Department of Environment and Conservation

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NEWSLETTER OF THE LAND FOR WILDLIFE SCHEME

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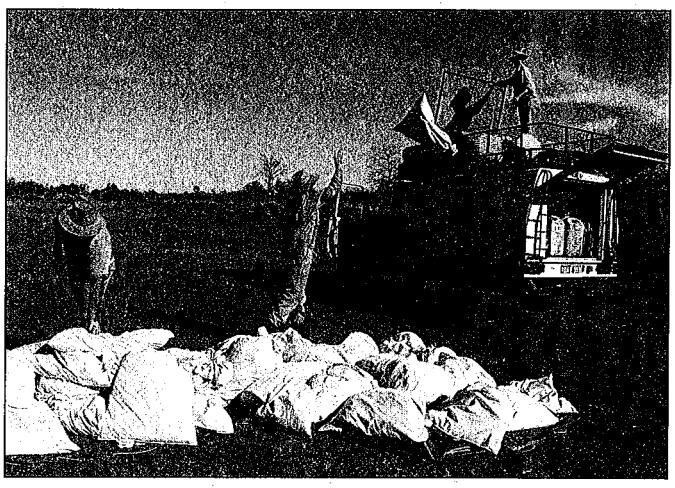
BOTANICAL COLLECTING IN WESTERN AUSTRALIA

Luke Sweedman

Kings Park is one of the few Botanic Gardens in the world that collects and displays its own flora. The display is primarily in the State's Botanic Garden. The display of the State's flora and a large area of wild bush as the setting for the Botanic Gardens in the middle of a major city is unique.

The primary role of the Curator of the Western Australian Seed Technology Centre at Kings Park and Botanic Garden (KPBG) is to collect seed and cutting material for the State's Botanic Garden. Fred Lullfitz was the first government appointed seed collector in 1965 and his job was to begin collections for the new Botanic Gardens that were to take shape in Kings Park. Herbert Demarz, who held the position from 1970 to 1990, followed Fred. I have held the position since then.



Seeds destined for the State's Botanic Garden at Kings Park and the Millennium Seedbank. Kew.

Today collections are made for display purposes and, increasingly, for conservation collections of rare and common species from the most threatened plant communities of the State for their long-term storage and thus hopefully, their ongoing survival. These collections should ensure that KPBG has as many species from the State's flora stored securely to preclude the chance of a species being lost. Collections of seeds are not a replacement for the loss of biodiversity in the wild but should ensure that we retain the genetic material of these species for reintroduction and research. Plant breeding programs are also a focus area for the Seed Technology Centre. Plant breeding programs aim to develop varieties from wild material that can be grown successfully in home gardens.

The early days of collecting were carried out using a 4-wheel drive and a caravan. Herbert Demarz and John Beard (the inaugural Director of KPBG) traveled huge distances throughout the state, recording and collecting the WA flora. In those days traveling was done without air conditioning, fridges, Global Positioning Systems or satellite phones and the road system was much less developed. Locations were measured from each milepost on the highway so that the spot could be returned to and this worked reasonably well until the roads changed through maintenance.

Today seeds are targeted in many ways. To determine target areas and to find species, decisions are based on weather trends for the year and evaluated through the Bureau of Meteorology websites. Satellite navigation technology is used to locate latitude and longitude and a touch screen computer monitor mounted in the vehicle displays a moving map. This computer contains all topographic and land tenure information as well as locations for particular species from the Department of Environment and Conservation's (DEC) Herbarium recording system, Florabase. Today we use the latest in 4wheel drive technology and a caravan is still used where appropriate as well as tents and a significant

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EDITORIAL

Greetings all!

Welcome to the eleventh year of *Land for Wildlife*!

The *Land for Wildlife* team has been very heartened by your response to the tenth anniversary events. Over and over again we are hearing that people enjoy meeting like-minded landholders from their local area, to exchange ideas and experiences. The message certainly is that small, low-key, local events are much appreciated, so we will be looking at holding more of these in the years to come.

The 10th anniversary party to launch the *LFW* 10 year Report "With Wildlife in Mind" will be held in February. (See the details on p 3.) Everyone is invited – we'd be delighted to see you! But so that we have some idea of numbers, please inform Robyn Polini on 9334 0404 if you are definitely coming.

Many of the articles written for *Western Wildlife* are by leading experts in their field and contain information of value for future reference. Even if you have kept all the issues, however, it is often difficult to remember where to look for that reference on ants, or oil mallees, or making yourself a bird hide. So, included with this issue is an index to Volumes 1-10, firstly by subject and secondly by author. Hopefully you will find it useful.

Along with that, it is planned to put back issues of the magazine onto the website. Unfortunately, the early volumes were not created electronically, but we hope eventually to get them all scanned in. In the meantime, if the index shows up an article you think you would like to read but you don't have that issue, please contact Robyn Polini, and she will post it to you.

Best wishes for 2007!

Penny Hussey

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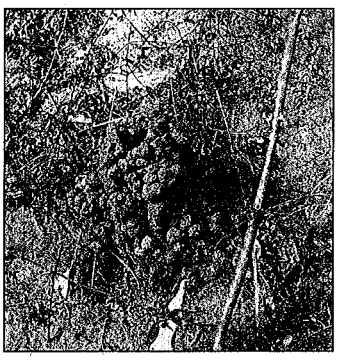
Bush Dectective

Who built this?



If you live in, or have visited, the wetter southwest, you may have seen these chimney-like structures constructed of soil pellets. They belie the size of the creature that toiled to make them. They are the entrance to burrows and are very likely to be found in the vegetated swampy floors of drainage depressions and headwaters in the south west Capes region.

Ans: p. 19

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Friends and colleagues -

come and help us celebrate Land for Wildlife's tenth birthday!

Wednesday 28th February 2007

10.00 am

Crawley foreshore

(near the DEC office, Australia II Drive)

The 10th year report "With Wildlife in Mind" will be launched.

The birthday cake will be cut and light refreshments served.

We would like to see lots of people there, so that we can toast:

"Thank you for the last ten years, and here's to the next ten!"

Please consider this your official invitation, we will not be sending out individual letters to Western Wildlife readers.

For exact details of the location, and for catering purposes, **if you are coming please ring Robyn Polini on 9334 0404.**

Look forward to seeing you there!

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FLORA

Seed collecting

amount of remote and exploratory trips are made to new locations. Approximately 2 to 3 months a year are spent on field trips.

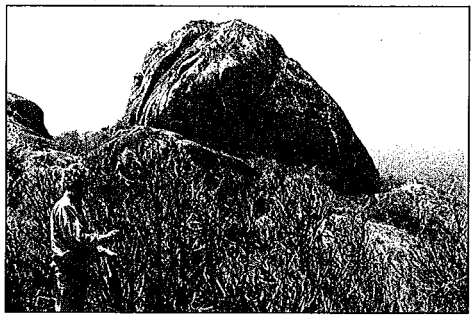
The field collecting vehicle

Originally seeds were stored in glass jars in the seed store. As material was required for display it was propagated and then grown on. Today seeds are stored in freezers at minus 20 degrees Celsius after being dried down to a low moisture content using a controlled environment room. Freezing seeds has meant that those species with a short shelf life do not need to be recollected every few years and according to the latest scientific information, they should last many decades or even centuries. Storing seeds is the cheapest and easiest way of keeping most plant species secure from habitat loss and possible extinction.

For the last 5 years KPBG together with DEC have been involved in the Millennium Seedbank Project (MSB). WA was the first state to become involved in this project and now all Australian states are involved. The MSB Project has targeted 10% of the world's flora to be stored by 2010. These seeds are from threatened temperate communities from throughout the world. Threats include land clearing, desertification and in the case of the WA wheatbelt, salinity and clearing. This partnership has resulted in large numbers of duplicated collections being secured for conservation in WA and at the Millennium Seedbank, Kew, UK.

