzewing and Grey Shrike Thrush. We've also noted some species breeding (e.g. Red-browed Finch, Superb Blue Wren, Yellow and Brown thornbills).

Our property also attracts 'drop-in' birds, migratory and occasional visitors; Horsefield, Shining and Pallid cuckoos, Fairy Martin, Yellow-faced and White-napped honeyeaters, Rufous and Golden whistlers, Restless Flycatcher, Musk and Purple-crowned lorikeets, and Varied Sitella.

Some neighbours are also planting native trees and there are four LFWers close by. With increasing cover of trees and scrub over the surrounding blocks, species diversity can only be expected to increase.

The South Gisborne/Toolern Vale area was historically a vibrant area for birdlife. Bird Observers' trips and camps were often held in the area, with regular sightings of birds such as Hooded Robins. Clearing and grazing has changed all that. However, with revegetation efforts such as by our Land for Wildlife members, perhaps some of this diversity can return!

The Purcell family, LFWers, South Gisborne

Below: A panoramic view of the Purcells' property.
Photo: Purcell family

Environmentally Friendly Blackberry Control

Blackberries are a real thorn in one's side and as a Land for Wildlife assessor, many landholders seek advice about controlling this weed on their properties. There are many species and hybrids currently grouped together and known as European Blackberry *Rubus fruticosus* L. aggregate. Blackberry is a Regionally Prohibited weed in Victoria in all regions except the Mallee. Landholders must take all reasonable steps to control it and prevent its spread on their land and on the adjoining roadsides.

Generally, blackberries thrive in areas of >750mm annual rainfall, although they can occur in areas with lower rainfall. Because of effective seed distribution and vegetation propagation from cane tips, large areas can be infested rapidly. Infestations result when daughter plants form at the end of canes that have anchored back into the soil, and lateral roots can produce suckers from the parent plant. Animals, particularly Foxes and Blackbirds, can also help disperse blackberry seeds.

The following suggestions focus on environmentally friendly control options for blackberries, and so chemical treatment is not discussed.

- **Hand Removal** – For individual or small blackberry patches, canes can be removed by hand and shovel with minimal impact on your property. Make sure that all of the root system and canes are removed, as blackberry will regrow from root fragments left in the soil. The root system will come out easier if the soil is moist.
- **Grazing** – Goats have a healthy appetite for almost any plant, so why not use goats to their full potential. Grazing by goats is useful in reducing the size of large blackberry patches. They will consume foliage back to the canes and continue to remove any fresh growth. Grazing animals will not eradicate the problem entirely, although they do allow for improved access for hand removal or slashing.
- **Slashing** – In general, always conduct slashing before the fruit appears in January to March. However, late winter to the end of spring is the best time to slash. Slashing at regular intervals helps weaken the plant and limit spread. Slashing is usually followed by chemical control. Irregular slashing can lead to stronger plants and extensive regrowth from canes and lateral roots, which can then reduce the efficacy of subsequent chemical control.
- **Fire** – Fire is usually used after chemical treatment, helping remove dead canes. Sole use of fire can trigger regrowth however, requiring another treatment soon after. *NB: Before lighting any fires check with your local CFA for advice on fire restrictions and burning off.*
- **Native Vegetation** – Planting local native plants can help keep blackberries to a minimum. As trees and shrubs grow they will shade out and smother weeds as competition for nutrients, water and sunlight increases. Replacing blackberries with local native species is best since they are a natural source of food, shelter and breeding sites for native fauna.
- **Biological Control** – The most promising form of biological control is a virus, the Blackberry Leaf Rust Fungus, *Phragmidium violaceum*. Rust spores need moisture to germinate so blackberry rust is more effective during wet summers. The rust attacks and defoliates the leaves, flower buds, fruit and green parts of the canes.

Illustration: Dawn Harris

Each control option cannot totally eradicate a weed but can reduce the spread and density of infestations. The above suggestions can be combined or used in conjunction with chemical treatments in an integrated environmental weed strategy (see LFW Note 39). It is important to find out as much information as possible on chemicals before use. Always use personal protective clothing and equipment, follow safe work practices and understand any risks involved.

Removing blackberries from your property may take several seasons of hard work, but with a little determination and persistence these prickly invaders can be tamed. Taking action sooner rather than later can reduce the rate of blackberry spread. Effective control of blackberries will hopefully enable native vegetation to regenerate as well as allow you to actively revegetate these areas.

For further information on pest plant issues contact your local Catchment and Agricultural Officer at the nearest DPI. For further information on Biological Controls contact the KTRI, PO Box 48 Frankston, Victoria, 3199, ph: (03) 9785 0111. Please see page 15 for further references.

Kylie Singleton,LFW Extension Officer, Traralgon

A Cattery with Sugar Gliders **and** a Land For Wildlife Sign?

In addition to our farming enterprise we operate a boarding cattery. People often remark on the two signs at the front gate. 'Happy Cats Boarding Cattery' and 'Land for Wildlife' and wonder how the two co-exist. It is simple - all the cats including our pet are confined in yards. We always explain this to people and encourage them to enjoy the companionship of their pet cat and also the wildlife in their garden by building a cat enclosure.

