Department of Parks and Wildlife

Western Wildlife

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NEWSLETTER OF THE LAND FOR WILDLIFE SCHEME

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LAKE MEALUP IS BACK!

Jan Knight and Peter Wilmot

What went wrong with our lake? In nine years, it changed from a freshwater lake of open water and abundant waterbirds to a typha-choked acid scald. Lake Mealup Preservation Society members Jan Knight and Pete Wilmot (with assistance from Department of Park and Wildlife (DPaW) officer Heidi Bucktin) report on the Lake Mealup Recovery Program.

This is a story about community groups, government agencies, neighbours and other interested partners working together. It shows how long-term community monitoring can help identify a solution to a big problem. And it recognises the importance of good timing and a bit of serendipity.

It's full again! Aerial view of Lake Mealup looking south, August 2012. Photo: Ross Rose

Lake Mealup is a large freshwater lake two kilometres east of the Harvey Estuary and about 16 kilometres west south west of Pinjarra. It is part of the Peel–Yalgorup Ramsar System. Part of the lake and bushland to its south are managed by DPaW. Another 120 ha of wetland and bushland to the west (including a second smaller wetland, Little Lake Mealup) are owned by the Lake Mealup Preservation Society (LMPS), an incorporated not-for-profit organisation. LMPS, a *Land for Wildlife* member since 1998, has as its sole purpose the management of Lake Mealup for nature conservation.

Since purchasing land at Lake Mealup in 1986–88, we have been busy with programs to monitor flora and fauna, water quality and groundwater levels; weed control; fox baiting; revegetation and fencing.

From 1988 to 1993 Lake Mealup held water all year round. Water quality in the lake was good, and there were lots of waterbirds.

From 1994 the lake began to dry out each summer, probably due to changes in drainage and a decline in rainfall. Members started to notice changes at the lake. The water became very acidic, with the pH dropping to between three and four. The waterbirds mostly left. The bulrush (*Typha orientalis*) was taking over the stretches of open water.

We were initially mystified by the low pH. Hopefully, once rainfall improved and the lake held water all year round again, the problems would be controlled. Unfortunately, 12 years later the lake's condition was still poor. The lake water was highly acidic, there were unpleasant algal blooms each year and waterbird numbers were typically down to a few tens of birds at best. The typha had expanded to cover about 80% of the lake surface.

By 2006 we had collected 20 years' worth of water quality data at Lake Mealup. It showed that when the lake didn't dry out, the lake pH was neutral the following year, but drying events caused it to become acidic. Perhaps if a water source could be found to keep water in the lake year round, the acidic conditions could be reversed?

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Editorial

Greetings all!

I hope everyone has had a reasonable start to the season.

An inspiring story in this issue concerns the return of water to Lake Mealup. This is a magnificent example of the need to return to a more natural water regime if we want to maintain wildlife in our wetlands. It is also the story of a determined group of landholders working and lobbying for years to achieve an outcome that they believed would benefit the environment. An example to us all – you can make a difference, you've just got to keep trying!

There are also some superb members' contributions – Bert Maddock's bee holes, for example, a great idea for using waste material to provide habitat. And check out some of the unusual fauna stories – don't we live in a wonderful world?

Unfortunately, though, we live in a world where rapid movement of materials means that unwanted plants and animals can quickly and unobtrusively be transported across the globe. This issue contains a number of stories about the problems that such feral invaders – plant, animal and fungi – could cause to our ecosystem. But there are also ways in which you can help, please see if you are able to contribute to the citizen science and so help maintain our world-class native biodiversity.

Survey

The results from the questionnaire distributed in the January issue of *Western Wildlife* have now been collated and compared to previous surveys. They provided a very positive response to the *Land for Wildlife* programme – it appears you like the service we provide. Thank you for this endorsement, and for the suggestions for future action that you made. A summary of the results is given on page 6, but if you would like the full 11-page analysis, please email me to ask for a copy. For the readers without email (a few respondents took us to task about expecting everyone to have email) please phone and I will send you a printed copy.

Penny Hussey

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Name change

You will have noted in the media that the Department of Environment and Conservation (DEC) is being split into two separate entities. In July, the environmental regulation side will be separated off and will be called the Department of Environment Regulation (DER). The parks and biodiversity side will be given the name Department of Parks and Wildlife (DPaW). *Land for Wildlife* will be within this department. *Western Wildlife's* production will be delayed until the new logo has been approved, and thus you will see it on the front of this magazine.

Many staff will move office as part of this split, and Claire Hall and myself are no exception. We will still be within the Kensington office complex, but in a different building. The move is due to happen in August. We will also, probably, have new telephone numbers, and all staff will have new email addresses, see below (change of 'dec' for 'dpaw'). The new contacts will be sent out as soon as possible, but please be patient if you have difficulty reaching us. Note also the change in the website.

Contact details for *Land for Wildlife* Officers

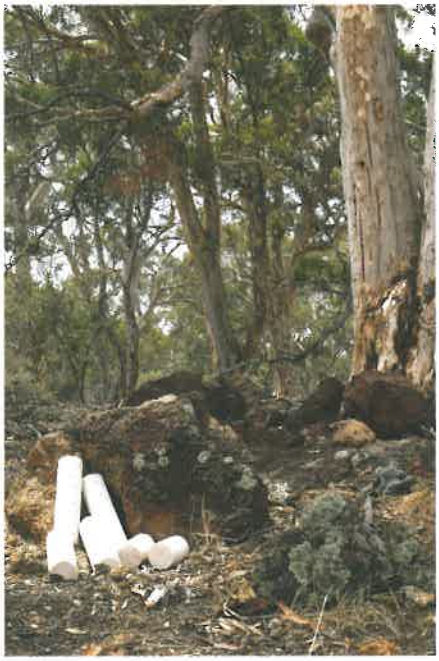
Name	Location	Phone	Email
Heather Adamson	Mandurah	(08) 9303 7738	heather.adamson@dpaw.wa.gov.au
Avril Baxter	Narrogin	(08) 9881 9240	avril.baxter@dpaw.wa.gov.au
Fiona Falconer	Coorow	(08) 9952 1074	fiona.falconer@dpaw.wa.gov.au
Wayne Gill	Esperance	(08) 9083 2118	wayne.gill@dpaw.wa.gov.au
Claire Hall	Perth	(08) 9334 0427	claire.hall@dpaw.wa.gov.au
Mal Harper	Merredin	(08) 9041 6004	mal.harper@dpaw.wa.gov.au
Sheila Howat	Bridgetown	(08) 9761 2405	sheila.howat@dpaw.wa.gov.au
Penny Hussey	Perth	(08) 9334 0530	penny.hussey@dpaw.wa.gov.au
Cherie Kemp	Busselton	(08) 9752 5533	cherie.kemp@dpaw.wa.gov.au
Zara Kivell	Mundaring	(08) 9290 6112	zara.kivell@dpaw.wa.gov.au
Sylvia Leighton	Albany	(08) 9842 4522	sylvia.leighton@dpaw.wa.gov.au
Dorothy Redreau	Albany	(08) 9842 4522	dorothy.redreau@dpaw.wa.gov.au
Phil Worts	Kojonup	(08) 9834 2242	philip.worts@dpaw.wa.gov.au

www.dpaw.wa.gov.au/landforwildlife

Habitat for native bees

I am a farmer in my 80's. We have been farming at Toodyay since 1976, and are proud to be members of *Land for Wildlife*. There has not been a fire through the bush on our farm since long before our time here. We have fenced off most of the remnant bush, which totals about 32 hectares. We have only rarely had to spray crops for grubs in nearly forty years, which I put down to the habitat available for natural predators in the healthy native vegetation as well as the many loose stones scattered about. In fact, I have come to see the loose stones on the property as an asset rather than as a liability, precisely because of the habitat they provide for a variety of ants and other insects to be found living under them.