Another collecting activity that KPBG are involved in is the Kings Park Expeditions. These trips take paying volunteers to some of the most remote and interesting areas of the state to help with our fieldwork program. They provide an opportunity for people to take part in a true botanical collecting trip. Some of the areas we have taken people to include the Canning Stock Route and the Great Victoria Desert. On one occasion a sand storm with cyclonic winds hit one of the trips in the Great Victoria Desert and we watched helplessly as the tents were flattened and driving sand had the camp in complete mayhem for 2 hours. There have been many interesting and exciting events take place on these trips and there has only been one accident requiring emergency evacuation. The experiences on over 8 major expeditions have ensured that we keep a balance between safety and engaging with the wild environment.

In spite of the original boundaries of collecting being the geographical borders of WA, the Seed Technology Centre has also been involved in several field trips in Africa. Through the MSB project, staff have worked in Kenya running training programs with the local collectors. Another project staff were involved in was developing and implementing protocols for the collection, cleaning and storage of seeds at the Geita goldmine, beside Lake Victoria in Tanzania. Collecting in areas with a much larger variety of wild animals was an added challenge for staff!



Collecting aloes in Kenya

Seeds today are even more important than ever as we realize how urgent it has become to ensure that no species are lost from this state and indeed the world. KPBG are committed to ensuring that WA species are stored for the lasting benefit of all Australians.

This year saw several exciting events take place, firstly the launch of the book "Australian Seeds" edited by Luke Sweedman and David Merritt (see page 18). Also the discovery of a new species of *Eucalyptus* from the south coast made by Steve Hopper and Luke Sweedman is to be known as *Eucalyptus sweedmaniana.*

Next year Kings Park Expeditions travel from Perth to Alice Springs via the Gunbarrel Highway. For information contact me at lsweedman@bgpa.wa.gov.au or phone Kings Park on 94803625

Luke Sweedman is Curator of the Western Australian Seed Technology Centre, Kings Park and Botanic Gardens.

PERUP FAUNA WEEKEND

A *Land for Wildlife* 10th anniversary event

A fabulous weekend was held by the *Land for Wildlifers* who attended the tenth anniversary celebrations at Perup Nature Reserve on 21-22nd October. Not only did the participants enjoy fascinating talks and walks but nature also put on a dramatic electric storm with hail stones over an inch in size thundering out of the skies. Luckily all participants were protected in the safety and comfort of the facilities at the Perup Ecology Centre as nature showed us its force.

Julia Boniface welcomed the 50 participants with lunch, then in the afternoon there was a series of talks. First the Centre Manager, Glen Beatty, gave a general outline of the area. Then DEC's Forest Ecologist, Adrian Wayne, described a very worrying decrease in woylie populations. Over the last 30 years, fox control had allowed woylies to grow in numbers so that they were even taken off the endangered list – but suddenly, over the last year, the population has crashed back to the levels of 30 years ago. Why? Cat predation, perhaps, or a disease, or habitat modification? It is Adrian's task to find out – fast!

Associate Professor Pierre Horwitz from Edith Cowan University spoke about the problems that could be caused by climate change and water extraction, especially to wetlands in the region. He first congratulated all the *LFW* members on their attentiveness to land management at a local level which is so important to the future of this state. He said that so many of us get distracted by looking at problems at a national and international level and that it is management at a local level that needs more emphasis. This led into his talk on providing more background information about the wetlands of the south west forests and the Yarragadee aquifer.

The south west forests are the coolest and wettest area of the western side of the driest inhabited continent in the world. The flora and fauna are adapted to fairly high rainfall with a very short summer dry period. This area also provides a very important freshwater flush into the Blackwood River all year round including during the dry summer months.

Research in the area on the different creeklines feeding into the system showed that the water in the creeks varies greatly in composition depending on whether it's catchment flows over sandstone, laterites, shales or granites. The organic loading in the wetlands is also extremely significant in that it gives the soils the peaty quality so that they hold much higher levels of moisture. This results in a special and unique composition of water that is fed into the aquifer and into the Blackwood River. Pierre also made reference to the Gondwanan elements of the landscape leading to many of the endemic and rare species and ecological communities. The big question asked by Pierre was: 'Do we know enough about this unique landscape to know the long-term consequences of pumping water out of the aquifer? If we try to override the natural resilience aspects of our ecosystems, then we are removing the protective elements for the relictual fauna and flora'. Needless to say, there were many questions!

After a shared BBQ meal the group prepared for the night activities. A talk on owls of the south west was provided by Ian Wheeler who is Muir-Unicup Recovery Catchment Officer with DEC. Then DEC National Park Ranger, Julia Northin, provided a detailed report on the animals that could be sighted during spotlighting and three groups set off on foot – one to concentrate on calling up owls. One group that contained many of the parents with children took the minibus, and were most successful spotlighting from the vehicle. The children managed to see lots of brush tail possums, a bandicoot, a tawny frogmouth, a long necked turtle, a cow and lots of grey kangaroos. The other groups saw very few animals, even the spiders were hiding. Perhaps they were deterred by the threatening weather!

Sunday's early morning bird walk, led by local bird enthusiast, Gwen Goodreid, recorded 32 species. The flora walkers, led by Penny Hussey, took two and a half hours to walk a flat 2.7km – a pretty good indication of the number of interesting plants! The list included a bladderwort and 13 different orchids. During this time the kids were having lots of fun practicing being 'fauna' survey scientists with all the measuring equipment and 'furry animals' brought by Sylvia Leighton.

"Thank you all for coming" said Julia, as people rushed around helping to clean up. Despite the lack of spotlighting success, everyone declared that it had been a great weekend, with meeting and talking to like-minded neighbours one of the pluses.

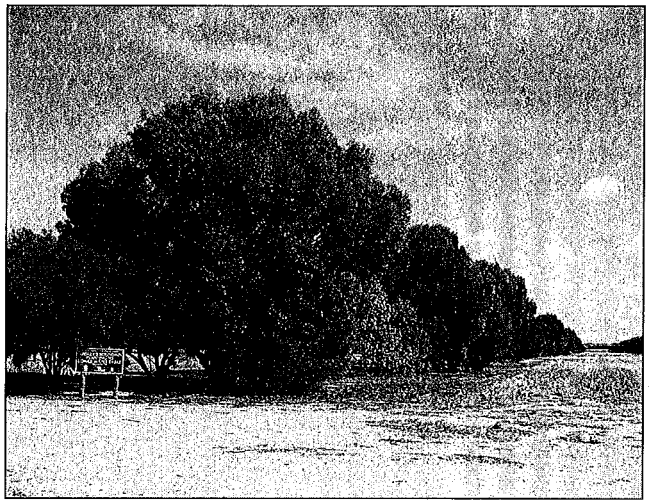
Pink petticoats, Utricularia multifida. Illustration: Allen Lowrie from 'Carnivorous Plants' Vol. 3.

REVEGETATION

ALLEY FARMING IN LOW RAINFALL AREAS - TRY IT - IT WORKS!

Mal Harper

Since the beginning of European settlement with the subsequent clearing of vast amounts of native vegetation, it is estimated that one million hectares of previously arable land have become saline in Western Australia. Salinity tends to occur largely in valley floors, which are normally the most productive lands from an agricultural viewpoint. Also, many small woodland remnants in the valley floors are adversely affected by rising groundwater. Landholders have adopted many techniques, both engineering and plant based, to bring their land back into production by lowering the watertable to at least 2 metres below the ground surface. One of the vegetation systems that has been used is known as the Boundain revegetation system. It derives its name from the locality near Narrogin where the first trial was undertaken. The system is also known as an alley farming system - where normal farming operations are carried out between rows of trees.



Boundain-type trial at South Tammin

At the original Boundain site, watertable levels before planting were approximately 1.5 metres below the surface. After five years, the watertable level had fallen to an average of 2.5 metres in the treed areas and remained constant in the non-treed control area. The measurements were taken from 69 observation wells constructed throughout the trial site. An added bonus is that the rows of trees can be a very effective windbreak for stock if planted so that they are aligned to protect against the prevailing winds.

On a recent *LFW* visit I was shown a Boundain-type trial in the Shire of Tammin - a Shire containing less than 4% remnant vegetation with only 1.6% remaining on farms. It is therefore an imperative to restore perennial vegetation on farms, and for it to be adequately protected.