We built our home in 1969 on the family farm near Bairnsdale, East Gippsland. Our sheep grazing property 'Cold Xmas', so the story goes, received its name from an original paddock purchased by the Stewart Bros. in 1924. The paddock is surrounded on three sides by Moormung Flora Reserve. It is believed in the time of the squatters on the old Lindenow run flocks of sheep were guarded by shepherds.Two shepherds one Christmas were low on supplies and one went to town to bring back victuals. After tasting the delights of the local hotels he didn't return for several days. The lone shepherd tending the sheep later remarked he had a very cold Christmas.

As the years passed the land was taken up by selectors. Bit by bit the magnificent Forest Red Gum forest was ringbarked and the understorey removed. This was believed necessary then so farms could be established and produce economically. Ancient ringbarked stags were still very much in evidence in the area until the 1970/80s but most have gone now. Remnant native vegetation of very old Forest Red Gums follows the Princes Highway from Stratford to Bairnsdale. Over the years the understorey has mostly been cleared. Even in the 1970s it was becoming clear the trees were in trouble from isolation, plagues of Christmas beetles and lerp infestations. In places some habitat trees remain dead or dying, and some Black Wattle. In these areas Sugar Gliders are still found.

Photo: Emma Roe

In the 1970s we planted trees to break the extreme wind from all directions. Bird species on our block then included Magpies, Eastern Rosellas and an occasional Grey Shrike Thrush. With a great dislike of pine and cypress species we planted mostly native and some exotic trees. There were very few native plant nurseries then and a lot of our initial stock came from the Treeplanters Nursery, Springvale. Before anyone knew any better, George propagated trees from seed collected on our holidays. Our garden comprises mostly of non-indigenous native species, since we had so much trouble trying to grow Red Gum due to the annual Christmas beetle plagues. We put in many specimen plants and numerous grevillea and banksias species. In the last 10-15 years most of the varied bird species began to leave. We've put this down to the environment created. Many nectar-bearing plants in the garden produce all year round and Wattlebirds are now over represented, with resident colonies that chase out most other bird species.

Illustration of Little Wattlebird on a Saw Banksia by Lyn Turner

Each year as the trees grew, we noted more and more bird species. By the 1980s our bird list was around 90 species including: Boobook Owl, Horsefield's Bronze-cuckoo, Pallid and Fan-tailed cuckoos, Grey and Rufous fantails, 4 species of honeyeaters, Restless Flycatchers, Golden and Rufous whistlers, Superb Blue Wren and Noisy Friarbird. Peregrine Falcon, Wedge-tail Eagle and Swamp Harrier flew overhead. Black Duck, Chestnut Teal, Little Grebe, Royal and Yellow-billed Spoonbill, Cormorants, White-necked and White-faced herons visited the dam that was put in the creek. We even have visits from Japanese Snipe and Banded Rail.

Eastern Rosellas still occur in the garden so we attached a parrot nest box to a tree in 1998. No parrots took advantage of it for 2 years but we left the box there in case. In 2001, George found a dead Sugar Glider near our house. With great excitement that night we spotlighted the garden and found the dead glider's mate in a self-sown Black Wattle. The next day we found the telltale marks around the nest box entrance. The Sugar Gliders unbeknown to us had taken up residence. These animals must have travelled across bare paddocks for at least 1km from the remnant vegetation on the highway, or from the corridor plantings that had been put in by neighbours along a road which connects with Moormung Forest, 7kms away.

The surviving animal fed each night from scraping the bark and licking the Black Wattle's sap. Over the coming months a couple more gliders moved in. A second nest box specifically for Sugar Gilders was quickly occupied and we have seen them feeding on the garden's flowering banksias. Maybe the gliders were using the garden long before we noticed. Perhaps they did not stay without hollows to nest and shelter in. Putting the nest boxes up showed us how important they are when natural hollows are lacking. We have gained a great deal of pleasure from observing the Sugar Gliders, as well as the Echidnas, Swamp Rats, Blue-tongue Lizards, Garden and Delicate Skinks, Red-bellied Black and Copperhead snakes that also use our garden.

The Stewarts, LFWers, 'Cold Xmas' property

Property Profile

A Creek Runs Through It

Since emigrating from Switzerland in the 1850s, generations of the Sartori family have lived on a large 162 ha property in the Franklinford area, in north central Victoria. For the past 80 years or so the family has operated a dairy farm with Jerseys, however they recently decided to move towards becoming an organic beef farm combined with a nature tourism venture.

Since reading the Birds Australia 'Birds on Farms' booklet, the Sartoris have been particularly inspired to implement certain guidelines for agricultural sustainability on their property. They believe it is important to try and integrate their agricultural practices with conserving and enhancing native biodiversity. This includes setting their own targets for coverage and quality of native vegetation, and targets for excluding areas from high impact landuses.

