

WESTERN WILDLIFE : NEWSLETTER
OF THE LAND FOR WILDLIFE SCHEME

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NEWSLETTER OF THE LAND FOR WILDLIFE SCHEME

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TURNING FARMLAND INTO FAUNA HABITAT - HOW DO WE KNOW WHAT SUCCESS LOOKS LIKE?

Angela Sanders

Since former Prime Minister Bob Hawke declared the nineties the 'Decade of Landcare' we have seen many variations of revegetation practices in the Western Australian wheatbelt. Paddocks have been transformed using everything from single tree species in single rows to using over a hundred native species planted to soil type, and many variations in-between. But when the aim is to reconnect the landscape, how do we know what success looks like?

Some of the ways to gauge the success of this revegetation effort has been to count the number of hectares planted and to record which plant species actually survive. Less commonly, the presence of vertebrate fauna, usually birds, has been used as a measure of success. Unfortunately, more commonly the plants or seeds are put into the ground and left to do their thing with little or no follow-up monitoring.

On the south coast of WA a bold connectivity project, Gondwana Link, is well underway with high quality restoration of farmland as one of its goals. The main focus of the restoration is between the Stirling Range and Fitzgerald River National Parks. Here farmland is being progressively revegetated with the aim of restoring the links between the national parks and also larger areas of native bushland in the area.

Prior to revegetating, cleared farmland soil samples are taken and



Rock piles are important habitat islands in cleared landscapes; an *Echidna* lives in this one.
Photo: Angela Sanders

a map is produced, which helps to determine the type of vegetation that used to grow there. In this area the vegetation comprises a mallee heath mosaic on shallow soils and Flat-topped Yate, mallet and moort woodland. A list of fauna that is likely to recolonise the paddocks after revegetation is then compiled. We are fortunate that in this area the habitat preferences for the vertebrate fauna are reasonably well known. These lists exclude highly nomadic species, agricultural increaser species (e.g. Galah), and those requiring a larger home range than is provided by the restored area and immediate surrounds (e.g. Wedge-tailed Eagle). The species are

then divided into functional groups including insectivores, carnivores, large and small nectarivores, granivores and omnivores. We can then work out what each fauna species needs with respect to feeding strata, food resources, shelter and nesting material.

After this analysis is compiled, a summary of ways to provide suitable resources for each vertebrate functional group is prepared. For instance, the majority of small mammals in this landscape are terrestrial and utilise invertebrates as a food source and require hollows and vegetation for shelter. The final step is to use this information to ensure the plant species included in the seed

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Greetings all!

As I write this, Penny Hussey is taking a well-earned break and will be returning in July.

Our lead article this issue is about turning farmland into fauna habitat and asks “How do we know what success looks like”? The preparation and planning of a revegetation project is a complex business. The type of species and composition of plants has an important bearing on which fauna species will use the area. As time goes by we learn more about what hasn't worked in the past and what is likely to work in the future. Angela Sanders writes about the revegetation process and how the return of native fauna is an indication of success.

There is no doubt that blackberry has had a devastating effect on ecosystems around Australia and

has been rightly referred to as a “scourge”. How exciting would it be to find that a biological control had wiped out 95% of the dreaded pest? Read all about the Warren and Donnelly Rivers riparian restoration project and the challenges they face.

Another prickly pest that was recently identified in the Shire of Dowerin is the invasive Wheel Cactus. This is the first time it has been identified in WA and you can read about the weeds that stab you.

Many landowners have created habitat for fauna, but we need to consider how the various types of infrastructure on our properties may have a negative effect on wildlife. Grains silos may be a death trap for bats – see Dayle Lloyd's story on page 9. Swimming pools can be death

traps too – see page 10. You can help fauna by providing an alternative water source and an escape route from the pool. Refer to the article titled ‘A simple device to prevent small vertebrate animals from drowning in swimming pools’ in Western Wildlife Vol. 3 No. 4 (page 7) which is available on our website www.dpaw.wa.gov.au/landforwildlife.

Don't forget, we are always on the lookout for any interesting snippets or photos for the newsletter.

Best wishes for the late-winter/early spring season.

Claire Hall

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farmland into fauna habitat

mix for direct seeding or those to be planted as seedlings will provide as many resources as possible. For example, short-lived plants are included to provide ground litter, dense shrubs for shelter and a variety of plants that will provide a source of nectar and pollen every month of the year. It is also crucial to provide other habitat elements such as rock and log piles to provide shelter until the restored vegetation matures.

There is no data showing any micro-habitat on the ground for reptiles and small mammals in the early revegetation efforts that were completed in the 1990s and early 2000s. The challenge, in a cleared landscape, is how to provide this critical habitat where most woody debris disappeared long ago. Numerous methods have been trialed including distributing native vegetation cleared from a fence-line throughout the restoration area, redistributing rock and log piles left over from land clearing and scattering old sheets of tin and other building material.

Another commonly missing element in previous revegetation efforts in the area is nectar and pollen resources over all seasons. To sustain the tiny Honey Possum (*Tarsipes rostratus*), which relies on a year-round source of pollen and nectar, the known flowering phenologies of the local plants were used and as many as possible were included to provide a year-round resource.

Some eight years on and after monitoring vertebrate fauna recolonisation of the revegetated areas, we can say that around 75% of the expected bird species are using the revegetated areas to some extent.

Pygmy Possums, Honey Possums and Grey-bellied Dunnarts have been captured 3-4 years after planting. Small reptiles still remain elusive; however it is still too early to assess



Simon Smale setting up pitfall traps to collect baseline data of species occurring in cleared paddocks just after direct seeding has taken place. Photo: Angela Sanders

the latest restoration work where micro-habitat has been incorporated as part of the restoration effort. Having set the trajectory for plant community composition at planting and determining which fauna species are expected to use the revegetated areas, or in other words, what will success look like, we can now track fauna use and continue to tweak our methods to constantly improve the way we do our restoration.

Through a process of adaptive management, using the open standards for the practice of conservation, Bush Heritage Australia is continually refining its restoration methods to increase the likelihood of fauna recolonising the former cleared farmland. Landholders may find some of our conclusions useful to assist in undertaking their own revegetation.

For more information please contact Angela Sanders, Ecologist, Bush Heritage Australia.
asanders@bushheritage.org.au

ANTS AND LERPS

On a recent LFW property visit, I spotted these ants apparently harvesting discarded lerp cases, probably from the Sugar Lerp (*Spondylia eucalyptii*). There do not appear to be any insects inside them, so perhaps a bird in the trees and shrubs overhead had eaten the lerp and dropped the case?