The site is on a flat saline valley floor that has been cleared for approximately 100 years. The area is prone to waterlogging and occasional flooding and had become saline to the extent that that it was unsuitable for growing introduced crops and pastures.

The aim of the trial was to determine whether planting trees in two or three tree lines, with two and a half metres between each line and five metres between each tree in the line and a thirty-six metre strip where there were no trees planted before the next row of trees, would lower the watertable evenly in the bare strips to the extent that crops and pastures could be grown there. As the site was bare scald it was necessary to grow salt or drought tolerant species. Those chosen were: *Eucalyptus kondininensis*, *E. longicornis*, *E. platypus*, *E. occidentalis*, *E. sideroxylon*, *E. spathulata* and *E. torquata*. The area of the trial was 40 hectares and 8000 trees were planted in 1992, taking up approximately 10% of the area.

After a period of three years it was noticed that the watertable was lower and barley crops could be grown. At the time of the *LFW* visit the site had been cropped for years, the trees were flourishing and being used by a number of birds. Also seen was the cocoon of a swift moth and some blue butterflies, which indicates that the area is regaining health after being saline for many years. As remnant vegetation is very limited in the Shire, these types of plantings are very important for the provision of habitat for native fauna. At this site it would also be possible to create a corridor joining up with a reasonably large reserve, thereby improving the habitat. **It was very obvious that whereas this 40 ha was croppable, the adjacent land was not.** The system therefore combines improved agricultural production with habitat provision.

When the system was designed and implemented, the role of these types of plantings for the use of native species was not appreciated and they were basically used for increased agricultural production. As a result the range of species was limited to mainly salt tolerant

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REVEGETATION

SHELTERBELTS IN AGRICULTURAL LANDSCAPES SUPPRESS INVERTEBRATE PESTS

Land for Wildlife's introductory brochure contains a photograph of a fairy wren with a blowfly in its beak and the caption 'natural pest control'. We have always maintained that controlling pest invertebrates is an important role of the native fauna living in remnant vegetation, however this is a difficult thing to quantify (but see Anne Smart's superb example in WW 1/3, July 1997, 'Birds, trees and fly strike'). A recent article * at last provides good experimental evidence in support of our position.

Farming creates uniformity in the landscape, in which the invertebrates that rely on crops and pastures may build up in numbers as their source of food increases and their predators decrease. The predators often need perennial vegetation in order to survive; remnants, roadsides or planted linear strips such as shelterbelts or oil mallees, and are unable to reach prey populations in the middle of vast paddocks. Thus, costly chemical control of the pests is required.

In order to evaluate whether the shelterbelts harbour beneficial organisms, or the pests themselves, the authors, working in Victoria, sampled invertebrates along transects running from shelterbelts and into pastures, then conducted glasshouse trials on the impact of the predatory organisms found on known pasture pests. They worked with three widespread pests, redlegged earth mite *Halotydeus destructor*, blue oat mite *Penthaleus major* and lucerne flea *Sminthurus viridis*. They found that there were lower numbers of pests in pastures adjacent to shelterbelts, especially those with a well-developed understorey. They state: "Our study shows not only that alternative vegetation (shelterbelts) contributes to an increase in potential predators (predatory mites and spiders) of the dominant economic pests in pasture, but also that the structure of the margin itself is important".

They also show that the shelterbelts do not harbour significant populations of the pest insects, perhaps because of effective control by predators. Thus landholders need not be concerned that infection will emerge from the bushland. (This was confirmed during the 'Woodland fauna' workshop at Coorow, where the pea aphid *Acyrthosiphon pisum* was in plague proportions in the paddocks, but only one specimen was found in the remnants, WW 8/3 July 2004.)

Of course there are many more questions to be answered, not least how far into the crop or pasture the predatory invertebrates can penetrate. But this work is rigorous and well replicated. The authors concluded; "We have shown here that habitat heterogeneity and its management can have a direct negative impact on pest invertebrates".

Landholders seeking organic certification, therefore managing pest insects by methods other than chemical insecticides, should find in this research encouragement for establishing more perennial strips throughout their properties.

** Ref: Tsitsilas A., Stuckey S., Hoffman A.A., Weeks A.R., & Thomson L.J. 2006. Shelterbelts in agricultural landscapes suppress invertebrate pests. Australian Journal of Experimental Agriculture,* **46***: 1379-1388.*

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Alley farming

trees, all eucalypts. This will limit the range of fauna that can effectively use the plantation. Therefore with the advantage of hindsight, having observed the systems for a number of years, some improvements which would give the Boundain type design an increased dual purpose role could be incorporated in any new plantings.

It would be useful for different bird species to have a range of mid-storey shrubs to mix with the taller eucalypts. Some of the species that have some salt tolerance include: *Melaleuca uncinata*, *M. hamulosa*, *M. adnata* and *M. thyoides*. There are also a wide range of *Atriplex* species that could be used. Bluebush is likely to colonise naturally once the site dries out.

Observations at this site indicate that salt land plantings can achieve the dual purpose of improving production and increasing and improving the habitat for birds and some other fauna.

There are still many areas of low-lying land in the wheatbelt where the Boundain system could be effectively employed with positive benefits for both agricultural systems and the maintenance of wildlife habitat. If you've got a site like this, why not try it?

Mal Harper is LFWO at Merredin. He can be contacted on 9041 2488.

FLORA

MISTLETOE - FRIEND NOT FOE!

Wendy Bradshaw

If you - like me and many others - thought that mistletoe is a pest species that is killing trees and needs to be got rid of, then the staggering results of research in NSW need to be considered for their relevance here.

Mistletoe is the common name for plants in the Loranthaceae family, which in WA are all aerial hemiparasites with the exception of the WA Christmas Tree (*Nuytsia floribunda*) which is a root hemiparasite. They produce their own sugars from photosynthesis, but also passively take water and nutrients from the host to which they are attached.

Because mistletoes may not be as affected by drought as many other plants, they provide an important food source for many native animals, with extensive flowering and fruiting periods often peaking during the dry season, a time when few other plants can grow, let alone invest their energy in fruit or nectar. Mistletoe leaves are also highly nutritious, and do not contain any nasty chemicals, but instead are full of phosphorous, nitrogen, a cocktail of scarce trace-elements and plenty of water. Mistletoe fruits are exceptionally nutritious, supplying lipids, carbohydrates, and all 10 essential amino acids.

The tropical north of WA boasts the largest number of mistletoes, with around 31 species. Three of the six genera, *Decaisnina*, *Dendrophtoe* and *Diplatia,* are recorded exclusively at the top end. The genera *Amyema* and *Lysiana* occur in all regions, while *Nuytsia* occurs only in the south west. The expansive arid area between the tropical north and the

A large mistletoe on wandoo

temperate south west has around 26 species, and the south west 9 species. Different species have specific preferences for hosts, a few examples in the north being *Ficus*, *Acacia*, *Brachychiton*, *Eucalyptus*, and *Gardenia*, while in the arid and south western areas, *Acacia*, *Eucalyptus*, *Casuarina*, *Melaleuca*, *Santalum*, *Exocarpus*, *Hakea*, and *Grevillea* are favoured.

There are a large range of birds that feed on mistletoe, such as honeyeaters, cuckoo-shrikes, ravens, cockatoos, shrike-thrushes, woodswallows and many more. Mistletoe clumps also provide valuable nesting and roosting sites for a large number of bird species. Herbivorous insects enjoy eating the leaves and they are a favourite food of brush-tailed possums.

A recent study by David Watson in southern NSW*, compared two adjoining fragments of the same vegetation type, of similar size and grazing history. The owner of one fragment had systematically removed almost all mistletoe plants from the property since 1996, using a blow-torch from a trailer-mounted cherry-picker. Twenty one-hour surveys in each fragment over two years revealed 20% more woodland bird species in the fragment with abundant mistletoe and, more importantly, over 70% of the woodland-dependant bird species (30 of 44) were recorded more often in this fragment, including several regionally scarce species. Despite measuring a whole range of vegetation and habitat variables, no differences between the two fragments other than mistletoe density could be found.