Knowing that female local native bees like to build nests using existing hollows in wood, or whatever they can find, I decided to add to the available habitat in the remnant bush areas. We recently built a wall which involved removing quite a number of limestone core plugs in order to fix the colourbond fence to the limestone retaining wall. I drilled holes in the plugs (as per the photo) for native bees to breed in. Then I distributed them around the remnant bush areas to add to the existing habitat. I am getting old now and I enjoy knowing that I have contributed over the years to maintaining habitat for our unique native insects. And in turn, my farm has benefited from the presence in the ecosystem of native bees and other insects.



Bert Maddock

Pleasure or pain?

In May we captured an eventful moment in the life of the colourful little male *Maratus mungaich* jumping spider. He is all of around 3-4mm long. He is out on his first date. He meets his lady friend sitting on the same reed only 100 mm away. He must get her attention. He is beautifully dressed for the occasion. He raises his stunning wraparound mediaeval cloak from the *Maratus mungaich* clan and sways with this from side to side – a performance that would make Elvis proud.

Surely she can see him. But she was not impressed.

So he waves to her raising and lowering his much longer third leg from each side of his body – so desperate for her to look his way. He persists with his colourful display for about 10 minutes or so, his black eyes focused on her.

I suppose you know that it is pretty tough in the jungle for the little people.

At a defining moment she launched herself at him landing squarely on top of him. In less than a second his passion and ego was smashed to bits. He desperately freed himself from her evil embrace, diving for cover under some leaves, breathing heavily whilst thinking that at least he could live and love another day. She probably went off in a huff wondering whether to have takeaway for dinner instead.

Photo and story: Fred Hort

(Well, it is certainly an exciting story! Taken at Talbot Road Reserve, City of Swan. - Editor)

Mama Maratus
Photo: Jean Hort

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Lake Mealup is back!

The only source of fresh water nearby was from the Mealup Main Drain (MMD), a large agricultural drain running immediately to the south of Lake Mealup and discharging to the Harvey Estuary.

LMPS submitted a conceptual proposal to the then Department of Environment and Conservation (DEC) in late 2007, to divert water from the MMD into Lake Mealup.

This was the first instance of good timing that we experienced. The Peel–Harvey Catchment Council (PHCC) and DEC were developing a management plan for the Peel–Yalgorup Ramsar System. The LMPS proposal and its data highlighting the poor condition of Lake Mealup qualified it as a priority area for remedial action in the Peel–Yalgorup System.

The Lake Mealup Recovery Program was established, involving LMPS, DEC, PHCC, the Department of Water and other agencies. A Lake Mealup Technical Advisory Group (Lake Mealup TAG) comprising experts from the various partners directed on-ground work by DEC, PHCC and LMPS. Intensive investigations and monitoring during 2009–10 confirmed that the poor condition of Lake Mealup was due to the exposure of acid sulphate sediments in the lake bed during drying events. Investigations concluded that water in the MMD was of suitable quality and quantity to augment levels in Lake Mealup, and that diversion was possible.

To divert water into the lake, a variable height diversion weir had to be constructed in the MMD. This required numerous approvals from state and federal agencies, detailed design work and a major construction effort. Fortunately, funding was available for these major tasks via the Filtering the Nutrient Storm project being run by PHCC, who managed the approval process, design and construction.

Aerial view of Mealup Main Drain, August 2012, showing diversion weir in operation
Photo: Ross Rose

The weir was completed in December 2011, ready to divert drainage flows from winter 2012.

We expected that the increased water levels in Lake Mealup would help control the extensive typha stands. However, once water levels were increased it would no longer be possible to use mechanised methods. We decided to make a pre-emptive strike before commissioning the weir, using two techniques. This work was largely funded through a Caring for our Country grant provided through South West Catchments Council.

Jan Knight at the diversion weir, Sept. 2012.
Photo: Peter Wilmot

Firstly, green growth in thin stands was controlled by wiping with Roundup Biactive, applied from a boom on a quad bike.

Secondly, the impenetrable mature stands were controlled using a technique developed during this project. A Caterpillar D6 tractor crushed the dense stands by driving over them twice, in opposite directions. This was done in June, prior to the commissioning of the weir. We hoped that regrowth would be drowned by the rapidly rising water.

Being serious about atacking the typha!
Photo: Heidi Bucktin

The weir was commissioned in mid-June 2012. Weekly monitoring of water levels and water quality (pH, temperature, conductivity, dissolved oxygen and oxidation-reduction potential) was carried out by LMPS members under DEC direction. Despite poor rains in July, by mid-August the water depth in the centre of Lake Mealup was 1.2m.

Water levels in the lake peaked at a depth of 1.7m in early October. In comparison, in the previous 18 years without augmentation the peak annual level had been

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Lake Mealup is back!

Regrowth in November 2010 after an initial attempt to control typha with a small machine in April 2010. With no follow-up treatment, the regrowth was explosive. Photo: Peter Wilmot

The same site after dozer control and flooding , February 2013 Photo: Peter Wilmot

between 0.3m and 1m.

There was a dramatic improvement in water quality from early August. While the lake pH remained in the three to fur range as the lake levels began to rise, during two weeks in August it increased to over six. We believe this was largely due to breakdown of the crushed typha on the lake bed releasing bicarbonate which neutralised the acidity. Over spring and summer, the water quality stabilised with pH around seven. The water was highly coloured, which has minimised the potential for algal growth.

The rapid increase in water levels largely controlled typha regrowth. There were a few outbreaks which were controlled by hand-scale controls; cutting stems under water or wiping with herbicide.

The waterbirds are voting in favour of the changes. There are hundreds of birds on the lake: 26 species have been recorded since winter 2012 (mainly swans, ducks and grebes due to the high water levels) spoonbills, ibis and herons have also moved in. Water levels this season were too high for small waders. Darters are breeding in the fringing melaleucas. The lake looks beautiful: a large expanse of open water, with many waterbirds happily pottering about. What a delightful change from the barren lake when the project began: dry for half the year with only a handful of waterbirds from a few species present briefly in the acidic water.