In the past, there would have been three different vegetation communities (EVCs) on the property – Grassy Dry Forest on the higher ridgetops and upper slopes, Valley Grassy Forest along the creek flats and gully heads, and Streambank Shrubland (an endangered community in the Goldfields Bioregion) along the riparian areas. There are still remnants of these vegetation types, which the Sartoris see as something to build on in the future. The Sartori's property includes about 1 km frontage of Jim Crow Creek, a tributary of the Loddon River. This creek once had healthy populations of River Blackfish, which have not been seen for many years. There are still smaller native species such as galaxiids and gudgeons in the creek, as well as introduced species including Brown Trout and Redfin. The Sartoris have a desire to return to the creek, the plants and animals that should be there.

We visited the Sartoris recently to do a LFW assessment and were impressed with what habitat already exists on the property and the family's plans for the future. The Sartoris have already undertaken many conservation activities, with the assistance of the Guildford Landcare group and the North Central Catchment Management Authority. These activities include fencing off remnant vegetation including along riparian areas, weed control particularly for Willows and Gorse, and the planting of 700 tubestock including Kangaroo Apple, Common Tussock-grass, Sweet Bursaria, Silver and Prickly Hedge wattles and Hopbush. Some of the patches of Grassy Dry Forest have been fenced for at least five years with good signs of natural regeneration occurring. Stock access to the creek is limited with the aid of temporary electric fencing as well as off stream watering. The plan is to fence the full length of the creek to an average width of 100 m, and to only allow stock grazing at specific points and times.

One of the family's aims is to provide corridors for wildlife. The vegetation along Jim Crow Creek provides a natural corridor, and they also hope to link existing remnants to the Wombat State Forest along the western boundary. They also leave most of the fallen timber as it lays, so that it can provide wildlife habitat.

While detailed flora and fauna surveys have not been carried out on the property, the Sartoris are keen bird watchers and keep a record of the birds observed. They would welcome any avid birdwatchers to come to their property to add to their birdlist and stay in their Bed and Breakfast accomodation! While recently visiting the Sartori's property, we noticed some very healthy Hairy Anchor Plants (*Discaria pubescens*) along the creek flats; this species is threatened in Victoria. Who knows what other delights lay undiscovered on the property!

For more information on the Sartori's property and conservation efforts, see www.trurohomestead.com

Pam Clunie, LFW Coordinator & Geoff Nevill, acting LFW Extension Officer, Bendigo

Above: Healthy examples of the threatened Hairy Anchor Plant.

Above: Grassy Dry Forest occurs along the ridgetops.

Left: Plantings along Jim Crow Creek

Above: Remnants of Streambank Shrubland still occur along patches of the creek with Wooly Teatree (Leptospermum lanigerum) and River Bottlebrush (Callistemon sieberi)

Photos: Pam Clunie

Property Profile

Striking a Balance.... Farm Management and Wildlife Conservation

Set in the picturesque rolling hills of West Gippsland is Geoff and Jean Irvine's 16 ha property, which they purchased in 1997. The property, north of Warragul, was cleared of native vegetation many years ago, with only cypress trees present.

During the past six years Geoff and Jean have worked tirelessly to build their home, manage livestock, control weeds and erect new fencing for shelterbelts. Jeans says "We love the area and with 1050 ml of average rainfall, we felt we could improve the property and produce good quality beef cattle".

Photo: Jean Irvine

In 1998, the first shelterbelt was planted (Messmates, Sugar Gums, Blackwoods, Melaleucas and Hakeas). During 2000, Geoff and Jean attended a Greening Australia demonstration day and were shown how to collect native seeds and grow their own plants. From then on it was "full steam ahead" with seed collection, growing seedlings and planting trees.

Jean has also completed a tree growing course and has since propagated and planted 2000 indigenous species on the property. Trees and shrubs planted include Messmate, Blue Gums, Strzelecki Gum (vulnerable in Gippsland), Blackwood, Silver Wattle, Hazel Pomaderris, Bushy Needlewood, Prickly Currant-bush, Cassinia, Daisy Bush and more.

The Irvines have used an array of site preparation methods. Holes were dug using a post hole digger and a Hamilton tree planter. Some sites were sprayed with a roundup/simazine mix and other sites not prepared at all. Each year trees were guarded from Rabbits and Hares (sometimes using recyclable pizza bases). Despite the different methods, the Irvines haven't noticed any difference in the growth or health of the plants and are very happy with the results.

Since planting began, the Irvines are thrilled to see an increase of native wildlife returning to the area including Flame Robins, Superb Fairy-wrens, New Holland Honeyeaters, Willie Wagtails, Eastern Rosellas, Yellow-tailed Black Cockatoos, Galahs, Herons, Wedge-tailed Eagles, Echidnas and frogs.

Using local native flora has ensured a high success rate and the Irvine's goal is to plant 500 tubestock annually until all the paddocks are bordered and linked with shelterbelts. Jean believes native shelterbelts will not only benefit local wildlife but also provide her livestock with adequate shelter and protection from the elements. "The wind can get quite strong sometimes and because the cypress trees are bare beneath, it creates a wind tunnel effect, subjecting the livestock to chilly winds and colder temperatures".

Geoff and Jean are active in their local community, propagating plants for school groups who attend tree planting events and Jean is also the president of the local Landcare group. Their property is a wonderful example of hard work and a commitment to strive for balanced farm management and wildlife conservation.

Kylie Singleton, LFW Extension Officer, Traralgon

Who Gains From Drought?