These constructions are almost pure sugar, absorbed by the lerp insect from its host plant, and spun into a protective shield. Bush children often suck them for sweetness, and Aboriginal people used to steep them in water to make a sweet drink.

The next time you see some on a eucalypt leaf, try them. Like tiny little sugar crunchies!

Zara Kivell

WARREN AND DONNELLY RIVERS RIPARIAN RESTORATION

Kathy Dawson

Mention the Warren River and images of towering Karri trees come to mind as it meanders through idyllic National Parks on its way to the ocean. This river system was threatened by infestations of the scourge *Rubus anglocandicans* (European Blackberry) and so Collins Rd Crossing was selected by the CSIRO in 2004 as a study site for the release of biological control *Phragmidium* – a rust designed to invade the leaf, interfering with its photosynthetic capacity, ultimately leading to its death.

It was three years later, when CSIRO researcher Paul Yeoh and Warren Catchments Council (WCC) officer, Lee Fontanini, returned to undertake further rust trials on the recruited seedlings that a remarkable discovery was made – the extensive blackberry thicket had disappeared!

This conundrum triggered further investigation up and down the river to confirm whether the cause of the disappearance was due to the rust or an isolated incidence of chemical control. Patches of bare ground were found over a widespread area. The blackberry had collapsed, died and rotted - a 95% collapse of the whole population. The few remaining live plants were up against trees and over the river banks.

Blackberry infestations are associated with a 50% loss of biodiversity but the decline of the blackberry along the Warren and Donnelly Rivers further exacerbated this environmental damage. The bare earth provided an ideal opportunity for other environmental weeds to colonise. *Atriplex prostrata*, *Cyperus congestus*, *Cyperus eragrostis*, *Rumex crispus* and *Rumex conglomeratus* are some of the weeds that are being controlled prior to replanting.

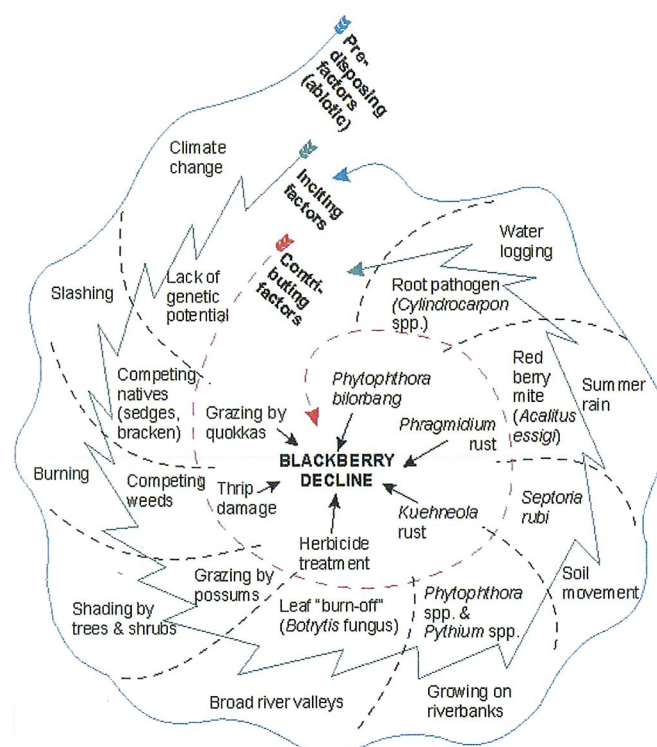
This was the basis for WCC's application to the first round of the National Biodiversity Fund grants. Not only was it crucial to revegetate these areas but also to identify possible factors contributing to the decline. In some areas it is impossible to know with certainty what plants existed there prior to blackberry domination. The changing climate pattern also needed to be considered – would it be advisable to revegetate with species from further upstream, more adaptable to drier conditions, to enhance the resilience of the restored sites?

This restoration project, funded by the Australian Government, has multiple objectives. Project partners include CSIRO, led by Dr John Scott, whose task is to continue the research into the complex of decline factors. Sonia Aghighi's doctoral research identified the presence of a new *Phytophthora* species – *P. bilorbang*. Current experiments by Dr Scott

and Paul Yeoh include investigating grazing impacts by native and feral fauna on disease and survival of seedlings. A network of cameras has been set up to record both the spread of disease and grazing pressure. To date, it has captured images of quokkas, kangaroos, possums, goats, rabbits, and birds as well as water levels - which was particularly interesting during the September 2013 flood when the cameras were retrieved just in time!

Other experiments will assess the ecology and longevity of blackberry seeds and also seek to quantify the revegetation planting density needed to shade out blackberry seedlings.

For those with a blackberry plant that is alive and well, the National Blackberry Taskforce has produced a Blackberry Control Manual which outlines a range of control options. Trials by WCC have found that the following herbicide combination has given excellent control of blackberry



The collaborative researchers 'conceptual model' sets up many hypotheses to be tested.

Illustration: WCC

in riparian areas and reduced off-target damage: Metsulfuron 10g/100L of water is mixed with Endorse 300ml/100L water which provides bigger droplet size and reduces drift.

Before Lee Fontanini's crew could begin putting the 600,000 plants in the ground, project partners from Department of Parks and Wildlife swung into action. Parks and Wildlife Science and Conservation Division Director, Dr Margaret Byrne, and her team of researchers were charged with the task of identifying those plants that would be most resilient to the challenges of disease such as *Phytophthora* and of a changing, drying climate. Dr Tara Hopley and WCC personnel scoured the river system collecting specimens to genetically tag seed sources in order to evaluate the survival and performance of species selected for

revegetation. Initial species selection was based on analysis of existing vegetation data and augmented by herbarium collections and provenance seed collecting potential.

Species selected for revegetation include three over-storey, four mid-storey and ten ground covers (sedges, rushes, grasses and herbs). The absence of native mid-storey and ground covers from the affected sites makes the collection of provenance seeds problematic – the bare landscape also makes it difficult to determine what was there originally. Some of selected species are presenting a challenge to the contracted nurseries as they have never before been commercially propagated.