The fragment from which the mistletoes were removed had about eight mistletoes/ha, a density typical of undisturbed woodland, whereas the untreated fragment had about 92 mistletoes/ha, which is characteristic of many fragmented habitats in eastern Australia. Does that sound a familiar story?

David's conclusion from this study is that without the resources provided by mistletoe, the impact of habitat fragmentation is likely to be much more severe. It is suggested that mistletoe only becomes a serious threat to trees when it is in very high numbers and in those situations, it is only one factor in declining tree health.

** Watson, D M 2004, 'Misunderstood Mistletoe' in Wingspan, March 2004, Birds Australia*

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A JOINT CELEBRATION!
10 YEARS OF LAND FOR WILDLIFE, 100 YEARS OF FARMING

A *Land for Wildlife* 10th anniversary event

One of the good things about being a *LFWer* is having the opportunity to meet like-minded people. Local field trips are a great way to do this, but a joint celebration of 10 years of *LFW* and 100 years of farming called for more - something a little different.

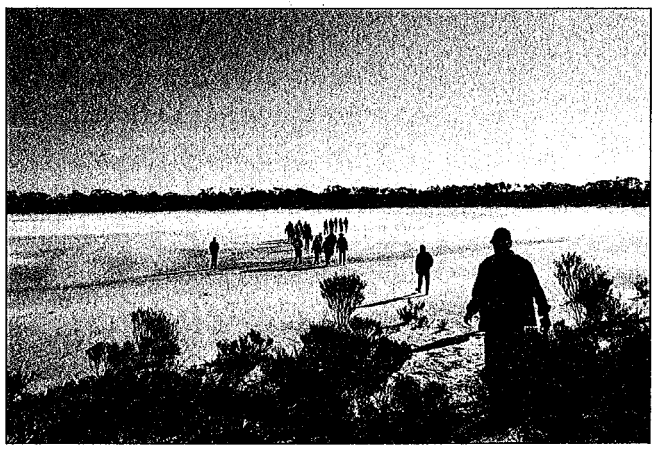
LFWers from the 'urban fringe' of Perth and Drummond Recovery Catchment or thereabouts, were invited to spend a weekend away in the northern wheatbelt. The destination was "Koobabbie", a 7,173 hectare broadacre wheat and sheep property belonging to John and Alison Doley. The property overlaps the Marchagee-Buntine and Waddy Forest Catchments, 260 kilometres from Perth. The invitation was enthusiastically received, with thirty five people participating (more wanted to come but logistics of catering, transport and accommodation meant some had to be turned away).

"Koobabbie" was first settled in 1906 and over the years the owners have successfully combined a commercial farming enterprise with nature conservation endeavours. Primary salinity covers an area of 1,864 hectares of the property and has high conservation value but low grazing productivity. In contrast, the area of secondary salinity that adjoins the lake system is productive grazing land. A key focus for conservation has been on fencing of remnant vegetation and management to enhance habitat for the endangered Carnaby's Cockatoo. Approximately 2,903 hectares, or 40% of the remnant vegetation on the farm is fenced off. Salmon Gums have been planted since 1987 to provide future nest sites for Carnaby's. In the short term, some artificial nest hollows have been erected to augment existing nesting trees.

John and Alison joined *Land for Wildlife* in 1997. It has been a case of *LFW* learning and sharing from their experience at field days and excursions hosted on the property and articles they have provided to *Western Wildlife*.

The weekend offered a fascinating glimpse of the special places, plants and animals that can still be found in fragments of the WA wheatbelt. Participants were able to explore a natural salt lake system, see rare plants and birds and hear about the activities of the Department of Environment and Conservation (DEC) Buntine-Marchagee Natural Diversity Recovery Catchment and the work to restore biodiversity assets threatened by salinity. Of particular interest were the two lakes visited; the gypsum lake with its fascinating gypsum crystals and the lake where the first record in Australia of the Hexarthrid rotifer *Hexarthra propinqua* was made- its occurrence at the site being due possibly to an introduction by migratory birds. In addition, there was a chance to learn about what farming used to be like, going back a century, with a meander amongst the historic buildings and a look at farm machinery spanning the years. And, of course, there was plenty of opportunity for socialising, especially around the campfire on Saturday evening.

A great weekend and a big thankyou to all those that made it happen, Fiona Falconer, Zara Kivell, Bob Huston and, of course, the Doleys.



Exploring the gypsum lake.

The group. Front row: Fiona Falconer, Alison Doley, Bob Huston and Zara Kivell.

CELEBRATION AT MARGARET RIVER

A *Land for Wildlife* 10th anniversary event

The theme was 10 years – what have we achieved? Where have we come within that time?

Wharnecliffe Mill was the venue on the 30th Nov. for over 35 people to get together to celebrate ten years of *Land for Wildlife* in the Leeuwin-Naturaliste region. The day consisted of a series of talks covering separate themes, with participants able to come or go at any point. The informality of the day enabled plenty of discussion.

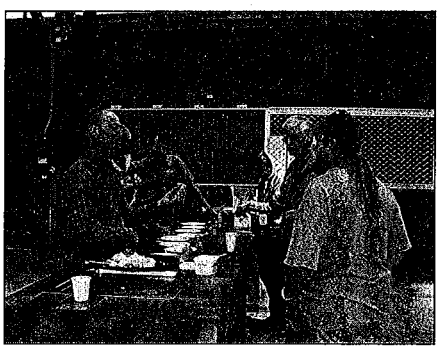
The morning's speakers were from DEC staff who have been involved in the *LFW* program and who have had valuable input into the *LFW* Officer's role and communication with the general community as well as *LFW* private property owners over the ten years. Where have we come in ten years? Certainly, better communication between DEC and the community in the local area.

First, DEC's Blackwood District Manager, Greg Mair, gave an overview of activities within the District, which extends to the eastern boundary of Boyup Brook Shire. Participants were surprised by the extent of the responsibilities as he touched on various activities. Greg emphasized the importance of *LFWers'* properties in providing stepping stones and corridors between reserved bushland.

Nature Conservation Officer Janine Liddelow gave a quick overview of the rare and threatened flora, fauna and communities in the local area. She also outlined problems with *Phytophthora* Dieback and how to manage it.

National Park Ranger Ken Ninyette gave a very interesting presentation on indigenous culture and heritage, emphasising that the need to know and understand country is the same, whatever your cultural or ethnic background. His 'bush spice tasting' was very popular!

The session immediately after lunch focused on *LFW* property owners' issues and achievements. Where have we come within the last



ten years? We have gained so much knowledge through both research and trial and error; we have learnt to use local provenance; we have learnt about ferals and local fauna habitat and we have seen the return of local fauna to rehabilitated areas!

Mike McCall described the trials and triumphs of actually recreating fauna habitat from ex-paddock over a seven year period. Richard Clark of Geographe Community Landcare Nursery emphasised the need for local provenance material and distributed a very impressive list of species being grown for rehabilitation. Neil Taylor discussed feral-proof fencing, including the research he carried out before attempting to build a feral proof fence on his property and the designs/materials actually used. Keith White demonstrated a cat trap, as well as some plaster casts of truly **enormous** cat footprints. FAWNA members Kristie Gawthrop and Cheryl Campbell distributed material on the care of native animals, while others in the audience gave a practical demonstration of care for orphaned youngsters.

The last session was geared towards – where to go now? What is in store in the future for *LFW* in the South West?

Cherie Kemp ran through some statistics of *LFW* properties in the State and in the South West region and asked the audience where they thought *LFW* could venture in the future.

New happenings in *LFW* in the South West: Steve McKinney from the Gracetown Progress Association impressed everyone by showing how professional a local community group needs to become in order to have an influence on Local Government development planning. He expressed the wish that 'the *LFW* model' could be used on Shire reserves. Ernie Stead-Richardson, Shire Environmental Officer for the Augusta-Margaret River Shire, outlined some future incentives for *LFW* property owners under their Draft Environmental Policy.

Cherie finished with a roundup of *LFW* activities in the region. "Thank you all for being marvelous people to work with", she said, and invited everyone to stay on for food and wine. "An especial thanks goes to some local *LFW*-registered vignerons who contributed some of their produce – now, let's party!"