Most readers would appreciate the effects of one of our worst droughts on record. In my area, the Victorian Mallee around Swan Hill, the impact of dry conditions on dryland agriculture, pasture and native bushland has been immense, with tonnes of topsoil blown away, the failure of grasses and groundcovers to germinate and the excessive grazing by native herbivores and domestic stock of remnant vegetation. This has the potential to impact on seed beds and revegetation for many years to come.

Who then would benefit from such a harsh climatic occurrence? As a Trainee Flora and Fauna Officer and LFW assessor, I have been lucky to visit many LFW properties and in doing this I've noticed a common theme. Many property owners have reported increased numbers of particular birds or visits by species that had not been previously recorded on their properties; nectar and seed eaters, insectivores which are soon followed by predators such as butcherbirds and falcons. Some of the sightings include Peregrine Falcons, Painted Snipe, Wedge-tailed Eagles, Pied Honeyeaters, Masked Wood Swallows, Australian Bustard, Budgerigars and Grey Fantails. The increase in visitors also includes many sightings of kangaroos, wallabies, Echidnas, bats and a wide variety of insects.

I believe that if we continue to protect and improve the natural environment, we will enhance the biodiversity within and this is never more evident than in times of drought. Property owners acknowledge the benefits of LFW in normal circumstances, after all that is why you joined. The rewards are really evident when things are at their toughest; then you appreciate the benefits of your hard works and beliefs.

Glenn Smith, LFW Extension Officer, Swan Hill

Looking Underground for Revegetation Solutions

You've no doubt often admired the many beautiful species of wattle found in Victoria, plants that often dominate undisturbed environments. Did you know that these plants, like other legumes, can develop partnerships with nitrogen-fixing soil organisms (root-nodule bacteria or rhizobia). Such relationships are called 'symbiotic' meaning a close association, and are beneficial to both the plant and the bacteria.

Most Australian soils are low in plant nutrients, especially nitrogen. Native legumes often rely on their interactions with rhizobia to supply much of their requirements for nitrogen and to increase their early growth rates and survival. Rhizobia for our native legumes are common in undisturbed soils but quickly disappear where native vegetation has been cleared for agriculture or where grazing has occurred over a long period. Superior strains of rhizobia for many species of wattle have already been selected from the wild. Reintroduction of woody native legumes together with their appropriate rhizobia gives us the potential to stimulate these nitrogen-fixing relationships, and to greatly improve the success of revegetation programs.

The importance of relationships between plants and rhizobia has been well recognised in the agricultural and forestry industries. Little attention has however been given to using plant-soil associations to increase the effectiveness of revegetation programs to rehabilitate native ecosystems. With the increasing trends in salinisation and acidification of rural areas, and the importance of conserving and enhancing biodiversity, we need to find low-cost, practical ways for revegetating large areas. Making use of beneficial plant-soil associations could assist in more vigorous seedling growth, better plant establishment and improved survival of native deep-rooted perennial species. In the long-term there's also the potential to increase the diversity of revegetated landscapes, by enhancing the chances of survival of hard-to-establish species.

In August 2002 a research project began in north central Victoria, investigating the benefits of introducing native legumes and their rhizobia into large-scale revegetation efforts. This has been a truly collaborative effort involving Greening Australia Victoria, the North Central Catchment Management Authority, Department of Sustainability and Environment, Biocare Technology Pty Ltd and CSIRO Plant Industry. Direct seeding trials were established on 8 properties around Bendigo, with a range of locally native wattle species, and non-legume native species, sown in two treatments in alternating rows. In the first treatment, the wattle seeds were pelleted with mixtures of rhizobial strains (known as seed coating). In the second treatment, the seeds were left uninoculated.

While we're still in the early days of assessing our trials, so far things are looking very encouraging. Monitoring the sites in early April and mid-June 2003, we noted considerable differences in plant establishment. Along the rows where plants had been treated with the rhizobia, we saw anywhere from 2 to 5 times the number of seedlings compared to the untreated rows. We'll continue to monitor these sites, to further document the survival and growth of the *Acacias* treated with rhizobia and associated non-legumes. This will allow us to assess the degree to which non-legumes benefit from the added nitrogen inputs to the soil.

With such promising results, especially under drought conditions, we plan to expand our trials. We will be establishing direct seeding trials on another 4 properties in the northern part of the catchment, where rainfall is even more limiting. Further down the track we also hope to look at the potential for using salt-tolerant bacterial strains to increase our ability to revegetate salt-affected land.

While these are preliminary trials, our results are promising. They suggest that by incorporating appropriate nitrogen-fixing bacteria into revegetation projects we will be able to substantially reduce costs while increasing establishing rates. It is possible that sometime in the near future, treating seeds with rhizobia will be a commonly used method of enhancing the successful establishment of many native legumes in large scale revegetation programs in Australia. Further work is needed to develop the most efficient and cost effective delivery methods and to quantify the potential benefits for replanting projects.