It is possible members of the public may, through marroning experiences or other recreational

activities over the years, be able to provide information about the riparian flora and fauna of the Warren and Donnelly River systems. Our project is keen to collect these anecdotal observations, photographs and personal stories. Project Manager, Lee Fontanini is also keen to hear from anyone who has noticed areas of dead or dying blackberries that have not been subjected to chemical control.

Lee Fontanini can be contacted through the Warren Catchments Council by phone: (08) 9771 8180 or by email:

lee.fontanini@warreccc.org.au.

Kathy Dawson is a project officer, at Warren Catchments Council.

One group that will have a personal story to tell is the Year 10 geography class from Manjimup's Kearnan College. Amanda Scutti based her Year 10 Geography unit on investigating human impacts on local waterways. The project provided an ideal opportunity for the students to be meaningfully engaged in riparian natural resource management issues. Experienced Ribbons of Blue co-ordinator Andy Russell showed the students around the functioning of Manjimup Timber Park's biological storm water filtration system, an entry point into the Wilgarrup, a Warren River tributary. Water quality testing (pH, electrical conductivity, turbidity, temperature and aquatic biota) and site assessments were carried out when the group joined WCC project officers at the Collins Rd Crossing site. Students enthusiastically assisted in collecting real data – setting up motion sensor cameras to monitor feral animals, carried out a site assessment of the vegetation



Kearnan College geography students assist in Collins Road Crossing site assessment. Chemically controlled blackberry is in the foreground. Photo: WCC

complexes and undertook a weed survey. The students contributed the first set of baseline data for water quality and waterway condition for this site. "These enthusiastic students brainstormed their site assessment and biological survey

results and identified that the concrete ford and culverts presented a major barrier for native fish migration and are issues that need to be resolved," said Mr Russell.

MEETING THE CHALLENGE: PHOTOGRAPHIC IDENTIFICATION OF BANDED CARNABY'S COCKATOO IMMATURES

Kayley Griffiths

The challenge, given to us by Rick Dawson (Parks and Wildlife) and Denis Saunders (CSIRO), was to photograph banded Carnaby's Cockatoos well enough to be able to read the number on the band. We all wanted to know – do these cockatoos bring their offspring back to the nest they hatched in? If so, parents may be teaching their offspring about their “homeland”, so they can return there as adults to nest.

Rick bands the chicks each year, and samples are taken by vets from Perth Zoo. Although banded immatures have arrived with their parents at the start of the breeding season previously, band numbers of immatures must be read to make a positive identification. This takes good lighting, good position, good equipment, and many photos. This year we were lucky to get readable photographs showing a banded immature returning to its nest with the parents four months after fledging. This was assisted by our new Canon 7D and 400mm L series lens rested on a handy support. Using f8, 1/500 second shutter speed and ISO 400, we were able to read enough numbers on the band to make an ID. Our chick had returned.

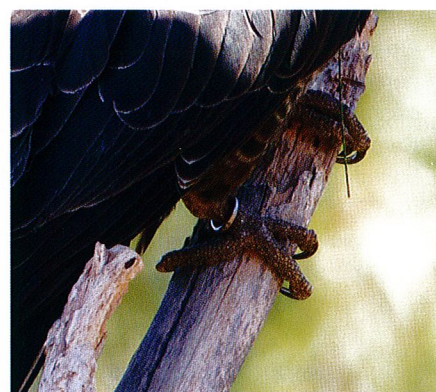
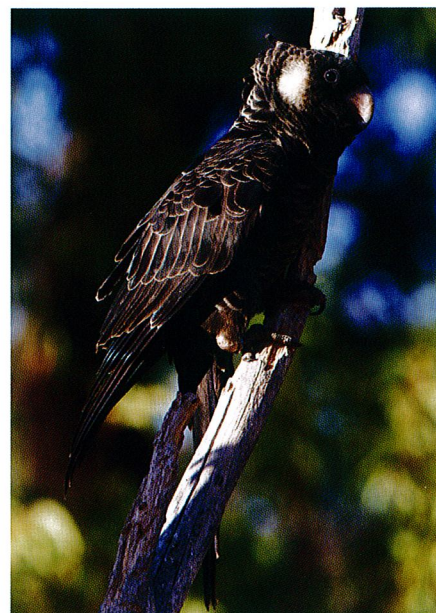
We are lucky enough to live on a large bush block surrounded by forest in the Perth hills. One year we watched as Forest Red-tail Black Cockatoos tried to fit into a far-too-small hollow, and we decided to improve their breeding opportunities by installing nest hollows. We now have nine wooden nests carefully constructed and installed by our good friend Rodney, with plenty of wood for bored mums to chew on during

long sitting sessions, without hazards for young cockatoos.

Carnabys and Forest Red-tails now know that good nests and breeding success can be found here, and even Baudin's Cockatoos have been seen checking out the real estate. From one Carnaby's pair in the first year, in 2013 saw four pairs of Carnaby's and two pairs of Red-tails nest, successfully fledging three Carnaby's chicks and one Red-tail chick.

It has been a true delight to watch the Carnaby's breeding process from start to finish. Initially, pairs go from nest to nest, carefully checking out each one with obvious excitement before choosing their nest. Weeks later, when the male enters the nest to feed we know a chick has hatched and count down until it is due to take its first peep over the top of the nest at the great wide world. Then another countdown starts, lasting seven to 10 days. We watch as the chick becomes bolder and strengthens its wings on the top of the nest. Then, in the dim evening light and with lots of encouragement from mum and dad the chick takes its first flight and graduates to immature.

During the breeding season cockatoo pairs regularly check all the nests when parents aren't watching, observing the progress of the chicks. The nests with the best track records are the first to be claimed in following years and the most heavily fought over. So far, each species has preferred to use nests previously utilised by that species, but they are also interested in other cockatoo nests and regularly observe chicks in them.