We still have a lot to do. We need to hone our operating skills with the diversion weir. A culvert with drop-boards is being built in the channel connecting Lake Mealup to the MMD. This will give us more precise control of water levels in the lake and better protection against possible tidal surges of saline water from the Harvey Estuary.

We have to determine the optimal water level regime. How much water do we need each year to get the best water quality, while protecting the important fringing melaleucas? What's the best for waterbird habitat? What native sedges should we plant to provide habitat, and where? These questions will take time and detailed monitoring to answer. Fortunately LMPS members and DPaW officers are carrying out ongoing monitoring to gather the information we need, and our Lake Mealup TAG experts are keen to help guide the decisions.

Why has the project been so successful? We had a good water source nearby, the Mealup Main Drain. Our extensive historical data helped pinpoint a solution to the problems at Lake Mealup. We had excellent timing, coinciding with the Peel-Yalgorup Ramsar Management Plan and the PHCC Filtering the Nutrient Storm initiatives.

A major reason was having the right people involved; in LMPS, the then DEC, PHCC and other partners. They brought the expertise and enthusiasm needed to plan and deliver the project, and deal with its many challenges.

The lake itself seemed to motivate us. It was exhilarating to stand in the inlet channel and feel the water flow into the lake and watch it wetting the roots of the melaleucas that had not had surface water for 18 years. How exciting it was to wade out into the lake, staring in wonder at our water quality monitor showing a rising pH as the acid was neutralised. How satisfying to look across the lake and remember the typha, now gone.

As we paddle about in our little boat carrying out transects or observing from the bird hide, hundreds of waterbirds swirl overhead. Lake Mealup is back!

Peter Wilmot and Jan Knight are members of LMPS and have been actively involved with the management at Lake Mealup for 26 years.

RESPONSES TO THE QUESTIONNAIRE SURVEY

Penny Hussey

Land for Wildlife (*LFW*) was started in WA in February 1997 by the then Department of Conservation and Land Management (which became the Department of Environment and Conservation, DEC, and is now the Department of Paks and Wildlife, DPaW) and has been operating since then. In order to gauge participants' attitudes to the programme, a questionnaire has been included with *Western Wildlife* on three occasions, in January 2000, January 2005 and January 2013. The first questionnaire asked principally about the content of *Western Wildlife*, the later two included questions about *LFW* in general.

Results

Three hundred and fouty-five responses were received. As with the previous two surveys, the responses provided very positive feedback on the success of the programme. Some examples are given below.

** I found LFW staff knowledgeable and helpful – 94% agree*

** Since joining LFW, I have had a greater appreciation of my bushland – 85% agree*

** I have used the information gained from LFW to help me manage my land – 84% agree*

** The visit helped me to see my land from an ecological perspective – 84% agree*

** I find Western Wildlife (WW) interesting and informative – 99% agree*

** I keep copies of WW for future reference – 93% agree*

** LFW should continue property visits and revisits as at present – 90% agree*

Concern was still expressed that it takes too long from registering with *LFW* to receiving a visit by a *LFWO* - 16% list this as a major problem. It was also a concern in 2005, when 34% were dissatisfied. After that we put in a lot of effort in trying to cut down this lag time, and clearly have succeeded, but not well enough yet.

Another major concern expressed was the frequency (or infrequency) of stewardship revisits, with some people saying they didn't realise it was even possible to arrange these. Theoretically we would like to visit everyone every five years, and we admit that we are way behind with this. The problem is that all field staff are part time, and they have problems just keeping up with new registrations. If you have something interesting to show us – perhaps how well the revegetation has grown – please contact your *LFWO* to see what can be arranged.

This leads into another question, how many times a year do you contact *LFW* staff for a chat? 50% of respondents commented that they had never done so. This is a bit worrying – surely there is something you could have shared with us, sometime over the years? We really would like to hear from everyone!

There was very little support for distribution of information via electronic media, only 6% indicating that they would prefer to receive *WW* in an electronic format, although 33% did indicate that *LFW* should increase its involvement in social media and develop a better website.

Two respondents took issue with *WW's* editorial policy of not listing scientific references, but merely stating at the end of the article: 'for ref., contact Editor'. Essentially, this is a space-saver. Many reference citations are quite lengthy, and a decision was made, some 10 years ago, that the space would be better taken up with informative text. It would also appear that the vast majority of readers do not want to refer to the reference. On average, there is less than one request for a reference per issue – not many out of a distribution list of some 2,200. The highest ever number of requests for a specific reference, seven, was to an article from a Kings Park researcher concerning the soil residual properties of specific grass control herbicides. All of these requests came from colleagues in the NRM industry, none from property owners. Therefore, the current policy for references will continue.

Many people wanted more information on weeds, specifically detailed weed control information related to their property and vegetation type. Much of this information is available electronically and, as Editor, I will try to bring together a list of all the contacts that you might like to look at for help. For those without access to the internet (and several respondents indicated very strongly that they did not have this) you will, I am afraid, have to phone or write to me and request hard copies of what you might be interested in. Also, if you have not yet had a visit, please let the *LFWO* know what information about weeds (or anything else) you would like sent to you with the report.

With regard to future directions, there was strong support for continuing along the same lines, but in addition, extending the programme into greater assistance to shire councils as well as actively approaching landholders with good bushland to invite them to join the scheme. As well, some people did indicate that they would like greater assistance with accessing grants. You need to make sure that your *LFWO* knows that you are interested in this, so that you can be kept up to date with what might be available. We may be able to help with maps and some wording, but we won't write a grant application for you!

Summary

The questionnaire records a very positive response to the *LFW* programme from its client base. It does not indicate any major directions

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A PYTHON'S BREAKFAST

"My wife, Alison, and I were enjoying a morning cup of tea in bed when, through the panoramic windows I happened to notice a commotion amongst the 28s that usually gathered in the adjacent wandoos prior to their morning feed from the bird table. After a lot of noise and fluttering about the mob departed. After they left I thought that one of the birds was doing some sort of acrobatic sequence on its perch when I gradually realised that it might be in trouble and trapped by one of its legs. I got up to have a look through the binoculars and, to my amazement saw that a carpet python of about 1.5m in length had grabbed the bird and was just positioning its head into its jaws. Alison and I watched, fascinated, for the next two hours as the python gradually manoeuvred the bird down its gullet and eventually slid off somewhere. This all took place about 20m above the ground and we were amazed that the snake had the reactions to catch the bird and the fact that it was up that high to begin with. It must have been staking the place out and knew that the birds used that tree to check out the bird table before they flew down for their morning feed."

Allan Henshawe, Toodyay

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Questionnaire

for change, but reinforces that *LFW* is a popular programme, doing what it does very well indeed.

Thank you to all the persons who took the time and effort to rrespond.

The full report analysing all responses can be obtained by contacting Penny Hussey, Senior Project Officer *LFW* on:

(08) 9334 0530 or

penny.hussey@dec.wa.gov.au

Is this colour form common?