NATURE PHOTOGRAPHY WORKSHOP

A *Land for Wildlife* 10th anniversary event

On 19th October 19 people attended a nature photography workshop for *Land for Wildlife* members in the Perth area at beautiful Kings Park & Botanic Gardens. Claire Hall welcomed everyone and gave an overview of the history of photography, equipment, digital cameras, composition, editing and printing. Claire also talked about the importance of photographic monitoring for landowners who have bush on their property.

"Mother and baby" photo: Mike Sibbald

Guest presenter Eric McCrum gave lots of very practical advice on photographing landscapes, sunrises, sunsets, insects, birds and flowers. Eric inspired everyone with his enthusiasm and his wonderful photos which illustrated the great diversity of our landscapes and wildlife.

In the afternoon practical session, Eric gave a demonstration of photography techniques near the Roe Memorial where a native garden has been established. Participants were then free to wander around and take photographs of the many colourful native plants in the area. A keen-eyed participant, Linda Evans, spotted a family of tawny frogmouths in a nearby tree and everyone rushed over, eager to put into practice what they had learned about photographing nature. The frogmouths sat obligingly as they had their photos taken – probably wishing we would go away!

We returned to the Biodiversity Conservation Centre for some refreshments and a further question and answer session. The day came to an end, but only because the building was being closed. We could have happily chatted for hours on the subject of nature photography.

Feedback comments included: "had a most enjoyable day and armed with loads of information", "excellent presentation", "very motivational", "great practical tips", and "has fuelled me to further my studies in this area". The huge amount of interest shown by *LFWers* in nature photography is very encouraging and everyone is asking "will there be another nature photography workshop?". We'll see next year. In the meantime, participants at this year's workshop are asked to submit three of their best photos to *LFW* for exhibition at our 10th anniversary celebrations next year.

"Wow, look at this!" photo: Claire Hall

MARGARET RIVER COFFEE MORNING

A *Land for Wildlife* 10th anniversary event

The first of a series of Coffee Mornings was held on 16th November at Jenny Stevens property near Margaret River. It was very enjoyable, with 16 people wandering through the jarrah/marri woodland and low-lying heath, searching out priority plants. It then absoluely poured with rain so we went inside for a cuppa and something to eat.

When the rain stopped (more or less!), the gravel pit rehabilitation was inspected. Some of the area has regenerated on its own, while in some places Jenny has scattered brush and seed or planted seedlings. She has her own little propagation nursery and she talked about how weeds were brought in with sand for the shed pad. She also realised that the heavy rainfall in winter was just running off the gravel and causing erosion, so she has carried out terracing. Little islands of seedlings grow where they have caught on the brush or the terracing.

People were still chatting at 1 pm, and the general concensus was that it was a great day and "Why can't we do this more often?"

Thank you, Jenny and Cherie, for a very pleasant event.

IN BRIEF

LOCAL AUTHORITY ROAD VERGE TREE PRUNING

Tree branches that lean across roads could form a hazard to traffic, especially for very large vehicles. Recently there has been some concern that Shire Councils are being unduly severe with the techniques and quantity of vegetation removal being undertaken. This stretch of Old Plains Road in Victoria Plains Shire shows how, with care and sensitivity, overhanging branches can be removed without destroying the biodiversity value and scenic quality of the road.

Old Plains Road is delightful rural road connecting New Norcia (in Victoria Plains Shire) with Toodyay (in Toodyay Shire). It is a very old track, established by the Benedictine Community in the 1840s, when all access to northern parts of the State was by sea, or via York and Toodyay. It passes through or alongside several very important conservation areas, and many of its verges still carry excellent native vegetation.

A few years ago, Victoria Plains Shire let a contract to remove overhanging limbs from many (all?) of its roads. Each limb was removed individually in such a way that it was cut clean and the rest of the tree was not damaged. The debris was then removed without damage to the understorey. The arrows show where limbs have been removed on the nearest tree.

This demonstrates that it is possible to prune for safety, conservation and aesthetics! It just costs a little more in the short term.

MARRI CANKER

A new brochure outlines the problems caused by this disease and gives excellent photos for field recognition of the symptoms of marri canker. You can download it from the Program for Australian Tree Health (PATH) website: http://wwwscience.murdoch.edu.au/centres/others/path/

The website also contains an online survey for landholders wishing to assess the health of the Marri on their property.

HOW TO MAKE NEST BLOCKS FOR BLUE-BANDED BEES

Blue-banded bees are large, attractive solitary native bees often seen frequenting blue-flowering plants in early summer. They are very important pollinators, especially for 'buzz-pollinated' flowers. You might like to encourage them by installing nest blocks. Consult Article 8 in Aussie Bee Online to find out how:

www.aussiebee.com.au Photo: Jacquie Hay

SOME THINGS DON'T CHANGE ...

In the Perth Gazette, on the 12th December 1840, the following comment appeared, under the heading 'Fire on the Swan':

"To persons lately arrived in the Colony, and unacquainted with the flammable nature of the bush in the summer season, we recommend the greatest caution. The rapidity with which a bush fire spreads will astonish them if they should be the unwitting instruments of bringing it into action. The end of a cigar thrown into the bush, or the remains of a pipe, will soon assist in producing a conflagration beyond the power of a number of hands to subdue."

NEW ROLEYSTONE BUSHCARE WEBSITE

Are you are a *LFW* member from the Armadale area? Check out the RoleyBushCare website at www.roleybushcare.com. Just a few of the many topics that would be very useful to landowners are: local frogs and fish; where to obtain native plant seedlings; balga grasstrees; a list of contractors; free courses; a notice board and contacts. There are links to the Dieback Working Group, DEC's NatureBase Living With Animals, Armadale Gosnells Landcare, City of Armadale, Urban Bushland Council, and Bush Skills for the Hills. The information could also be very useful to residents or community groups in other areas.

Claire Hall

WEEDS and FERALS

IT WAS NO ACCIDENT - WEEDS INTRODUCED BY GOVERNMENT AGENCIES

A recent paper* examines the role of deliberate plant introductions on the spread of naturalized flora in Australia. It shows that plant introductions for agricultural purposes – mainly fodder – have been immense. For example, over 70 years, Commonwealth Plant Introductions brought into the country 145,000 collections, of more than 8,200 species. These include more than 2,200 grasses and 2,200 legumes, representing about twice the indigenous flora in those families and about 22% and 18% respectively of the global flora of those families. The authors state: "For most of the 20th century, these and other introductions supported research into continental-scale transformation of Australian landscapes to support greatly increased pastoral productivity in order to achieve policy goals of maximum density of human population."

This is a fascinating paper, full of historical references and quotations, which clearly documents the dichotomy in attitude between pastoral researchers and landscape ecologists. It acknowledges also the change in public attitude that has taken place in recent years and urges that care be taken "to avoid making decisions that cannot be reversed".

If you are interested in weeds, or in cultural history, you will find this well worth reading. [If you wish, contact the Editor for a copy to be sent to you.]

* It was no accident: deliberate plant introductions by Australian government agencies during the 20th century, Cook, GD & Dias, L. *Aust. J. of Botany* 2006, **54**. 601-625

FERAL DEER

LFW staff were rather surprised to learn from a *LFWer* in the eastern half of Gingin Shire that feral red deer had been seen on the property. When deer were deliberately released in the past, they have died out, possibly through eating poison peas. Hopefully these animals will also not establish, because we don't need another feral pest!

It is important to keep track of the animals so, if you see a deer in the wild, contact the Department of Agriculture and Food's Pest and Disease Information Service on freecall 1800 084 881.

They can also provide information, including advice on the removal of animals.

GIANT REED

Giant reed, *Arundo donax* (often incorrectly called bamboo in WA), is a major problem on river floodplains in California. Although it's never been known to set a seed there, it grows from broken rhizomes and so far infests some 100,000 ha of land. Although it has some value – it provides 'reeds' for reed instruments such as saxophones and clarinets, for example, but this is only some 450 instruments a year – the detrimental effects far outweigh this.