Examples of the series of photos which, when studied carefully and enlarged on a computer screen, show enough numbers for the band to be formally identified. In this case it is 32000184. Photos: Kayley Griffiths

QUANDONGS

Claire Hall

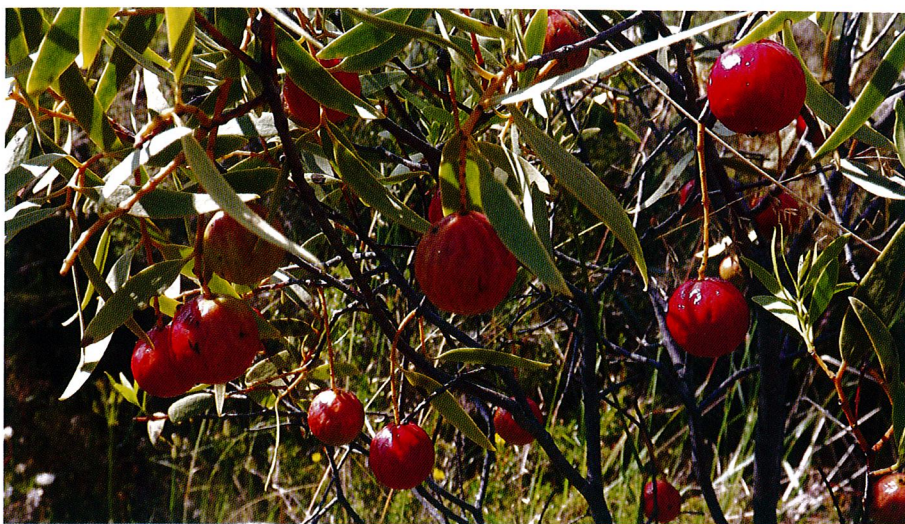
You may have seen a plant growing in the bush with distinctive red fleshy fruits 2-4cm across and wondered what it is and whether it is edible.

The plant is the Quandong (*Santalum acuminatum*) or Native Peach, a shrub or small tree 1-7m high with pale green leaves and small greenish-white flowers. The fruit is a drupe (stone fruit) that changes colour from green to red when it ripens in late spring or summer. The Quandong is one of four members of the genus *Santalum* in WA which includes the Sandalwood, whose fragrant timber (including the roots) was a major export earner for WA in the late 19th and early 20th century. Sandalwood roots were used to make temple incense and carved objects in Asia. All members of the *Santalum* genus in Western Australia are root hemiparasites.

The name 'Quandong' was one of 400 Aboriginal words adopted by European settlers into the Australian English language from the Wiradhuri languages of southwest NSW in 1836.

The Quandong is one of Australia's most widespread plants, occurring in all mainland states. Fossilised Quandongs have been found in the coal seams of southern Victoria dating back 40 million years. In WA it grows along the coast southwards from Carnarvon and through to the inland. In the Perth metropolitan region, Quandong grows in coastal dunes and limestone, and also on the Darling Scarp.

Where emus are located they are major dispersers of Quandong seeds as they digest the fleshy part of the fruit and the stone is passed through the bird. The flesh of the fruit is eaten by beetles and moth larvae, and the leaves are eaten by the larvae of the Spotted Jezebel Butterfly and by a species of soldier beetle.



Quandong fruit in the bushland at Duncraig SHS.

Photo: Claire Hall

Both the fleshy part of the fruit and the kernel were a staple food of the Indigenous population and surplus fruit was collected and dried for up to eight years for later consumption. Dried Quandongs were reconstituted in water when needed. The flesh can be eaten raw, having a slightly sour and salty taste, hence it is more tasty if made into jams and relishes. The nutritional value of the Quandong is high and it contains outstanding antioxidant substances. The leaves are reported to have antibacterial and antifungal properties.

Early settlers would take their families on Quandong picnics and the fruit was gathered to make jams, chutneys and pies, particularly during periods of drought and the depression years when money was short.

Several methods of propagation are recommended, including direct seeding or cultivation in a nursery-style situation. If direct seeding, at least five seeds should be planted and kept moist with irrigation for the first year. In the nursery, seeds can be covered with potting mix and kept dark and damp or pretreated with a broad spectrum biocide before placing them in a zip-top plastic bag filled with moistened vermiculite. Bags should be stored at a constant temperature of 17-22 °C and germination may occur as early

as two weeks, but may continue for up to nine months. After germination, the seedlings can be transferred into pots with a nitrogen-fixing host plant such as wattle or sheoak until they are large enough for transplanting. Best results have occurred when planting is undertaken in early spring.

Quandong is able to re-shoot from rootstock after fire, but regrowth is slow, and in areas where frequent fires occur, large specimens are rare.

CSIRO Australia began investigating the horticultural potential of Quandongs in 1973 and many studies on the cultivation and commercialisation of Quandong have been done by the Rural Industries Research and Development Corporation. Concerns over the long-term impact of wild harvesting means that orchard production will continue to increase in importance. For references on commercial Quandong production contact the Editor.

It is important to note that Quandongs should not be collected in the wild without the appropriate Parks and Wildlife collecting licence and/or the permission of the landowner, and you are sure that it is Quandong fruit and not another unknown plant!

Whether grown for its fruit or simply as a decorative native plant, the Quandong would be a talking point in any garden.

WHEN TIMES MOVED SLOWER

Bill Dawes, as told to Avril Baxter

When times moved slower - people were never in the hurry they are today.

Bill Dawes' mother Vera Bergin came to live beside Malyalling Rock (south of Yealering) in 1904. Farmers were beginning to settle the area, but a nomadic lifestyle still existed for the Noongar people and the cattle herders, both of whom followed a similar annual route.

Vera talked of her early childhood when each year around October she would wake in the morning and see piccaninnies climbing all over Malyalling Rock. The Noongar people would stay there for a week or so, and then head down to the Williams River near Quindanning. The timing varied depending on water supplies in the area. Each year as they left, they'd light fires around the rock. Bill said the new shoots of the following year brought the kangaroos in to feed and the gnamma provided the necessary fresh water.

Around this time, 1905 - 1912, cattle, which had been grazing on the salmon gum country to the east, were also herded through the area. The cattle were moved on quickly as there was box poison (*Gastrolobium parviflorum*) around the rock. One of the bush remedies that Bill remembers is that if an animal was poisoned its ear was cut off and the blood left to flow, a guaranteed cure which Bill never questioned - it just worked!

Meanwhile in 1906, Bill's dad and his uncles started contract clearing. In the middle of winter they felled and burnt green salmon gums including the roots in the top 5 inches of soil for 10 shillings an acre.

Bill's dad eventually bought a property nearby where Bill was born in 1929. Clearing continued; Bill remembers box poison coming up in newly cleared paddocks and how the



The original Bergin property and gnamma at Malyalling Rock.

Photo: Avril Baxter

brush wallabies preferred to graze the poison bush rather than the crop.

Bill has always been interested in nature. As a child he had a pet possum, which he had to grab by the scruff of the neck or it would bite him. He would collect dugite snakes and, safely tied up in a wheat bag, send them on the train to the Perth Zoo for venom extraction.