Peter Thrall, CSIRO, Plant Industry and Centre for Plant Biodiversity Research, Canberra

Above: Some of the crew involved in our collaborative project. Photo: Michael Harvey

Left: Lines of healthy seedlings are beginning to appear. Photo: Pam Clunie

Economic Benefits of Biodiversity

Managing Native Pastures in Victoria

Background

It is estimated that, prior to white settlement, more than a third of Victoria was covered by grasslands and grassy woodlands. Within a few years the introduction of sheep had reduced this dramatically and now we have less than 1% left, mostly in tiny fragments. The two largest grassland areas were the Volcanic Plains between Melbourne and Hamilton and the Riverine Plains in northern Victoria.

Although most of the original grassland has gone, considerable areas of semi-degraded native pastures remain. These have varying levels of introduced grasses and forbs but still contain a high diversity of native species. A research project funded by the Department of Primary Industries (DPI) and the Department of Sustainability and Environment (DSE) is looking at ways to manage these areas to benefit native species.

Why should we care about our grasslands?

Both the Volcanic Plains and the Riverine Plains are unique environments found nowhere else on the planet - just as valuable as the wet tropics, the Ningaloo reef and the alpine meadows. They once supported a great diversity of animals, some now extinct or nearly so - Striped Legless Lizard, Plains Wanderer, Bustard, Bush Stone-Curlew, Eastern Barred Bandicoot and so on.

We know so little about the grasslands. They changed so quickly with white settlement that there was no time to study them.

Economic value

Native grasslands have potential agricultural value. Although introduced pastures species carry more stock, the native species are better adapted to the variable climate, cope with low fertility soils, may be responsive to summer rainfall and are well suited to marginal environments. However the nutritive value of native grasses is often lower than for introduced grasses and legumes so animals grazing native pastures may require additional supplementary feeding.

The purple-flowered legume, Clover Glycine Glycine latrobeana is a nationally vulnerable species dependent on healthy native grasslands.

Photo: Yvonne Ingeme, DSE Hamilton

Native grass seed is in great demand for amenity planting (along freeways for example) but seed is scarce and expensive. There are great opportunities for farmers with native pastures to harvest seed and supply this market when technological and biological barriers are overcome.

Many of the plains flora would make highly desirable additions to the horticultural industry. Will we soon see punnets of Bluebells (*Wahlenbergia* sp.), Blue Pincusion (*Brunonia* sp.) and Buttons (*Leptorhynchos* sp.) seedlings alongside the pansies and snapdragons at our local nursery?

The EcoRich Grazing project

The project has field work underway on the Volcanic and Riverine plains. The team consists of agronomists, ecologists, botanists and economists from both DPI and DSE. We also have the invaluable support of a group of grassland farmer advocates who supply enthusiasm, local knowledge and land for experimental and extension work.

On the Volcanic Plains the emphasis is on grazing strategies to increase the proportion of native species in the swards. We have established three sites - Hamilton, Darlington and Colac - each consisting of six grazing systems. These are: always grazed, never grazed and a series of strategic grazing regimes where livestock are removed at particular times to encourage flowering and seeding of various forbs and grasses.

On the Riverine Plains we have experiments to examine strategies to re-establish native grassland communities in previously cultivated, degraded pastures. The long-term strategy is to recreate diverse, resilient pastures that are able to sustain livestock and biodiversity. Our initial research is investigating methods to establish Bluebush (*Maireana*) species under cereal crops. The theory is that the *Maireana* plants are a foundation of the northern grasslands and their presence greatly enhances regeneration of the grassland flora after cropping. Three sites have been established between Echuca and Mitiamo.

With the help of grassland advocate farmers and groups such as Greening Australia and Land for Wildlife we plan to extend the findings of this project to farmers via field days and various publications.

Steve Clark, DPI, Research and Development Division, Hamilton

Planning the Big Picture

Occasionally members ask us 'How does what I'm doing on my property fit into a larger picture for conserving Victoria's biodiversity?' Recently, the planning process has taken a giant leap forward through a new approach. The elements of that approach are outlined below. You can find out more by contacting DSE or your local Catchment Management Authority (CMA).

Each CMA in Victoria, of which there are ten, is developing a Regional Catchment Strategy (RCS). Under the RCS is a range of plans usually including a Regional Vegetation Plan. Many CMAs are also now developing Biodiversity Action Plans (BAPs).

The process used throughout each plan is similar in looking at:

- **Assets**: What are the priority assets to be protected?
- **Threats/Impacts**: What factors are impinging on these assets?
- **Actions**: What actions will respond to the threats/impacts based on their priority?

For biodiversity, assets are described in terms of four classes including:

1. vegetation type (Ecological Vegetation Class);
2. threatened species;
3. river reaches and
4. wetland assets.

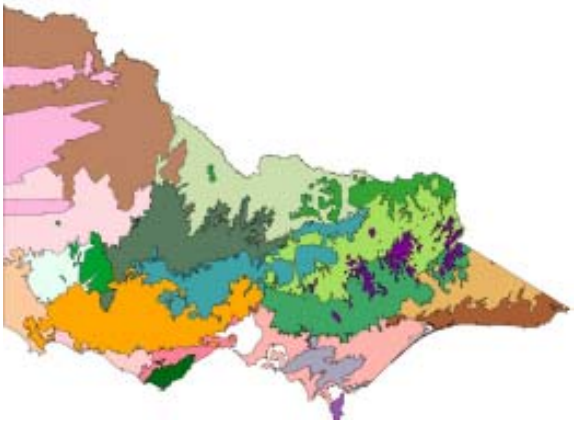
A 'Bioregional Conservation Status' has been assigned to each native vegetation type based on a classification system similar to that used for threatened species, which in turn is based on the International Union for the Conservation of Nature (IUCN) model. This classification has the familiar names of 'endangered', 'vulnerable', 'rare', 'depleted', etc. A new tool called 'habitat hectares' has been developed to measure the relative condition of similar vegetation types.