It impedes river flow, causing bank undercutting and change of river course; when undercut by floods it collects against bridges and its weight can cause them to collapse; the rotting debris washes out to sea and ruins inshore fishing grounds; it uses twice as much water as native floodplain plants – important economically where the rivers are used for crop irrigation; and it is also more flammable than the native plants. The frequent, intense fires it carries have killed the trees and shrubs and altered riverine woodlands to a dense monoculture of giant reed. In addition, of course, it displaces local native plants and provides very poor habitat for native fauna.

So what to do about it? It can be eradicated, using a combination of herbicide, fire and mechanical digging, but it is costly and disruptive [as anyone who has tried to do so, such as myself, can attest! – Ed.] US researchers are looking for insect pests, and think they might have found a couple of useful critters. If they can find a biological control, maybe it would be useful here as well.

Tom Dudley, University of California Santa Barbara.

Did you know ...?

...that the soil temperature can be up to 9.6° warmer in recently burnt areas, compared with adjacent unburnt bushland where the soil is shaded by canopy cover and leaf litter? Since the devastating plant pathogen Phytophthora Root-rot (Dieback) grows more rapidly in warmer soil, it means that the disease expression (plant deaths) will be greater in frequently burnt sites.

Nicole Moore, Centre for Phytophthora Science and Management, Murdoch Uni.

[Remember this as a possible consequence if you decide to use fire to 'clean up' an area of dead banksia, for example. You may get seedling regeneration after the fire, but the reactivated *Phytophthora* will soon kill them. Ed.]

FAUNA

COMMUNITY FAUNA SURVEY - LOWLANDS COASTAL RESERVE

Sylvia Leighton

Honey possums, mardos, dunnarts, sand frogs, bardicks and bushrats, to list just a few!

What else would you want to be doing in early November other than getting up at 3.45am to go and do some fauna surveying when you are seven months pregnant? Actually I couldn't think of anything more pleasurable than being out in the bush seeing our native animals in the first light of the day. And so it was in early November that I went out to join the Youngs Siding Progress Association for the third fauna trapping survey session for this 12 month project.

The Albany TAFE 'digging in' team who installed most of the pit traps.

It was in mid 2005 that *Land For Wildlife* agreed to help the Youngs Siding Community carry out a fauna survey in their local coastal reserve which is located half way between Albany and Denmark. *LFWers* Brad Kneebone and Jill Williamson own a property that adjoins the coastal reserve and took on the role of coordinating the project. There are also quite a few other *LFW* properties in the near vicinity and everybody was keen to survey this City of Albany coastal bush reserve which is very dear to their hearts.

A typical 5am gathering of locals at Site 1.

Brad went ahead and applied for funding through Lotteries West to purchase the fauna survey equipment that was required. We were able to carry out the fauna survey under my DEC 'Fauna Survey for Scientific Purposes Licence' with me in the role of 'Chief Investigator' and we also gained approval for the project from the City of Albany and the DEC Animal Ethics Committee.

Clearing the traps in the morning with local community members.

We agreed we would carry out four seasonal sessions of five day fauna surveys over a twelve month period in sites that represented the four major vegetation communities of the reserve. A large part of this project is community education so at each session the community members were invited to come along and assist. We have had all age groups out helping with setting and baiting the drop pit traps, cage and Elliott box traps and then helping to clear them in the mornings. We also had assistance from the local TAFE Diploma of Conservation and Land Management students .

The survey has so far revealed the following small mammals; honey possums, coastal dunnarts, yellow footed antechinus, western bush rats and feral mice. The two animals we were hoping to find and which are still missing are the western pygmy possum and the quenda. We have also recorded the sand frog, banjo frog, green tree frog and motorbike frog . The spring session revealed a nice array of reptiles - crown snake, dugite and bardick. We had the delightful pleasure of capturing one of the beautifully patterned legless lizards which grow to about 50cms in length, our local bobtail lizard and five different skink species which still need confirmation of their identification. The last group of animals that we have noted are the insects and we have all delighted in the array of spiders, beetles, centipedes, ants and various other spineless wonders. The WA Museum is helping with the spider identification but unfortunately the rest of the insects will not be given proper identification for this survey. The local Birds Australia group have also been visiting seasonally to do bird surveys throughout the reserve.

continued on page 15

continued from page 14

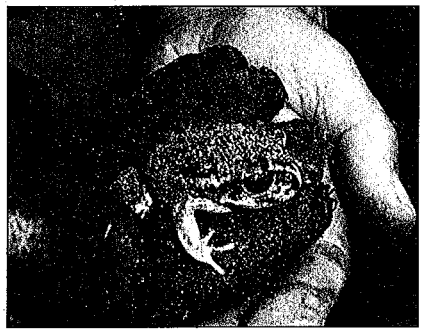
FAUNA

Fauna survey

Watch out for the sharp teeth of the coastal dunnart, Sminthopsis crassicaudata.

A mardo, Antechinus flavipes.

Project coordinator, Brad Kneebone, with a honey possum, Tarsipes rostratus.



The large-eyed sand frog, Heleioporus psammophilus. *(Note that frogs should not be touched by hand, because it would cause chemical contamination of frog skin by oily human sweat.)*

The bardick, Echiopsis curta, *often gets mistaken for a death adder, which does not occur in the Albany part of the South Coast region.*

There are no words to express the delight and pleasure all Australians of every age group feel when they actually see their local native animals up close out in the bush and get their first experience of being able to touch some of these special little animals. To be able to provide this experience for local community is a privilege and the visual rewards I get from the experience make the early morning rises well worth it.

Unfortunately there is clear evidence of some very healthy populations of feral cats and foxes in the Lowlands Coastal Reserve. Every morning reveals fresh tracks and scats from these formidable exotic predators. This will be the challenge for the local community to work in with the City of Albany to try and establish strategies to help reduce the numbers of these destructive animals in the future.

One more trapping session to go, then the results will be written up and recommendations submitted to the City of Albany.

SPIDER HUNTER

In late spring many predatory wasps can be seen carrying prey back to their nest. This striking orange and black insect is a ground wasp, probably of the genus *Cryptocheilus*. It digs a burrow in sandy ground by scratching it away with the forelegs and throwing it back between the hind legs. This one has caught a wolf spider which it has stung into immobility. It will stuff it into the burrow and then lay an egg on it. Keeping the spider alive but paralysed avoids the problem of the food decomposing while the wasp larva is developing.

Fiona Falconer

FAUNA

LESSONS FROM ANTS AND SMALL CREATURES

Sylvia Leighton

In November *Land For Wildlife* and Green Skills co-organised "Lessons from Ants and Other Small Creatures", a workshop and day field trip. The guest presenter for the day was Professor Jonathan Majer, who heads the Department of Environmental Biology at Curtin University. The workshop started at the Denmark Centre for Sustainable Living and then visited various rehabilitation sites in the Denmark area illustrating ecosystem rehabilitation in action. Sites included karri afforestation and wetland rehabilitation sites next to the Denmark River, bushland rehabilitation sites affected by introduced weeds and ants and finished at *LFWer* John Pate's spectacular show-case karri forest property.

Prof. Majer collecting invertebrates by 'shrub shaking'!

Prof. Majer is an Australian authority on ants and the value of invertebrates as indicators of ecosystem recovery. The first question he asked was "Why isn't entomology embraced by the general public and why don't scientists include insects in many fauna surveys?" Possibly the answer lies in the fact that worldwide there are just so many species of invertebrate that researchers feel overwhelmed and scared to look into this group of animals. Rough estimates of how many invertebrates exist around the world vary from 10-30 million – even the lowest figure is daunting enough!

Jon and his co-workers have recently done some research into the number of invertebrate species found in marri and jarrah trees. They sampled 160 trees and found 561 spp. in the canopy zone, 415spp. in the bark zone and 305spp. in the leaf litter zone. There was a little bit of cross over of species between zones but there were at least 1000 species of invertebrate found in these two particular eucalypt trees species alone! It is notable that marri has many more invertebrate species than do the jarrah trees. Because birds follow the insects, this also means many more bird species use marri rather than jarrah.