Up until the 1950s there would be flocks of 80-90 plovers (Banded Lapwings) on the dams, which if disturbed, would fly around like the flocks of Galahs that have since moved into the area. If Bill came across a plovers' nest when he was ploughing, he dug a small hole in the already ploughed ground, put three of the eggs into the hole and one on top of the mound beside it so that the mother bird could see the eggs. Next round of the combine, mum would have rolled the other egg into the hole and be sitting on top of the new nest.

Plovers disappeared in the 1960s when Bill started using DDT but he is not sure if there is a connection. They are now making a resurgence



Bill Dawes, still protecting plovers' nests.

Photo: Avril Baxter

on the farm due to reduced amount of cropping and increased fox control.

Over the years Bill witnessed foxes move into the area in 1939-40 and sees them as the biggest threat to wildlife. Maned Geese first appeared in the 1960s, Pink and Grey Galahs in the 1970s, Mulga Parrots in the 1980s and Little Corellas in the last five years.

AN UNINTENDED DEATH TRAP FOR BATS

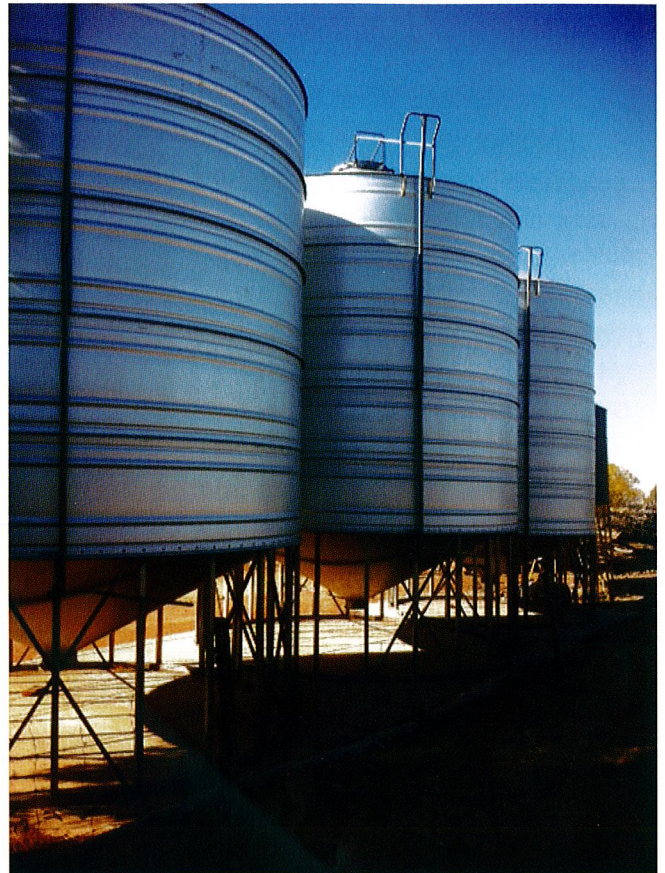
Dayle Lloyd

Dayle Lloyd of Eden Valley Biodynamic Farm, Dumbleyung, writes: “Sometimes really good improvements to plant and machinery can have unintended side effects. We have a reasonable number of small bats around our sheds and farm in general but have recently discovered a death trap for them.

The bats see the long tube as being a convenient hollow in which to roost for the day, but once inside the bat is unable to get out at the bottom and is unable to climb out on the vertical slippery walls and dies within a few days. I found a dead bat in every silo frame before I took action – the silos had only been in place for three months. “On ‘Moylan’s’ grain silos they have, in recent years, introduced a frame that enables farmers to open and close the top lid from the ground, thus reducing the need to climb and improving farm safety. Other silo manufacturers have also introduced similar mechanisms. However, it has not been safe for our bats.

“I have overcome the problem by plugging the top of the tube with an inexpensive 40mm square tubing plug available at hardware stores, and also alerted the manufacturer. Farmers are increasing the number of silos on farms (I estimate 500-1000/year) and improving farm safety by retrofitting older silos, which means that many more bats could easily be trapped. If you know of anyone with a similar situation, it would be worth alerting them and checking – bats do such a great job of controlling nocturnal insects.”

Dayle can be contacted on: edenvalley@wn.com.au

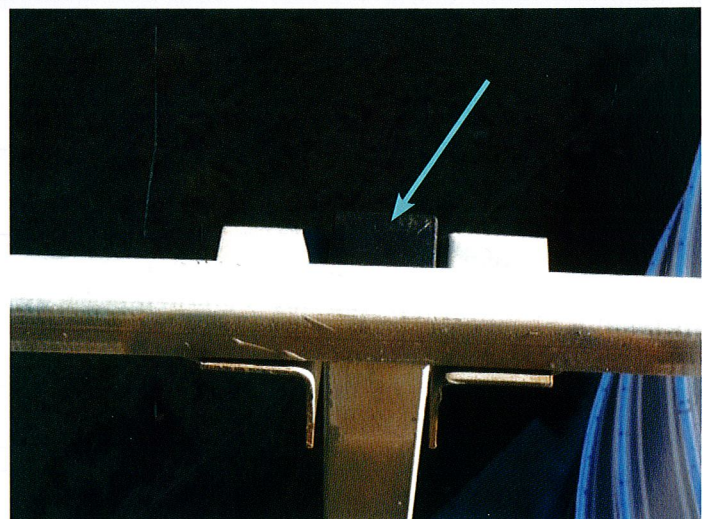


Above: The silos showing the frame which enables the lid to be opened from ground level., operated by a long galvanised tube.
Photo: Dayle Lloyd



Left: The base of the tube where it rests on the cross strut. A petrified bat can be seen where it tried to squeeze out, but was unable to do so. This gap at the bottom is only 8mm x 38 mm wide. Changing the cross bar at the bottom to provide a larger gap would help with future design, but the top cap (see below) will solve the current problem.
Photo: Dayle Lloyd

Below: The new black plastic cap sealing the galvanised tube to prevent bats entering.
Photo: Dayle Lloyd



TRIGGERPLANT

Simply superb and subtle in style,
with come-hither trigger poised to beguile,
colours and shapes designed to confuse
the unwary suspect. It's simply a ruse
in micro dimensions, a means to incite
pro-active creatures unseen from a height.