Combining the conservation status and the habitat hectare score gives the bioregional conservation significance of a remnant and allows a priority to be assigned to each remnant. A similar process can be used for each asset type.

Identification of assets at the catchment scale is made easier by excellent mapping databases (Geographic Information Systems), which hold a wealth of information about the distribution and abundance of our native flora and fauna (BioMap is the version that collates information on biodiversity). Analysis of current data, which tends to be less reliable for private land due to fewer surveys, shows that over 60% of the native vegetation remaining on private land is of a threatened vegetation type and that 30% of populations of threatened species are on private land.

Traditionally, threats have been considered in terms of actions or events that directly threaten an asset. A new development in looking at threats has been to consider the requirements of 'Focal Species'. A Focal Species is one which is the most vulnerable to a particular threat operating at a landscape scale such as patch size or condition of remnant vegetation, or dispersal distance to other remnant vegetation. Biodiversity Action Plans, being developed jointly by CMAs and DSE/DPI, identify Focal Species in different parts of Victoria so you don't need to work these out for yourself.

You can apply this same logic at the property scale by asking the above questions. What are my key vegetation assets in terms of their conservation significance within my bioregion?



A map showing the bioregions identified across Victoria

Land for Wildlife, through a related project called Living Systems, has been piloting working with groups of landholders to understand these issues and develop plans for their *local landscapes* based on the protection of key assets.

For those who have a keen interest in understanding how all this fits together, you'll find plenty to consider in the RCSs and BAPs currently being developed for your local area by CMAs and DSE/DPI. There's more on BAPs on the Departmental website www.dse.vic.gov.au, look under the Conservation and Environment theme.

Steve Platt, Ecosystem Conservation, DSE

Recent Publications (see page 2 for member discount)

Plants and Animals of the Box-Ironbark Area of Central Victoria. (2002). There has been much interest in Box-Ironbark forests over the last five years and the ECC has released recommendations for management of public land. A new Flora and Fauna CD has been released and was produced by three Field Naturalists' Clubs in Central Victoria with the support of the DSE and Viridans Biological Databases. It provides an information, education, planning and natural resource management tool for the Central Victorian Box-Ironbark area.

The CD provides a suitable format for public use and allows limited access to information for nearly 2000 species of plants and animals found in and around the Central Victorian Box-Ironbark Forests. It is the third regional flora and fauna database to be released with 83,000 distribution records, 3500 photographs, 2000 written descriptions, eight map layers and dozens of identification and characteristic aids.

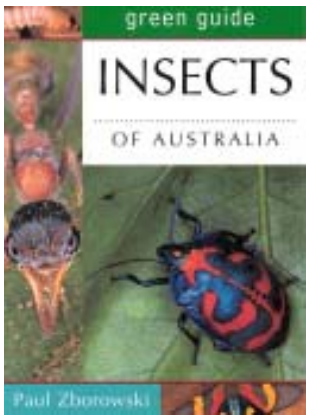
This is the first CD to be organised entirely by a community group. The three Field Naturalists' Clubs who co-ordinated this project are non-profit community organisations with an objective to promote community awareness of the unique plants and animals of the central Victorian Box-Ironbark Region. The CD will stimulate more people to appreciate the diversity of plants and animals in the area and lead to better data collection, research and management.

The following organisations kindly provided financial assistance to produce the CD: The City of Greater Bendigo, Mt Alexander Shire Council, Goldfields Shire Council, Macedon Ranges Shire Council, the Norman Wettenhall Foundation, Parks Victoria, Vicroads and the former Departments of Natural Resources and Environment, and Infrastructure, and the North Central Catchment Management Authority.

Much time and effort went into planning and organising the CD, and is a reflection of their high motivation for educating the public and having convenient access to high quality information. Mayor of Mt Alexander Shire Council, Peter Skilbeck, officially launched the CD on 6th December 2002 at the Castlemaine Botanical Gardens. Over 100 keen naturalists and sponsor representatives attended – a clear demonstration of the level of community interest in regional flora and fauna.

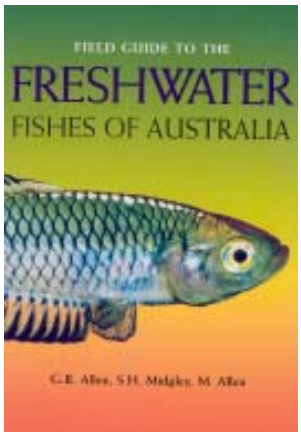
Peter Johnson, Flora and Fauna Planner, DSE, Bendigo

CDs can be purchased through the Bendigo Field Nats at a cost of $49.95; please contact Bill Holsworth, Bendigo Field Nats, 5443 4063.