Jean-Pierre Clement photographed this beautiful pure white-flowered variety of the Blue Lescenaultia (*Lechenaultia biloba*) among laterite boulders on his property at Toodyay. He asks if it is rare.

Not rare, but certainly unusual. We presume that this is a simple colour mutation, but there are other variations as well, beautiful flowers with varying quantities of white in their throats and blue ends to the petals.

Blue Leschenaultias spread from underground rhizomes - these different colour forms would be superb in gardens!

THE MAJESTIC RED MORREL

Avril Baxter

The sight of the majestic Red Morrel (*Eucalyptus longicornis*) growing in the Wheatbelt is always something to stop and admire.

These tall open woodlands are found on lateritic, ironstone ridges or granite profiles along valley floors usually adjacent to saline areas and having very little understorey. They are a Priority 1 Ecological Community (PEC).

Ecological communities are defined as naturally occurring biological assemblages (plants and/or animals) that occur in a particular type of habitat and in Western Australia some are listed as Threatened Ecological Communities (TECs) i.e. they are subject to threatening processes and could be destroyed or significantly modified across most of their range. Others are recorded as Priority Ecological Communities (PECs) i.e. they are rare but currently not considered threatened with extinction but are in need of further survey work before their conservation status can be fully evaluated.

In many instances these remnant woodlands are found as a thin strip below a laterite ridge, with the majority of the community being subject to historical clearing for farming. Other threats to the eucalypt woodlands include salinisation and waterlogging in the lower landscape, invasion by introduced species, grazing, and altered fire regimes.

Darrel Dent who farms at Cuballing added another dimension to the picture. Darrel had been told that there was a sawmill operating on his property which harvested Red Morrel and the timber was sent to wheelwrights in York to be made into felloes.

This use is recorded in the literature, along with general use on pastoral or agricultural properties, also as mining timber and firewood. More recently, uses include craft wood and flute head joints.

The York Residency Museum notes that the first wheelwrights operated in York from 1893.

Many of the harvested Red Morrels on Darrel's property had coppiced. As this is an unusual sight, we sent this image to Malcolm French author of *Eucalypts of Western Australia's Wheatbelt*. He confirmed that Red Morrel have lignotubers and can resprout, but had never seen it occur to such a large extent.

If you have a patch of Red Morrel growing on your property and would like to record it on our TEC database,

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In many instances these remnant woodlands are found as a thin strip below a laterite ridge. Photo: Avril Baxter

Coppiced Red Morrel harvested for its timber in the early 1900s. Photo: Avril Baxter

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Red Morrel

please give your local *LFW* Officer a call. If possible we would like to record its location, size, species composition and condition.

Avril Baxter is the ***LFWO*** in Narrogin

The wood may have been sent to Bradshaw & Sons, Amos Coach Builders, who operated in York from 1893. Photo copyright and used with permission from the York Residency Museum. Date unknown.

Does anyone recognise this location?

This photo of a wheelwright's shop comes from the old Forest Department archives, now held by the DEC library. But unfortunately it has no information attached. It must be tall timber country, as this huge wheel is probably destined for a whim. It would be interesting to know more about it - the date, the place, the people? If you would like an electronic copy, so that you can enlarge it on your computer, please contact the Editor.

PETRICHOR

Did you know ... ?

... what causes that wonderful scent arising from warm dry ground after the first rains?

Two Australian researchers based in CSIRO, Joy Bear and Richard Thomas, were intrigued by the scent and worked out what causes it, publishing their results in the journal *Nature* in 1964. The scent comes from a yellowish oil trapped in the rocks and soil which is washed out by the first rains. They named it petrichor, from the Greek words petra (= stone) and ichor (= the ethereal fluid that flowed like blood in the veins of the gods).

But where does the petrichor originally come from? It is a chemically complicated mixture of at least 50 different compounds that affect one another to produce the scent, rather like the constituents of a perfume. It is thought that they originate with the volatile substances given off by vegetation such as eucalypts and wattles, which is sometimes so abundant as to be visible as a blue haze – hence the name for the Blue Mountains in NSW. Chemical reactions occur in the atmosphere and in the soil as the substances are adsorbed onto the rocks and into the soil. The first rains fill the pores of the soil with water, washing the oil out of the stones and releasing its smell.

Interestingly, the presence of petrichor in the soil retards seed germination. Could it be part of the complex process that inhibits germination until the conditions are right? That is, until the drought has broken with enough rain to wash it all out ...?

Bush detective

UNUSUAL EGGS, SEEDS OR BUDS?

Diana Papenfus

During a walk through Avon Valley National Park near Toodyay one recent beautiful clear autumn day, in an area of bush that had received a cool burn earlier that week, I came across an interesting pile of orange coloured, deeply grooved pea-sized lumps at the base of a young shrub of Honey Bush (*Hakea lissocarpha*). A search of the area revealed no clues. The surrounding terrain was blanketed by blackened and scorched leaf litter, easy to explore but not revealing. Examination of the plant presented no hints. The 'peas' were not seeds, nor were they buds (*H. lissocarpha* has a woody fruit). Squeezing the 'pea' indicated they were solid and they carried no scent. Questioning the expertise of my companions brought no answers either. What was this?

Do you know, or can you guess? Turn to p. 18 for the answer!

SPANISH HEATH - NEWLY NATURALISED IN WA

The flower buds are pink, turning white with age. Photos: Peter Hennig.

An infestation of Spanish Heath (*Erica luisitanica*) has been found on a road verge near Denmark. This is a very pretty plant that doubtless has escaped from someone's garden. It is also one of Tasmania's worst weeds.

We asked Iona Mitchell, the Tasmanian *LFW* Coordinator, whether we should be worried about this plant getting a hold in WA. She responded: "That is not good to hear that Spanish Heath has been found. Here in Tasmania it is a dreadful weed that can spread pretty quickly. We have a number of *LFWers* as well as covenant properties which have significant infestations of the stuff. The seed is readily spread by the wind, on the coats of animals (hence you often see plants along wildlife runway tracks) and council roadside slashing is another prominent mechanism for spreading plants along roadside verges and then into surrounding land.

"The best thing is to isolate the infestation to prevent the spread of seed. For isolated plants, cutting and pasting with a good woody weed herbicide will work and the plant tops can be left on the ground if you want. Follow-up will need to be done to check for seedlings, which can easily be hand-pulled if there aren't too many plants. For larger areas a boom sprayer can be used. It can also resprout from broken plants, or if the roots have not been pulled out entirely, so you need to watch for this.

"Getting in early to eradicate it before it does spread is my advice based on the areas and places I have seen it growing in Tasmania. It really is a terrible weed, so hopefully it will not get a foothold in WA."

All the wetter south-west would probably be suitable for Spanish Heath to spread into. However, it has been spotted early and, once the identity has been definitely confirmed, local weed groups and the various authorities will need to plan how to deal with it.

AN ODD FIND OVER EAST ...