Stoop to their level. Peer if you must.
And even take part in this crude form of lust.
Who hasn't succumbed to the urge to pursue
this pastime of pleasure – this Spring rendezvous?
Requirements are basic and all above board.
The trigger's reaction will be your reward.

Text and photo: Lyn White, Dardadine



ORDEAL BY DROWNING



In early March, Stephanie King of Gidgegannup wrote: "I have picked this little monitor out of the swimming pool three times now. The first time he was at the bottom and I thought he was dead. I put him on a warm rock, head down. The last two times it was found clinging to the floating power cable for the pool vacuum. Here it has lassoed his tail around his own neck."

The consensus in the office is that this is a juvenile Black Goanna, *Varanus tristis*. They hatch around February/March. It was probably looking for water and we suggested a low dish of water in a shady spot around the pool might be helpful by providing an alternative drinking source.

Stephanie King, Gidgegannup

'GROW YOUR OWN HABITAT' AT BALINGUP

Middle Blackwood LFW officer, Sheila Howat was kept busy at this year's Balingup Small Farm Field Day where a huge crowd turned up for the "Grow Your Own" themed event.

The LFW display focussed on 'Growing Your Own Wildlife Habitat' and Sheila was inspired by a day full of conversations with visitors passionate about wildlife and biodiversity conservation.



Dunsborough LFWer Jenny Stark carrying a well-worn Chuditch, being photographed by husband Peter at the LFW display. Jenny is not only a committed environmentalist, but also a Scout leader with the Scout name of "Chuditch"

Photo: Sheila Howat

ANOTHER ENTOMETA CATERPILLAR?

Readers may remember last April's Bush Detective, which showed the caterpillar of *Entometa fervens*. Mike Rumble sent us this picture in February from Dunsbouough. It is a likely to be a member of the same genus, though we have not been able to determine the species. The legs show up clearly on this background, where it has been placed for photography. It has clearly come from a twig that required a more mottled disguise.



Did you know ... ?

... that all the trees in the Wungong catchment that were monitored because they contained hollows being used as nesting sites by Red-tailed Black Cockatoos, were over 230 years old?

Ron Johnstone, WA Museum

Do professionals and the general public share the same vision of conservation?

The recent controversy over whether sharks should be culled at popular swimming areas has highlighted the difference between how professional biologists and the general public may view conservation issues. Although both may wish to achieve the same end point (in this case the survival of shark species and the safety of human swimmers) the factors they take into account when making action decisions might be quite different.

Researchers from the Netherlands have studied the differences between professionals and the general public in the way they think and their actual attitudes towards conservation measures.

Essentially they found that the professionals focused on species, habitats and ecosystem health, while the public tended to evaluate conservation measures by their effects on individual animals and trees and their consequences for scenic quality. For nature conservation issues to gain wide acceptance, it is important that both professionals and the interested public work together to build a shared vision of conservation issues. This is what *LFW* tries to do, to bring everyone together to exchange ideas, understand each other's point of view and reach a consensus on appropriate action.

Domestic ruminants are important contributors to global warming

Here's a challenge – an international group of scientists point out that the production of meat from ruminants is a big contributor to global warming. Australians have always been meat eaters and exporters, so do we even want to

consider the suggestion to get rid of most of our sheep and cattle to help the world's climate?

We hear a lot about how carbon dioxide (CO₂) affects global warming, but methane (CH₄) is also a greenhouse gas. A major anthropogenic source of methane is the gasses emitted by domestic ruminants – cattle, buffalo, sheep and goats – some 3.6 billion animals. The greenhouse gas 'footprint' of consuming ruminant meat is 19-48 times higher than that of high-protein foods obtained from plants (e.g. beans or soy).

The total area dedicated to grazing is 26% of the terrestrial surface of the planet. Livestock production accounts for 70% of global agricultural land, and 33% of total arable land is dedicated to feed-crop production. Thus, reduce the demand for meat and there would be greater area for human food production – and less greenhouse gas. Less need, either, to convert tropical forests into cattle pastures.

The authors conclude: "We need to increase awareness among the public and policymakers that what we choose to eat has important consequences for climate change".

This suggested change in policy would have huge ramifications for rural Australia. If you would like to read the original paper, email me and I will send you a copy.

Penny Hussey

Climate change

CSIRO and the Bureau of Meteorology have released the 'Climate 2014 report', which confirms that Australia is heating up and, combined with other events, makes for more frequent and more severe bushfire events. Detail of all other changes that are occurring are also contained in the 16-page report. Well worth reading.

Go to the CSIRO website: www.csiro.au.

From the Climate 2014 Report, some fast facts:

- Australia's climate has warmed by 0.9°C since 1910, and the frequency of extreme weather has changed, with more extreme heat and fewer cool extremes.
- Rainfall averaged across Australia has slightly increased since 1900, with the largest increases in the northwest since 1970.
- Rainfall has declined since 1970 in the southwest, dominated by reduced winter rainfall. Autumn and early winter rainfall has mostly been below average in the southeast since 1990.
- Extreme fire weather has increased and the fire season has lengthened across large parts of Australia since the 1970s.
- Global mean temperature has risen by 0.85°C from 1880 to 2012.
- The amount of heat stored in the global oceans has increased, and global mean sea level has risen by 225 mm from 1880 to 2012.
- Annual average global atmospheric carbon dioxide concentrations reached 395 parts per million in 2013 and concentrations of the other major greenhouse gases are at their highest levels for at least 800 000 years.
- Australian temperatures are projected to continue to increase, with more extremely hot days and fewer extremely cool days.
- Average rainfall in southern Australia is projected to decrease, and heavy rainfall is projected to increase over most parts of Australia.
- Sea-level rise and ocean acidification are projected to continue.

CACTI - THE WEEDS THAT STAB YOU

Sandy Lloyd

Many people associate cacti with old cowboy movies, and think they only occur in desert areas. However, cacti are native right across the Americas from Canada down to Tierra del Fuego. No cacti are native to Australia, but many have been introduced as ornamentals, or for their fruits. A number have become invasive. In April 2012, three genera of opuntoid cacti were named as Weeds of National Significance in recognition of the agricultural, environmental and social threat that these species pose and the economic cost associated with these weedy cacti. They are *Austrocylindropuntia* spp., *Cylindropuntia* spp. and *Opuntia* spp. (except *O. ficus-indica*).