Jon then turned our attention to one of his favourite insects – ants. [See his article in WW 3/1- Ed.] Ants are believed to have evolved from wasps, whilst termites are believed to have evolved from cockroaches. There are thought to be at least four to five thousand species of ant in Australia. Of these, 497 (so far known) are found in the south west corner of WA from north of Geraldton to east of Esperance.

Different Botanical Regions host different numbers of ant species, and it is interesting that the Warren Karri Subregion has fewer ants than anywhere else. Jon's explanation for the drop in numbers in this area is possibly because ants evolved in warmer climes and they just don't spread out as well in the cooler areas. Ants contribute greatly to the pollination of flowers, dispersal of seeds and distribution of nutrients in the soil. Most of the ants in a colony are workers and they are all female, only breeding males when a queen needs to be mated. Many of the species also have fascinating symbiotic relationships with different invertebrate species. In the field Jon showed us a trail of ants going up a karri that were probably going up to collect sugars from a scale insect. The scale insect sucks the sap of the tree trying to extract proteins. It excretes large quantities of unwanted sugars which the ants remove, thus maintaining the health of the scale insect and taking some easily obtained sugars back to their nest.

During the field trip Jon demonstrated various methods of collecting ants; shaking them out of trees (bashing a plant with a stick actually!), collecting from the ground, trapping in pit traps, and sweep netting across foliage. He also encouraged participants to survey by torch light during the night, as often different species can be found. Examination of the specimens under a stereoscope would have revealed how distinctly different the body features were on each species.

All in all everybody had a fascinating day. Once again the workshop alerted us all to the issue that we need to learn more about the invertebrates in our landscapes. Having the expertise on hand to carry out the species identification is the challenge and our long-term vision is that one day we will have a team of entomologists who reside in the area and can carry out this role.

Sylvia Leighton is LFWO at Albany.

ECONOMIC VALUE OF BIODIVERSITY

TOURIST RADIO

Free promotion for your *Land For Wildlife* tourism accommodation property!

Land For Wildlife members Barry & Dale Green from Boronia Farm Farmstay at Donnybrook have come up with a novel way to promote *LFW* and in particular, properties that provide tourist accommodation. Barry & Dale also own Western Tourist Radio with stations in Perth and the South West dedicated to promoting the attractions of WA. The Tourist Radio website: www.touristradio.com.au includes a section for Special Interest Accommodation which includes a category for *LFW* Properties. You can view the page directly at:www.touristradio.com.au/pages/land_for_wildlife.htm. Barry is keen to add other properties, all that is required to be listed is a reciprocal link to the tourist radio website. You can contact Barry by email: barry@touristradio.com.au or phone 9731 7154.

Barry believes that tourism is important to conservation generally, he says: "Tourism presents risks and possibilities for conservation. Conserving the natural environment is of great importance for tourism, in fact, like it or not, tourism gives an economic value to the natural environment. It also provides an opportunity to educate people about the importance of looking after the natural environment and show how their actions can impact on the future. Owners of *LFW* properties offering tourism accommodation are in a special position to reach and influence an increasingly disconnected city population. Conversely, large scale tourism development can destroy the goose that laid the golden egg!"

www.touristradio.com.au/pages/land_for_wildlife.htm

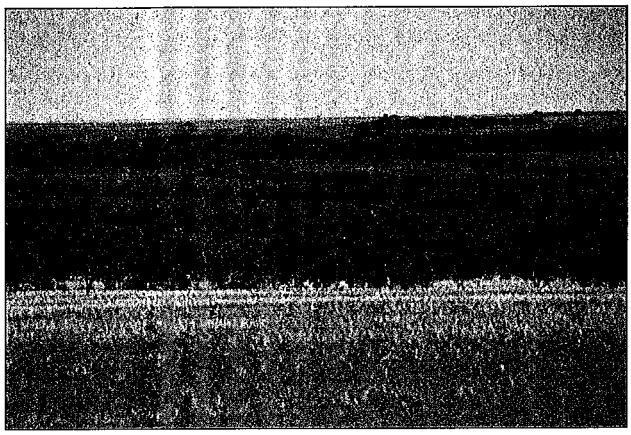
Did you know ...?

... that Australian Proteaceae seedlings are capable of surviving on nutrients stored in their seed for the first year and a half of seedling growth?

"Australian Seeds", p. 9

OIL MALLEES - THE QUIET ACHIEVERS

Over a decade ago a vision of a commercial tree crop across the WA wheatbelt was born and nurtured. The trees are grown usually in alleys on farmland addressing major land issues of rising groundwater and recharge leading to salinity.



They've provided conservation benefits of corridors linking remnant vegetation and created microclimates on properties assisting farm production. Their steady growth has created foundations for industries based around oil distillation at Kalannie, electricity and activated charcoal production at Narrogin, and carbon sequestration opportunities for farmers and large companies. Wood composite products, biomass and liquid fuels, and carbon sinks are potential products.

The Oil Mallee Association (OMA) anticipates investment capital coming from energy producing and carbon emitting companies needing to offset carbon emissions, and private investors seeking new industries.

OMA is updating an extensive new database to define the mallee tree resource in WA including species and tree planting and survival records. This information will provide the expanding industry with the basis for attracting new players. It will soon be possible to interrogate the database for tree tallies in Shires, OMA and NRM regions.

If you have information on plantings and survival rates, please call the Oil Mallee Association with your contribution.

Phone: OMA on 9433 1244.

NEW BOOKS

The Complete Guide to the Care of Macropods

Lynda Staker

Pub: 2006, author.

Cost: $120 + $8.10 p&h.

enquiries: macropodicmania@optusnet.com.au

This is the most informative guide to the hand rearing, rehabilitation and captive management of kangaroo species. There are detailed recommendations for all aspects of hand rearing and captive management techniques, cross referenced for easy page navigation. The section on injuries, ailments and disease is very comprehensive, and there is also specific detail about skeletal and muscular injuries and their treatment. There is also a section on medications and remedies, exemplified by case histories. It is all fully illustrated.

I am in awe of the work the author has put in to produce such a comprehensive compilation of her extensive work. Although costly, for a Wildlife Carer every cent is worth it. If anybody would like extra details about the book, you could ring me on 9834 3046 or refer to the email address above.

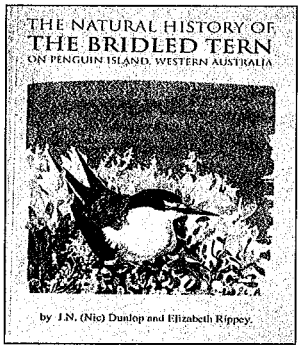
Pamela Valton, Cranbrook

The Natural History of the Bridled Tern

Nic Dunlop and Elizabeth Rippey

Pub: 2006. Rockingham Regional Environment Centre

Cost: $8.00 from RREC Naragebup, or 'Penguin Experience' on Penguin Island.



This little book provides a detailed insight into the life of the bridled tern, a seabird that nests on Penguin Island. It can easily be observed from the walkways and beaches. The book is beautifully illustrated by Elizabeth Rippey's evocative watercolours of the bird and its behaviour. If you haven't been down to Safety Bay for a while, obtaining a copy of this book is the perfect excuse for a summer outing!

From a young *Land for Wildlifer*:-

Q: What is one hoarsepower?

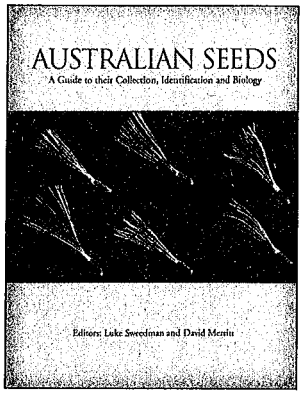
A: The basic unit of laryngitis!