A colony of Smooth Newts (*Lissotriton vulgaris*) has been discovered in Melbourne's south-eastern suburbs. Newts are amphibians from the family Salamandridae, having smooth skin like frogs, but in appearance they are lizard-like. They breed in fresh water but in the non-breeding season they live in leaf litter and under dense vegetation in the surrounding habitat. They are carnivorous, both juveniles and adults taking a wide variety of other creatures and thus, if they became established here, they could have a severe impact on the local food web. They also have another feature that could create problems at the higher end of the food chain. They produce a poisonous skin secretion known as tetrodotoxin. Anything eating a newt (wading birds or turtles, for example) would be poisoned. The Department of Primary Industries in Victoria is taking steps to control this population. If you would like to know more, enquire to: highrisk.invasiveanimals@dpi.vic.gov.au

So please, if you spot something that looks a bit odd, be it plant or animal, report it to a responsible person who could check it out. It is difficult to say whom you should inform, as it depends where and what the organism is. The Department of Agriculture and Food's Pests and Diseases section might help, or DPaW, or your local Shire Ranger or *LFWO*. A photograph always helps in verifying your sighting.

UPDATE ON THE EUROPEAN WASP PROGRAMME

Oonagh Byrne

European wasps are a declared pest in Western Australia. The battle to ensure they do not establish in WA is an ongoing one, as they are established in the eastern states. Each year fertilised wasp queens arrive via freight and cargo and seed new nests. Outside their natural range, they become a serious environmental and agricultural pest, with large nests housing many thousands of wasps. These high population densities would threaten WA's outdoor lifestyle, tourism, human health and the well-being of our pets and livestock. Horticulture, viticulture, and apiculture industries would suffer if this pest became established in WA.

During the cooler winter months, wasp queens will hibernate, often in freight and cargo en route to WA. These queens then emerge in spring to forage and establish new colonies which increase in size throughout the summer. Surveillance trapping is undertaken by the Department of Agriculture and Food WA (DAFWA) between November and May each year to coincide with wasp activity.

This season, the department installed more than 500 European wasp surveillance traps, mainly in the Perth metro area around known wasp 'hot spots'. DAFWA's surveillance program has expanded with the establishment of a European Wasp Working Group (EWWG) comprising DAFWA staff, local government and other interested parties.

An additional 300 traps were supplied to individuals and organisations to manage under the 'adopt-a-trap' program. *Land for Wildlife* volunteers, local government, industry and the public have helped expand DAFWA's trapping grid into regional areas including Albany, Geraldton, Mount Barker, Margaret River, Dunsborough, Busselton, Bunbury, Mandurah and Northam. The 'adopt-a-trap' scheme has also expanded into Perth residential areas not covered by the department's trapping grid.

This season, 39 European wasp nests were located and destroyed by the department. The majority of nests were in industrial areas, including 18 in the Welshpool/Kewdale area, four in Bayswater, two in Canning Vale, two in Maddington, one in Belmont and one at Bibra Lake. Several nests were also found in Queens Park, one in the grounds of a primary school in Belmont and one on a golf course in Canning Vale. Additionally, one nest was located along a cycle track in Redcliffe. Nests were also found in residential locations in High Wycombe, Thornlie, Gooseberry Hill and East Fremantle. Calls from the public resulted in the location of seven nests. Two were found with local government collaboration and the remainder through the department's trapping grid.

The good news is that there were no confirmed reports of European wasps in regional locations this season. However, in the past, nests have been found in Albany, Kalgoorlie, Eucla, Capel, Donnybrook, Falcon, Geraldton and Kalbarri, therefore continuous surveillance in regional WA is important.

A European Wasp's nest in sandy soil - scary, isn't it? Photo: DAFWA

Thank you to everybody who took part. Hopefully, we will have even more observers next trapping season.

More information about the 'adopt-a-trap' program is available by emailing info@agric.wa.gov.au or by calling DAFWA's Pests and Disease Information Service on freecall 1800 084 881.

NATUREMAP WEBSITE*

Judith Harvey of Curtin University/DPaW reports:

After years of work the results of projects in the Wheatbelt NRM are available on the NatureMap website

- Native vegetation maps compited by Ben Bayliss
- Wheatbelt woodland fact sheets describingcommunities,sub communities and reference sites by Judith Harvey
- Survey of gypsum dune communities reported by Anne Rick

Go to NatureMap <http://naturemap.dec.wa.gov.au./default.aspx> > Themes >Wheatbelt NRM Baselining Project for access to fact sheets and spatial data. Scroll down on the benchmarking vegetation page to the highlighted species names for access to the fact sheets.

*Carefully read the Avon Native Vegetation Map page on how to view and query the vegetation maps presented on NatureMap.

There are links to the products above and to the DPaW website for the Avon Natural Diversity Program <http://www.dec.wa.gov.au/our-environment/biodiversity/avon-natural-diversity-program/baselining.html> > Baselining > Terrestrial where reports supporting the NatureMap products are housed.

ADOPT A TREE TO HELP GUARD AGAINST MYRTLE RUST

Ian Dumbrell

LFW has been warning Western Wildlife *readers about the advance of this potentially devastating disease since October 2002 (WW 6/4). Alas, it is now a genuinely serious threat to WA - but you can help by becoming part of an 'early warning system'.*

Myrtle rust, part of the eucalyptus/guava rust complex (*Puccinia psidii*), is now established in New South Wales, Queensland and Victoria but it is vitally important for of WA's parks, gardens, native forests and reserves to keep it out of this state..

Vigilance by government, nurseries, local interest groups and concerned individuals is essential so we can detect it as soon as it crosses our borders.

Latest records show infestations on 200 host plant species in the Myrtaceae family and the number is growing. It is still uncertain how easily this disease will establish and persist in WA, however the latest combined climatic and disease phenology modelling suggests that the lower west, south-west and south-east regions are moderate to highly susceptible. Two-thirds (1,043) of WA's Myrtaceae species occur in just the five south-west WA IBRA bioregions thought to be most at risk from this disease.

It is likely that most of the 2,253 species of Myrtaceae found in Australia could become infected to some degree, although this wide host range may not be fully realised in the field. Many factors are required for the disease to establish, such as the presence of actively-growing young shoots, night conditions conducive to infection and abundant inoculum. Persistence and spread also depend on factors including climate, soil moisture, species richness and susceptibility.

Surveillance and early detection are critical to eradicating this disease should it enter WA. Using the same format as the European wasp monitoring program 'Adopt-a-trap', DAFWA has developed a monitoring program called 'Adopt-a-tree'.

Members of the public can monitor the health of susceptible species on a regular basis, helping to get the jump on the disease if it does appear.

If you wish to help in the surveillance initiative go to http://agspsrap31.agric.wa.gov.au/myrtlerust/ and click on the register button. The program is based on Google maps, so once authorised you can log on and establish your monitoring site or sites simply by zooming in to locate your exact location, right clicking on this (or control clicking on a Mac computer) and then clicking on the 'add tree' box that appears. This creates a dialogue box that you use to fill in your details. You must scroll to the bottom of this dialogue box and click on 'save' to establish your site.