Insects of Australia. (2002). P. Zborowski. This small-sized book is a recent edition to the Green Guide series. While not a field guide for identification, it provides many interesting facts about insects. The book is separated into sections on insect types including aquatic insects, social insects, scavengers, parasites and pests. Each section also incorporates interesting facts, and probably includes some questions you may have already asked yourself! For example, "What is the difference between butterflies and moths?", "Do earwigs live in ears?" and "What happens when the pond dries up?". The book includes many well presented photographs and a checklist of Austrailan insect groups. $17.95. Available from DPI/DSE Information Centre (see page 2 for more details).

A Field Guide to the Freshwater Fishes of Australia. (2002). G.R. Allen *et al*. This useful guide provides detail of nearly 300 species of Australian freshwater fish. Information includes general features and identification, habitat, status and distribution information and remarks. There are distributional maps and clear photographs which will also assist in identification. The book provides some background on the origins of our freshwater fish, ecology, reproductive biology and the major geographical drainages in Australia. There are three major family sections; primarily freshwater, estuarine-freshwater, and introduced fish. $45. Available from DPI/DSE Information Centre (see page 2 for more details).



Conservation Properties for Sale

Wedderburn. A registered Land for Wildlife property of 20 acres of undulating bushland. Mostly grey box, some wattle and variety of native plants including orchids. There are lizards, possums and abundant birds. Kangaroos, wallabies and echidnas pass through. Modern 2 bedroom hardi-plank house, open plan, tiled through-out. Full solar power system. Combustion heater and cooking stove with hot water through. Gas cook-top and fridge. Plenty of rain water in house tank. Large dam, fenced vegetable garden, fruit trees, sheds. Private and quiet, 10 mins to town. $125,000. Brian Dixon c/- Elders St. Arnaud (03) 5495 1611 mobile 0407102050.

Yarra Valley, Hoddles Creek. 52 acres (21.37 ha). Superb, difficult to find natural bush property containing a specially zoned wildlife corridor. Potential to build one dwelling so as to preserve the abundant natural flora and fauna. Power and phone available, sealed road frontage. Lovely cool climate, rich red mountain soils and generally abundant rainfall. Friendly rural community with local primary school and 10 minute drive to Steiner school, buses for secondary schools. 25 minutes via Warburton Highway to Lilydale, 1 1/2 hours to City. $275,000. Contact Eileen Nichols at Val Nichols Real Estate, 623 Maroondah Highway, Coldstream. (03) 97391155.email: valnichols@bigpond.com.au

Hoddles Creek. Beautiful 1 acre bush block in a peaceful and quiet setting in the Upper Yarra Valley. An abundance of wildlife, including over 100 species of birds, as well as echidnas, lace monitors, wombats and various possums. Adjoins another Land for Wildlife property. Partially cleared around large four bedroom brick home with upstairs studio. (03) 5967 4392.

Yarra Valley, Launching Place. 2.5 acres (1 ha). This registered Land for Wildlife property provides a tranquil and very private living experience, combined with nature. The spacious 22sq., 4 bedroom, brick residence has an open living plan with wide verandahs and a large paved, undercover outdoor entertaining area. There is an extensive park-like lawn area and landscaped native garden which attracts lots of birdlife - the parrots are year round! Mountain views extend beyond the garden area. Large ornamental dam fed by an abundant water supply which flows thorugh a rocky creek bed, then overflowing down a rock spillway into the fern gully. Frogs and waterbirds abound. Native animals such as echidnas, ring-tail possums, lizards and owls live in the area of natural bush. Extensive shedding with concrete floor and 3 phase power. For life outside this property, the bus stop is at the front of the property, kinder and school are walking distance, along with milk bar, restaurant, hot bread shop, service station, doctor, garden supplies and hardware store. For more details, phone Shane or Marg on 5964 6214.

Have you sold or are you thinking of selling your Land for Wildlife property?

If you sell your Land for Wildlife property, please inform the Extension Officer or Statewide Coordinator. We can then alter the database and invite the new owners to join. **The Land for Wildlife sign is the property of DSE and needs to be returned or picked up.**

Advertising your property here is free to Land for Wildlife members.

Continued from page 7

References for management of Blackberries.

Go to www.weeds.crc.org.au, then Publications, then Best Practice Management Guidelines. There is a dowloadable guideline for management of Blackberries by Bruzzese *et al.* (2000).

Go to www.dse.vic.gov.au, then Plants and Animals, then Pest Plants and Animals, then Weeds, then you'll find a downloadable copy of the Victorian Blackberry Strategy.

Blood, K. (2001) Environmental weeds - A field guide for south east Australia. CRC Weed Management Systems. CH Jerram & Associates - Science Publishers, Victoria.

Parsons, W. T. & Cuthbertson, E. G. (1992) Noxious weeds of Australia. Inkata Press, Melbourne.