Australian seeds: a guide to their collection, identification and biology

Ed: Luke Sweedman and David Merritt

Pub: 2006, CSIRO

Cost: $ 59.95

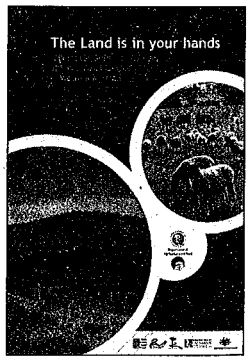


If you have ever collected native seed for a regeneration project, you will appreciate this book. It is a complete guide to the collection, processing and storage of wild-collected seed, including 1260 photographs of Australian species, showing clearly their size, shape - and beauty. If you are involved in flora conservation, this book will be invaluable. *(See article on p1.)*

The Land is in your hands: a practical guide for owners of small rural landholdings in Western Australia

Pub: 2006. Department of Agriculture and Food, Perth

Cost: Free from any DAFWA office



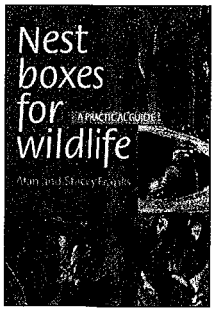
This is a revised edition of a booklet first published in 1999. It is a brief but comprehensive race through a multitude of topics, from drainage to disease, clearing to chemicals. An important strength is the lists of contacts for further information. All owners of small landholdings - especially if you have any stock - will find something of interest.

Nest Boxes for Wildlife: a practical guide

Alan and Stacey Franks

Pub: 2003, Bloomings Books, Melbourne

Cost: $19.95 from good bookstores



This is one for the handy-person! It describes how to make and install several different sorts of nesting boxes, and gives plenty of chatty information about the fauna that use them. Although written in the eastern states and describing some animals that do not occur here, it is still useful for people interested in backyard fauna.

NEW BOOKS

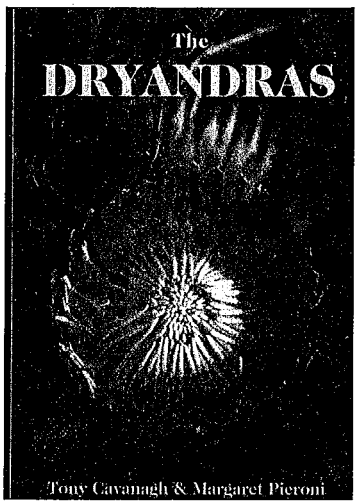
The Dryandras

Tony Cavanagh and Margaret Pieroni

Pub: 2006; Australian Plants Society (SGAP Victoria) and Wildflower Society of Western Australia.

Cost: $64 + p&h from good bookstores or WSWA direct.

Dryandras are found only in WA and this superb book illustrates and describes all of them. For each taxon (135) there is a botanical description, distribution map, habitat and cultivation information. It is lavishly illustrated with photographs and drawings. There are also chapters on discovery and naming, general biology and ecology, as well as some very detailed information on cultivation and propagation. Botanical experts could use the detailed species key for identification – though the average reader can by-pass this and just look through the book.



Margaret Pieroni has had a love affair with Dryandras for a very long time, and when she wrote an article for Western Wildlife in October 1998 (Dryandras – they are not all prickly shrubs! WW 2/4) the planned book was going to be illustrated by her paintings, similar to the Verticordia book she wrote with Elizabeth George. Perhaps we can look forward to a book of paintings in future?

After looking at this publication, go out into your bushland and search for Dryandras. You will be amazed at the diversity of species you hadn't even realised were there! And then try growing the ones that should have been there, but past land management has eliminated.

Even if you are a Hills resident who finds the prolific seed regeneration of pingle and parrotbush along your firebreak something of an annoyance, you will still enjoy this book. Dryandras are fascinating and often beautiful plants, and this magnificent publication will help everyone to appreciate them fully.

Penny Hussey

Bush Detective answer

It is the home of a burrowing crayfish (*Engaewa* spp.), a Dunsborough burrowing crayfish (*E.reducta*) to be exact.

Burrowing crayfish are small, 50mm total length, but they have large strong claws adapted to digging. They excavate extensive burrow systems that reach down to the water table, hence the large pile of soil pellets at the front door (exposure to wind and rain can smooth out the soil pellets and the chimney may look more like a rounded mound). These deep burrows provide refuge in the drier months and the burrowing crayfish does not have to rely on permanent surface water all year round. These secretive crustaceans were first discovered in the 1950s and very little of their life history is understood

Currently there are five known species of burrowing crayfish that are found in the south west corner of WA. Three of these are listed as Threatened Fauna.

The Walpole burrowing crayfish *E. walpolea* is vulnerable, the Margaret River burrowing crayfish *E. pseudoreducta* is critically endangered, and the Dunsborough burrowing crayfish *E.reducta* (pictured) is endangered. Clearing of vegetation and the alteration of drainage for dams and irrigation has had a major impact on the distribution of the burrowing crayfish. Compaction of soils and disturbance to remaining swamp vegetation by grazing stock is a continuing threat.

If you live in the south west Capes area north of the Margaret River and think you may have seen the chimney like burrows please let your *LFW* officer (Cherie Kemp) know.

Thank you to Kellie Mantle, Project Officer, DEC Kensington, for this information.

REVEGETATION

THE SEARCH FOR CARBON NEUTRAL PLANTING SITES

In 2002 Men Of The Trees Inc developed a Carbon Neutral Program where people could offset their carbon dioxide emissions by planting trees. The Program took off slowly at the beginning with seedling numbers from 2002 to 2005 totalling 78 500 trees. This jumped in 2006 to 230 000 and for 2007 we are currently looking at over half a million trees to plant.

We are currently searching for sites for these seedlings in the WA wheat belt that may assist with other environmental issues. To date our seedlings have been planted to control the spread of salinity, to stabilise soils from both wind and water and to create wildlife corridors.

We also don't limit ourselves to biodiversity plantings. This year our total also included 100 000 oil mallees and we would be interested in all other tree species as well. It is important to note however that the sites would not be able to be harvested during the time of the agreement.

With all our planting sites the Program follows the Kyoto Protocol's Guidelines. This states that they have to be over 2 metres tall when fully grown, in belts of at least 10 metres wide and occupy an area of at least 0.2 hectares. The Protocol also states that once a tree is felled all of the stored carbon is released again as carbon dioxide which is the limiting factor for harvestable tree crops.

In agreeing to have Carbon Neutral seedlings on your property the Carbon Rights will be registered on the land title. This ensures that every one realises that Men Of The Trees Inc has rights to that carbon and therefore cannot be sold to a third party.

A Carbon Covenant will also be placed over the seedlings for added protection. It is important to note that this covenant is purely over the carbon in the trees and you still own the land that the seedlings are on. The main reason for this covenant is in case the property is ever sold in the 30 year time period. It protects the trees from ever being destroyed if the next landholder does not see a need for them.

All of the details and conditions in the covenant are completely negotiable, for example if you run sheep on your property, it is written into the covenant that once the trees are big enough the sheep are allowed on to crash graze the site.

To cover the costs of this work (which is undertaken entirely by Men Of The Trees Inc) we do have a minimum of 20 000 seedlings per land title. They may be broken up over the title and may be on more than one location.

If you think that you may be interested in our Program and are interested in rehabilitating part of your property please call Erin Keeffe, Planting Coordinator, Men Of The Trees Inc. on 08 9274 4842 or by email mottplanting@iinet.net.au.

FUNDING

HEALTHY WETLAND HABITATS

Healthy Wetland Habitats is a voluntary program giving technical and financial support to landholders who care for wetlands on the Swan Coastal Plain.

Who can apply?

Any private landholder whose property contains a wetland on the Swan Coastal Plain, and who would like to better manage that wetland to ensure its long-term conservation.

How does it work?

Healthy Wetland Habitats assists landholders to develop a management action plan that will identify on-ground activities, such as fencing and weed control, that help to protect the wetland from threats and conserve the wetland in the long-term.

Once the management action plan is prepared, landholders can access funding of up to $10,000 to carry out the activities identified in the management plan.

If you already have a management plan, such as one written by a covenant programme or *LFW*, you may be able to progress directly to funding of on-ground activities.

How to apply

If you would like to develop a management action plan for a wetland on your property and are interested in receiving funding to assist you to do this, please contact Anthea Jones, Healthy Wetland Habitats Coordinator, on (08) 9334 0570.

ENVIROFUND

Envirofund Round 9 opens in February.

Contact your Landcare/Community Support/NRM Officer for details.

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 Environment and Conservation.
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