To update your surveillance information every few weeks, simply log on and click on your 'tree' which will open the dialogue box. Enter information into the 'inspections' box and click on save.

Infection and spore formation occur on the undersides of leaves first and this should be remembered when inspecting plants for symptoms. The most common, and most easily recognised, are the uridiniospores (asexual life phase) which show as masses of bright yellow or orange-yellow spores. Associated lesions are usually purple. Less common are the teliospores (sexual phase) that have mid to dark brown pustules and spore masses that are much harder to distinguish.

Myrtle rust produces lesions on young, actively growing leaves and shoots, as well as on fruits and sepals. Leaves may become buckled or twisted as a result. Severe rust in young trees may kill shoot tips, causing loss of leaders and a bushy habit.

Rusts are highly transportable. The most common dispersal mechanism is wind, but they may also be dispersed by honey bees who work the spores on leaves. Spores can also be spread via contaminated clothing, infected plant material, insects and animals.

If you notice symptoms that may be myrtle rust call the Exotic Plant Pest Hotline on freecall 1800 084 881 as soon as possible.

You can also click on the 'Suspect Symptoms' button in the dialogue box for your 'tree'. This acts as a record but will not alert biosecurity authorities.

Do NOT collect samples for identification as this can spread the infection. Immediately wash any clothes and skin that may have come in contact with the spores.

Ian Dumbrell is DAFWA Myrtle Rust Coordinator

Above: rust on leaf

Below: Spores on coat

Photos CSIRO

'DE BAIT DEBATE' CONTINUES ...

The following is written as further comment on the issue of bait efficacy raised by Paul Downes in the April 2013 edition of Western Wildlife.

DEC (now DPaW) has been using its own sausage meat bait known as Probait® for fox control since 2007. Prior to this it used dried meat baits produced by the Department of Agriculture and Food WA (DAFWA). Comparison trials prior to the changeover of bait found no significant difference in the uptake of Probait® as compared with dried meat baits (Marlow, unpublished report). As part of this, results at White Wells and Lochada stations showed extremely high uptake (averaged at 87%) of each bait by foxes at the respective sites.

In terms of effectiveness, a trial by the then DEC in 2011 in Kalbarri National Park found fox activity and abundance significantly lower in the long-baited area of the park compared with the non-baited area of Murchison House Station. Moreover, it took on average 30 times the effort to trap each individual fox in the baited area compared with the non-baited area. This is suggestive that broadscale baiting under *Western Shield* has been effective in suppressing the fox population in Kalbarri National Park. Additionally, the majority (83%) of foxes in the bait-naïve test population of Murchison House Station died, most likely as a result of aerial baiting with Probait®.

As part of the usual baiting conducted by DPaW under the *Western Shield* program it is acknowledged that total eradication of foxes is not feasible and that individuals will persist in an area and reinvasion is inevitable. DPaW considers the use of 1080 meat baits as the most effective and efficient tool at controlling foxes on a broadscale level. It is recognised that other on-ground measures may be required to deal with animals that persist after a baiting campaign.

There may be some benefits of using egg baits on a smaller and localised level particularly in wetter environments e.g. wetlands; however the longevity of egg baits in the environment can present issues for managing risk to domestic animals and uptake by native species, such as goannas, in summer months can be very high (Twigg et al 2001)

There is evidence of native species such as possums and quokkas taking meat baits including Probait®. However, the size and extremely tough nature of Probait® minimises the consumption of these baits by native species (Martin *et al* 2012).

DPaW is aware of the issue of the interference of baits by native species and the likely impact this may be having on availability of baits for foxes. While this may have some impact on the effectiveness and efficiency of baiting, this issue needs to be considered in the context of a fox population which is most likely already suppressed as a result of long-term baiting in an area. Research is being conducted by DPaW in the forest zone to examine the effectiveness of different bait types and bait placement to improve uptake by foxes and minimise interference by native species.

To obtain full references for the publications cited above, please contact the author, Ashley Millar, Western Shield Coordinator DPaW, on Ashley.Millar@dpaw.wa.gov.au

PLEASE NOTE: If you change your postal address, phone number or email, please let *LFW* know.

LAND FOR WILDLIFE GETS WITH THE TIMES!

Well it has finally happened! *Land for Wildlife* has been brought into the 21st century via the recent publishing of a *LFW* page on the social media site Facebook. This is potentially a new way for members to interact with *LFW* officers, each other, and post queries about things they may have noted and photographed in their corner of the state. When regularly checked and updated by *LFW* officers we can provide fast responses to any such queries. It also provides a chance for *LFW* members to share what is great about 'their patch' and we encourage members to share photos and a few words about where their *LFW* property is, and why it is so special to them. It also gives us the opportunity to share information and stories with a wider audience through the sharing networks of viewers of the page.

If you are on Facebook and want to be a part of the ongoing evolution of the *LFW* program then you simply have to 'Like' us at www.facebook.com/LandForWildlife and start sharing. We are still having some minor teething problems but sorting them out as we go. On the page at the moment are some lovely flora, various frog species, fungi, birds and Miss Pygmy (a cat-orphaned juvenile Pygmy Possum). Posts by others include a shot of a chuditch and an echidna captured on a motion camera as well as various insects.

Wayne Gill

SHARE WITH US ON FACEBOOK!

SUMMER TIME HIGHLIGHTS THE FERAL HONEY BEE 'STING'

Sylvia Leighton

Over summer there have been calls coming in from *LFW* landholders who are experiencing problems with aggressive introduced honeybees dominating their water source outlets on their properties. They often overcrowd the water source so even the native local birds are kept away from garden bird baths. The dependence of introduced honeybees on a permanent water supply over the hot dry summer months can cause bees to 'zone in' desperately seeking the moisture they need to survive.

Feral bees are beginning to be recognised as a statewide problem in WA. In early December 2012 a *Forum on Feral Bees* was held in Albany. It was co-organised by *Land For Wildlife* and Green Skills. There was a range of speakers including Rob Manning (Beekeeping Industry researcher DAFWA) who brought together the history of honeybee introductions into Australia and presented details of their favoured habitats. Alan Danks (environmental consultant) talked on the ecological impacts of feral bees. Sean Bryce (DPaW Apiary Coordinator) explained how apiary sites are assessed, and Roger Tschabotar and Bart Lebbing (long-time commercial apiarists) spoke from their experiences as commercial beekeepers.

Bee introductions into WA

After 20 years of various attempts, the European Honeybee finally arrived in Fremantle in 1841. They were said to be the English Black Bee *Apis mellifera mellifera* and were successfully bred to establish WA's first domestic apiaries. In the 1930s Rottnest Island was a government bee breeding ground and the Slovenian Grey Carniolan Bee *Apis mellifera carnica* were bred. In the 1970s the Italian bee called *Apis mellifera ligustica* was imported and also included in the government breeding programme on Rottnest Island.