***Land for Wildlife* Extension Officers are at the following Department of Sustainability and Environment Offices:**

Alexandra
- (03) 5772 0257
Bairnsdale
- (03) 5152 0410
Ballarat
- (03) 5333 6967
Benalla
- (03) 5761 1526
Bendigo
- (03) 5430 4368
Central and West Gippsland
- (03) 5172 2111
- (03) 5172 2550
Geelong
- (03) 9785 0134
Portland and Colac
- (03) 5523 3232
Melbourne area & Port Phillip East
- (03) 9785 0134
St Arnaud
- (03) 5495 1700
Wodonga
- (02) 6043 7947

Other *Land for Wildlife* contacts:
Horsham
- (03) 5362 0765
Swan Hill
- (03) 5036 4824

Bird Observers Club of Australia
PO Box 185, Nunawading, 3131
(03) 9877 5342 or 1300 305 342 (country callers).

Courses/Field Days/Information Sessions

22 August 2003. Woodland Birds as Indicators of Ecosystem Health. Victorian Landcare Centre and NCCMA. Newstead Community Centre. Cost $35, concession $20. Gayl Morrow (03 5345 2200).

23 August 2003. Frogs. Greening Australia and Surfcoast Shire. No cost. Contact Claire Dennis GAV (03 5236 2399) or Donna Groves, Surfcoast Shire (03 5261 0552). Surfcoast Shire.

28-29 August 2003. Biodiversity Action Planning. Two day workshop. Victorian Landcare Centre and NCCMA. Dunkeld. Cost $180. Gayl Morrow (03 5345 2200).

30 August 2003. **Koori Use of Natural Material**s. Greening Australia, Melbourne. Cost $170, concesssion $45. Benita De Vincentiis (03 9450 5305).

5 September 2003. Plotting and Planning. Victorian Landcare Centre and NCCMA. Newstead Community Centre. Cost $35, concession $20. Gayl Morrow (03 5345 2200).

7 September 2003. **Introduction to Sustainability.** Peppermint Ridge Farm, Tynong North. Cost $220 or $22 for FarmBis subsidy. (03) 5942 8580.

14 September 2003. Burning Issues - Fire in South East Australia. The Field Naturalists' Club of Victoria. Prince Philip Theatre, University of Melbourne. Cost $55 FNCV Members/Students, $77 non-members. (03 9877 9860), fcnv@vicnet.net.au.

16 September 2003. Riparian Ecology and Management. Greening Australia, Melbourne. Cost $220 concesssion $88. Benita De Vincentiis (03 9450 5305).

19 September 2003. Implementation - Action on the Ground. Victorian Landcare Centre and NCCMA. Newstead Community Centre. Cost $35, concession $20. Gayl Morrow (03 5345 2200).

21 September 2003. Corangamite EVC - A Guided Tour. Victorian Landcare Centre. Ross Creek Hall. Cost $35, concession $20. Gayl Morrow (03 5345 2200).

late September 2003. Sow n Gro. Greening Australia. South East Region, Maffra. Claire McInnes (03 5147 0854). No cost.

3 & 4 October 2003. Wildflower Walks on the Patho Plains and Terrick Terrick National Park Grasslands. Contact Elvyne Hogan (5345 3933, elvyneh@tfn.org.au) Trust for Nature, or Deanna Marshall (5430 4367, deanna.marshall@dse.vic.gov.au), DSE.

4 October 2003. **Bush Shrub Identification.** Greening Australia, Dandenongs. Cost $170, concesssion $45. Benita De Vincentiis (03 9450 5305).

5 October 2003. Attracting Birds to Your Property. Peppermint Ridge Farm, Tynong North. Cost $70 ($20 for Cardinia Shire residents). (03) 5942 8580.

10 October 2003. Monitoring for Success. Victorian Landcare Centre and NCCMA. Newstead Community Centre. Cost $35, concession $20. Gayl Morrow (03 5345 2200).

12 October 2003. Plant and Weed Identification. Peppermint Ridge Farm, Tynong North. Cost $70 ($20 for Cardinia Shire residents). (03) 5942 8580.

15-19 October 2003. Wetland Ecology and Management Course. Greening Australia. Five day course. Cost $880. Benita De Vincentiis (03 450 5305).

17 October 2003. Saltmarsh Ecology. Greening Australia, South West Region, Ramsar Lakes. Cost $50 for agency staff, $10 for landholders. Brenda Skein (03 5231 6910).

18 October 2003. What Plant is That? Greening Australia and Surfcoast Shire. No Cost Claire Dennis GAV (03 5236 2399) or Donna Groves, Surfcoast Shire (03 5261 0552). Surfcoast Shire.

19 October 2003. Bushfood. Peppermint Ridge Farm, Tynong North. Cost $70. (03 5942 8580).

21 October 2003. Predators of the Waterways. Greening Australia, Corangamite CMA and Waterwatch. South West Region, Warrambeen Landcare Education Centre. No cost.

23-24 October 2003. Managing Native Grasslands. Two day workshop. Victorian Landcare Centre. Creswick. Cost $195. Gayl Morrow (03 5345 2200).

27-31 October 2003. Box Ironbark Ecology Course. Five day course. DSE. Nagambie. Cost $1072 or $148 for eligible FarmBis members. Applications close 26 September. Course Convenor, Box Ironbark Ecology Course, DSE, 4/240 Victoria Pde, East Melbourne, 3002.