About 27 species of naturalised opuntoid cacti have been identified in Australia, 17 have been found in WA,

plus two as yet unidentified hybrids. *Cylindropuntia fulgida* var. *mamillata* has the dubious honour of being the most widespread species, and causing the largest known infestation (some 66 km²) on Tarmoola Station in the Shire of Leonora.

Two species of concern are the spiny duo both known as Hudson Pear, *Cylindropuntia rosea* and *C. tunicata*. Both have been found on the goldfields and have spines so sharp they can stick into car tyres or heavy work boots. A project to remove opuntoid cacti from Pilbara towns resulted in the collection of several tonnes of material. The opuntoid cacti have proved themselves to be intractable weeds: they are highly invasive and can tolerate a mix of harsh conditions including drought and a wide range of temperatures;

they are armed with spines, and are difficult and expensive to kill.

At present it appears that some species of opuntoid cacti (particularly wheel cactus) can still be eradicated, and there is increasing interest in the community to manage them.

Please report any cactus infestations to the Department of Agriculture and Food's Pest and Disease Information Service (PaDIS) on 1800 084 881 or email info@agric.wa.gov.au.

For more information about opuntoid cacti in WA, see: www.agric.wa.gov.au/declared-plants/opuntoid-cacti-situation-report.

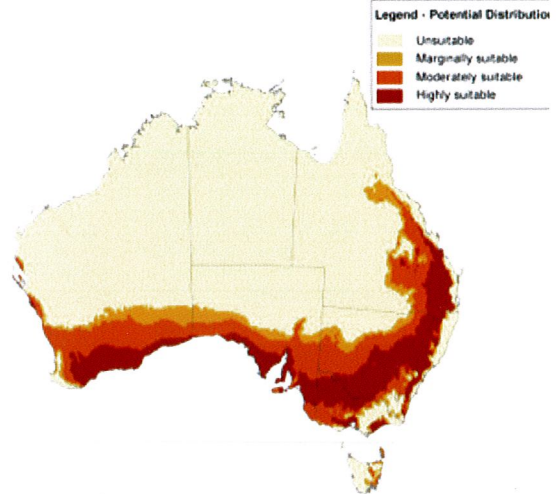
Sandy Lloyd is a weed scientist with DAFWA. She can be contacted on: sandy.lloyd@agric.wa.gov.au

WHEEL CACTUS



Wheel Cactus at Dowerin.

Photo: Sandy Lloyd



Computer predictions show that Wheel Cactus is highly suited to southern parts of Western Australia. Illustration: DAFWA

Of most concern to WA is the recent find of Wheel Cactus (*Opuntia robusta*) in the Shire of Dowerin. The plants were sprayed and this species will now be targeted for eradication – please report any suspect plants. This species is highly suited to most

of the south of WA. See map). It cannot be contained as it is spread by birds – in South Australia it infests 35,000 ha. Wheel Cactus can be distinguished from other prickly pear type cacti by its round segments, the others generally have oval, oblong or egg-shaped segments.

Wheel Cactus must be reported if it is cultivated, as well as if it's naturalised (it's possibly being cultivated for its fruit). For more information about opuntoid cacti in WA, see: www.agric.wa.gov.au/declared-plants/opuntoid-cacti-situation-report.



Above: *Cyindropuntia rosea*
Photo: DAFWA

Right: *Cyindropuntia fulgida* var. *fulgida*, showing how easily individual segments can break off and grow to become new plants
Photo: Jane Bradley, Rangelands NRM



Below: This Euro carcass, photographed in South Australia, has numerous pads of *Cyindropuntia proliferata* embedded in its flesh.
Photo: Lorraine Edmunds



GLYPHOSATE-RESISTANT WILD RADISH FOUND NEAR GERALDTON



Raphanus raphanistrum, Wild Radish
Illustration from Geigy Weed Tables, pub. 1968.

Wild Radish (*Raphanus raphanistrum*) is one of the most damaging weeds in cropping systems. Throughout WA, herbicide containing glyphosate is used to control it.

Recently, three populations of glyphosate-resistant Wild Radish have been identified north and east of Geraldton. This is the first record of this phenomenon in the world. The implications for crop management are huge.

I suppose there is no possibility that “Round-up Ready” genes could have transferred from GM canola to the Wild Radish?

Penny Hussey

Ken Atkins has advised he attended a seminar at UWA in the 1990s where it was stated that crossing had occurred between canola and wild radish in France. In response to his question he was advised that there was “a low risk of gene transfer but the potential certainly exists”.

THE MAGIC OF THE DJITTI DJITTI

As Danielle Perrie and I were exploring the granite rock/sheoak woodland on her property at Woodanilling, we were followed by a Willy Wagtail (*djitti djitti* is its Noongar name). It didn't seem frightened at all, just hopped around about 5m behind us. In Noongar mythology this bird is one to be careful of, as it can lure people into the realm of bad spirits. The story goes something like this:

The *gnardis* and the *wudartjis* are bad spirits that lurk in the bush. At night, firelight keeps them at bay, but during the day the cunning *wudartjis* hide in caves and behind rocks. They have the ability to blend in, so they can't be seen, but sometimes they can be smelt. The *djitti djitti* will follow people, but when they turn towards the bird, thinking perhaps that they can catch it, it will just bounce a



bit, mesmerising the watchers and enticing them further away, until, before they know it, they could be drawn into the realm of a *wudartji*. Dreadful fate!

It is lucky we were strong and didn't follow the bird – was that really a fox you smelled, Danielle, or was it a *wudartji*?

Avril Baxter

A NEW PLANT FAMILY? THE SIMULACRACEAE

A paper in the *Journal of Ethnobotany Research and Application* takes a wonderfully tongue-in-cheek look at artificial plants. It studies the "economics, distribution, ecology, taxonomy, paleoethnobotany and phakochemistry of this widespread family". Taxa are described (inventing evocative names, eg one genus is named *Calciumcarbonatia*) and their economic importance analysed. The authors clearly had a ball researching and writing this paper.

I read this with a bubble of amusement – sometimes in this



world of violence and disaster, it helps to take a lighthearted look at our surroundings. In the interests of adding to our knowledge of this family, therefore, I attach here my example of a new species in the genus *Plasticus*, hereby named *P. acer* var. *aestivalis* (green) and var. *autumnalis* (orange). The holotype of this new species are these superb 'maples' that adorn the entrance to the Qinibagh Hotel in Kashgar, western China.