European bees that are properly bred are usually not too stingy (generally hybrid crosses with feral bees make bees stingy). Some domestic bees become so passive and familiar that they can be picked up by their apiarist with no special clothing protection. Unfortunately, ever since the postal service and shipping services were set up into Australia, bee varieties have been coming in from all over the world. Even USA bee genetic stock arrived in Australia at some point in time. In 1977 the WA borders were closed to further bee introductions with quarantine checks tightened and there have been no known new bee varieties introduced from this time. A study of the genetics of bees in WA in 2008 found that feral bees were mainly from Italian, Spanish and French origins (possibly via New Norcia monastery). Some races of bees like the Carniolan are now believed to have died out.

Introduced honeybees are found from the Kimberley to the south coast. Most will be found near water. They will swarm about 300 to 400 metres away from their hive with about 10% going as far as a 2km radius of the hive. The furthest distance an introduced honeybee is known to have flown away from the hive is 10km (in a tropical area). Feral bees have been found in areas where no apiary sites have previously been recorded, for example Creedo Station where the nearest bee site was more than 150km away. With limited research in the state of WA, the feral honeybee density is believed to be worst just north of Lancelin. A survey revealed 1.68 colonies per ha. Coastal areas in general are not too dense in feral bee populations because of lack of trees and water.

Feral bees at a hive consisting of a narrow crack in a dead log. Photo: Sylvia Leighton

An open feral hive on Eucalyptus staeri, *Wellstead. Photo: Sylvia Leighton*

Ecological impacts

Like introduced honeybees, the native WA bees also collect pollen and honey and take it back to the nest to feed their young. There are at least 150 species of native bee in the south coast region and probably many more yet to be identified. Ecosystem-wide impacts of feral bees are difficult to elucidate. Research has shown that New Holland Honeyeaters often avoid flowers that are being worked by

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Feral bees

European honeybees, often changing their pattern and timing of feeding. Introduced honeybees are known to take over hollows that are used by our native fauna – for example possums, phascogales, parrots and cockatoos. There is particular concern in relation to black cockatoos, as feral bees are known to have caused the death of cockatoo chicks in the nest hollow. Research has shown that in general the feral honeybees prefer a hollow cavity size of 30–31 litre size (they definitely do not like smaller areas like the 5-litre volume cavity). Black cockatoos prefer a 113-litre hollow size. The feral bees can choose this but it is not their preference.

Feral bee nest requirements

Feral bee nest requirements include: size of hollow and of entry hole, location above the ground and amount of light striking the cavity. Swarms weigh between 290g to 3.7kg so these different-sized colonies will be seeking different-sized hollows. Feral bees love manmade structures like power boxes but in the bush they can be found in tree fissures; in caves and cliff overhangs; even subterranean where the hive goes underground or sometimes they nest as an open air colony but these will come and go due to climate. Sometimes the hive will get too hot in summer and the wax will melt and the hive will drop onto the ground, while in winter they cannot keep the hive up at 34 C° and use too much nectar to generate heat. When the nectar supply runs out the colony will usually perish. Sometimes the queen dies and then the colony dies. There is a 40–50% annual mortality of feral bee colonies.

Control options

There have been pilot programmes that have been run in the state using chemical treatments to kill feral bee hives. However results indicated that the toxin was residual and could remain in the environment for up to 172 days with the poison impacting on non-target species and the potential for the toxin to accumulate higher in the food chain. The use of this poison for bee control is tightly controlled (need to apply for APVMA permit from Canberra) and it would not be granted to members of the public. Other methods like gassing through the use of flea bombs or the use of petroleum fuels as fumes to kill bees are not approved methods (a plastic bag surrounding hive needed to control fumigation gas).

A very effective non-chemical control method was described by Rob Manning:

"Using a pump spray of dishwashing liquid (thimble full in 7 litres) will kill the bees. The dishwashing liquid penetrates the hairs on the bees, cooling them and making them weigh more, and they die very quickly."

For more detailed notes from the talks and discussions presented at the *Forum on Feral Bees* held in Albany in 2012 contact Green Skills, Denmark.

A BUMBLEBEE AMONG THE RASPBERRIES!

© DAFWA Entomology, Pia Scanlon

This supermarket customer got more than she bargained for when she opened a punnet of raspberries from Tasmania – a live Bumblebee! The species was imported to Tasmania to pollinate greenhouse tomatoes, but instead has become an environmental pest. This is the first time one has been reported in WA. They compete against native bees and honeybees for pollen and nectar and are known to actually destroy many flowers when foraging. DAFWA's Pest and Disease Information Service (1800 084 881) confirmed the identity and commended the finder for reporting it.

But this sterile worker bee had another surprise in store. After she had been euthanised, she was prepared for photography by combing her hair – and out fell over a hundred tiny parasitic mites! They have been sent off for identification … will they be native, or exotic?

A DESTOCKED FLOODPLAIN

Floods in December 2011 topped up the soil profile with fresher water. Photo: Dusty Miller

Above: Eucalypts and melaleucas are regenerating on the edge of the river system and will eventually thin themselves out.
Below: Margaret Miller and friend viewing Flooded Gum (Eucalyptus rudis) regeneration after the flood waters have receded.
Photos: Dusty Miller

After heavy summer cyclonic rains, low lying areas along our wheatbelt rivers are often inundated with fresher water.

These areas, known as floodplains, hold water for some time and slowly release it back to the river system reducing the river's peak flood levels. They create a seasonal habitat for animals and as the water recedes, rejuvenating silt is deposited across the land.

The water, coupled with the warmth of summer, also results in a massive regeneration of summer weeds and native vegetation from seeds that are carried into the area by the flood and seed fall from existing vegetation.

Dusty and Margaret Miller's along with Robyn and Brad Flett's properties on the banks of the Arthur River north of Wagin were inundated by floods in December 2011. Just one year after the event, both landowners are amazed at the amount of natural regeneration on these destocked properties.

When the Fletts bought their property in the summer of 2008–09, they noted that much of the ground was bare and began planting tree belts, but it took a flood to completely change this landscape.

One year after the event, the main river system is fringed with young eucalypts and melaleucas, replenished claypans are covered in native grasses, swamp sheoaks are regenerating around billabongs and in low-lying areas there has been a massive regeneration of York gums, flooded gums, sheoaks and melaleucas. Nature was very effective!

As always this technique can be mimicked, native seed can be cast upon the water, find its own niche and germinate on the strandline.

Avril Baxter

Woolorama

This year's Woolorama coincided with election day. The then DEC's Covenanting, *LFW* and Roadside Conservation officers joined other NRMOs to show how landowners can act positively for Landcare on their property. "Vote 1 for Landcare" was at great success at Woolorama.

BEWARE - LITTLE GREEN MONSTERS IN THE MULCH!