If you, too, would like the fun of reading this spoof, contact me and I will send a photocopy.

Penny Hussey

NEW WEBSITE

Local photographer and publisher Simon Nevill has a new website which you can log into to see the various books he distributes – mostly natural history-related.

www.simonneville.com

Simon informs us that he would count fellow *LFWers* as 'friends' for whom he could provide up to 30% discount on all the books he distributes. He asks, if you are interested, that you leave a message with your details and a return code number will be given to access the discount.

SOUTH WEST WETLANDS MONITORING PROGRAM REPORT 1977-2010

This document reports in exhaustive detail all the monitoring of southwest WA wetlands - physical and biological data - that has been done by CALM/DEC during the stated years. If you are involved in wetland management, and need either baseline or comparison data, you might find it useful. The publication can be viewed at Parks and Wildlife offices.

FOOD FOR DRAGONFLIES



Gus King noted this dragonfly eating a fly on his Pingelly block. Brian Hanich of the WA Museum says it is probably a Blue Skimmer (*Orthetrum caledonicum*). A nice, natural way to control those pesky flies!

WOOLORAMA PHOTO COMPETITION

Avril Baxter

Once again *LFW* teamed up with the South West Catchments Council (SWCC), Wagin Woodanilling Landcare Zone (WWLZ), Katanning Landcare, Dumbleyung Landcare, West Arthur Landcare, The Blackwood Basin Group (BBG) and Main Roads Wheatbelt South to put together a combined Landcare exhibit at Wagin Woolorama.

A central feature of the exhibit was a photographic competition with the theme of "Caring for Our Land". Entries varied from photos of wildlife, to activities on the farm and bigger landscape pictures.

The winner was *LFW* member Chris Murphy with "Wildgirl" a numbat spotted on his property adjacent to Boyagin Nature Reserve. Numbats persist in some of the nature reserves in our area and Chris was lucky enough to have a camera handy when this one chose to forage on the laterite ridge near his home. [This photo was featured in WW 16/2, April 2012. Ed.]

Second prize went to Caroline Telfer who sent in a photograph of her son helping with tree planting on their property near Darkan. For Caroline "planting salt affected land on our farm is a family affair".

Third prize went to Christine Bairstow of Dumbleyung whose panoramic shot of Dumbleyung Lake depicted "caring for our land is not just one element of care. It is a combination of microbiology, biology, land management and planning to make the bigger landcare picture."

The show was a very successful two days.



First prize, Chris Murphy



Second prize, Caroline Telfer

Third prize, Christine Bairstow



**LAND FOR WILDLIFE MEMBERS' WORKSHOP
AT TORTOISESHELL FARM, BRIDGETOWN**

“How to propagate your favourite native plants”

with **Sabrina Hahn**

Sunday 19th September, 2014

As requested at last year's workshop, Sabrina has devised a hands-on workshop that will not only send you home with plenty of valuable cuttings, but tips and knowledge to help them thrive.

Sabrina asks that you start saving one and two litre plastic drink bottles now.

Please express your interest in this full day workshop now with *LFW* Officer Sheila Howat:

sheila.howat@dpaw.wa.gov.au or phone 9761 2405

And please update your email addresses and telephone numbers with us. There were a lot of people who did not receive advice of Sabrina's workshop last year as their contact details were invalid.

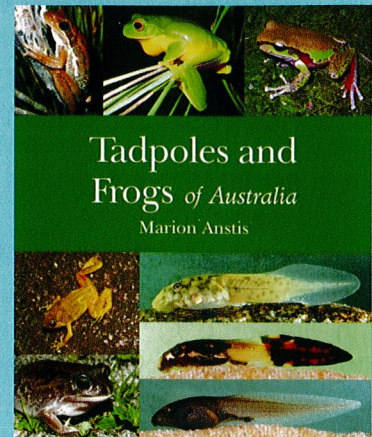
[It is essential that you register your interest with Sheila ASAP, as she will be overseas during some of the planning period. Editor.]

Tadpoles and Frogs of Australia

Marion Anstis

Cost: around \$150.00 + p&h

Available from good booksellers



This is a monster of a book (830 pages), packed with illustrations covering every Australian amphibian species from spawn, through every life stage to adult. It is an astonishing achievement.

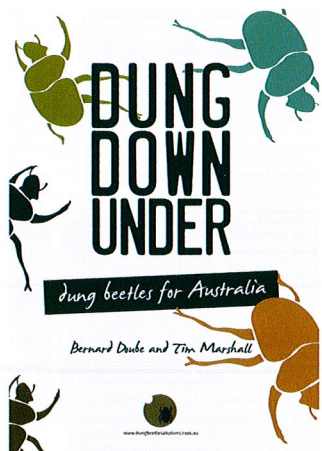
The book is really for very serious froggers - or perhaps the reference library in teaching institutions; ordinary interested persons can then borrow and read with awe at the work involved.

Dung Down Under: dung beetles for Australia

Bernerd Doube & Tim Marshall

cost: \$33.00 / copy + p&h

Contact: Loene Doube on 08 8339 4158
or email: loene@dungbeetlesolutions.com.au



Calling all cattle farmers – this one's for you!

This is the first farmer-friendly book on the ecology and management of dung beetles in Australia, possibly the world. It is a great reference for farmers, landcare groups and environmental organisations concerned with sustainable productive land management. Although written in South Australia, it contains many WA references and is relevant to the south-west of this State.

This A4 illustrated colour book (120 pages) examines the ecological, environmental and production benefits of dung beetles, and provides a non-technical analysis of their value and potential role in increasing soil carbon storage. There is also a section on the use of dung beetles in vineyards and orchards to improve soil health without disrupting root systems. Factors limiting dung beetle abundance, distribution

and activity are examined and gaps are identified. Regional report cards allow a quick assessment of which dung beetles might occur in particular regions, approximately how abundant they might be and which additional species might prosper.

This is a superb resource for all cattle farmers, as well as fascinating reading for the rest of us.

[Note: David Cousins (DAFWA) says that there are no restrictions on importing dung beetles from the Eastern States to WA, although these commercial sources do not have the two new species that are being bred up prior to trial release in WA (see WW 18/1 p.13). Farmers can also collect adult animals themselves if they have time and access to farms that have good beetle numbers. Editor]

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 Parks and Wildlife.

Published by the Department of Parks and Wildlife, Perth.

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