Sophie Moller

If you've travelled to south-east Asia or Queensland, this plant is probably familiar to you as 'the shy princess' or 'sensitive plant'. Its name is *Mimosa pudica* and it is one of the few plants in the world that is capable of 'seismonastic' movements. Its leaves close in response to shaking, touching, blowing or warming. When the plant is disturbed, specific regions on the stems are triggered to release chemicals which force water out of the cell vacuoles and the cells collapse from a loss of pressure. Over time, the water is returned to the cells and the leaves reopen. It is thought that this mechanism evolved as a response to predation or to dislodge harmful insects. The plants stems are also covered in thorns, so it clearly doesn't want to be eaten!

Above: Sensitive Plant with leaves open and closed. Photos: Sophie Moller
Below: Sensitive Plant, a prohibited pest plant in WA, in flower. Photo: DAFWA

Originally from south and central America, *Mimosa pudica* has arrived in Perth before but fortunately has been eradicated. It is still an invasive weed throughout many other parts of the world. Its much larger and weedier cousin the Giant Sensitive Plant (*Mimosa pigra*) has been found most recently in the East Kimberly, and is undergoing eradication. *Mimosa pigra* is listed as a Weed of National Significance (a WONS) as it grows quickly and outcompetes native vegetation. Both species of *Mimosa* prefer tropical conditions and would thrive in WA's warmer parts.

The *Mimosa pudica* plants shown in the photographs above arrived in sugar cane mulch imported from Queensland. They were found growing in a Perth garden by a former Queensland resident who recognised them as a new weed and alerted (DAFWA).

The import of sugar cane mulch, used by many home gardeners in WA, was restricted from 31 May this year, because of its potential to carry seeds that could threaten the state's biosecurity and agriculture. After this date, a permit will be required to import sugar cane mulch, and permits will only be issued if a system or treatment is in place to ensure its freedom from risk seeds.

The restrictions will be introduced under the new *Biosecurity and Agriculture Management Act 2007* (BAM Act) and regulations, which were fully proclaimed on 1 May and replace a number of other Acts, including the *Agriculture and Related Resources Protection Act 1976*, the *Plant Diseases Act 1914* and the *Seeds Act 1981*. The BAM Act provides a new approach and improved efficiency for biosecurity and agricultural management in WA.

Invasive plants (or weeds) are one of the greatest threats to bushland, and they should be prevented from establishing in new environments. All of us need to be constantly vigilant so we can identify new weeds before they get a toehold. If you find a new plant in your garden, and you're not sure what it is, you can contact your *Land for Wildlife* Officer. If they can't identify it, they may send it on to the WA Herbarium for assistance.

Sophie Moller is Policy Officer, Invasive Plants in DPaW. She can be contacted on: sophie.moller@dpaw.wa.gov.au

Did you know ?

How Stinkwood got its name?

George Fletcher Moore arrived in the Swan River Colony in 1830, barely a year after first settlement. He was a lawyer, a poet, an explorer and a farmer and the letters and journals of his first ten years are full of interesting insights into what it was like to make such a dramatic change in lifestyle. He was also fascinated by and concerned about the Aboriginal people and he published a descriptive vocabulary of the local language.

From his writings we learn that the Nyungar people knew to avoid using timber from the Green Stinkwood tree (*Jacksonia sternbergiana*), which they called Kapbur, as firewood, because it has a most unpleasant smell. (When I first arrived in WA I had to try it, and indeed it smells foul, like long-unwashed urinals!) I've also been told that if sheep graze this plant, it will taint the meat with the same unpleasantness. Nevertheless, it is useful in revegetation, as it germinates easily, grows fast and contributes nitrogen into the system.

Penny Hussey

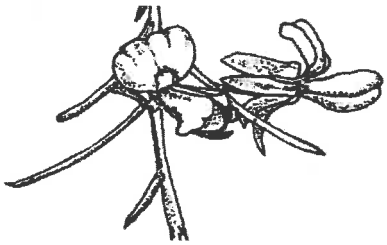

Illustration: Sue Patrick, from "Leaf and branch", pub. DEC.

Bush detective

THEY ARE .....?

Presenting these unusual unidentified pellets to Alan Wills, Senior Technical Officer in DPaW, provided the answer. Politely put, I had carefully collected a handful of caterpillar poo, also known as frass or larval excrement!

In this instance it was likely to be frass of the Banksia Moth (*Danima banksiae*). The grooved or ridged appearance of the droppings is due to the anatomical structure of the animal's intestine. The walls of the intestine and rectum are marked by thick longitudinal folds or rugae lined with hardened cuticle – hence the regular, deeply ribbed pellet. [For those interested in this there is a fascinating website that explores invertebrate effluvia: http://utahpests.usu.edu/ipm/files/uploads/PPTDocs/09sh-UPIS-insect-scat-cranshaw.pdf]

Banksia Moth is distributed across most of Australia including Tasmania. A large caterpillar can grow up to 6cm by the time it is mature. They feed on many of the proteaceous plants (grevillea, hakea, dryandra and banksia). A striking animal, reddish brown with white markings in colour, the larvae sports a black horn on its rear end. They have quite a dramatic aggressive stance when disturbed by rearing up to form a 'U' shape thrusting out its front legs. Under threat the caterpillar also spits out a gooey substance.

Pupation occurs in ground litter.

Interestingly the adult male moth has similar defensive actions when disturbed by lifting its wings, curving its abdomen under his body and thrusting out its distinctive abdominal rings and red structures near its apex. So next time you wander the bush, watch out for piles of distinctive-shaped orange pellets. You may find a posturing Banksia Moth larva nearby!

Adult and larva of Banksia Moth.

Photos: Janet Farr

BALINGUP SMALL FARM FIELD DAY

Land for Wildlife was a part of the award-winning Landcare stall at the Balingup Small Farm Field Day in April. The focus of this year's event was 'Small farming - a family experience' and the Landcare stall was deemed as 'The most Effective Information Display'. *LFW* Officer, Sheila Howat, devised an interactive display under a banner which invited visitors to 'Be a family of Bush Detectives and discover the wildlife that also call your block home'. Children and adults were fascinated with the simple techniques of sand pad monitoring and identifying cockatoos and parrots from the feeding marks left on gumnuts. Her collection of hollow logs and artificial nest boxes also sparked interest and the realisation that hollows harvested as firewood could be put to better use than burning. It was a busy day with over 10,000 people coming through the gates.

Photos: Sheila Howat (left) and Wendy Wilkins (right)

LAND FOR WILDLIFE WORKSHOP, JUNE 2013

The LFW staff workshop was held at DEC (now DPaW) Kensington in June, 2013. Shown in the photo are: Back row, l-r:, Zara Kivell, Avril Baxter, Mal Harper, Dorothy Redreau, Sheila Howat, Phil Worts, Penny Hussey. Front row: l-r; Cherie Kemp, Claire Hall, Sylvia Leighton. Not present were: Heather Adamson, Fiona Falconer and Wayne Gill.

Did you know ?

... that, on a global scale, nearly one in five reptilian species are threatened with extinction, with another one in five species classed as 'data deficient'? The proportion of threatened reptile species is highest in freshwater environments, tropical regions and on oceanic islands. Global conservation actions specifically need to mitigate the effects of human-induced habitat loss and harvesting, which are the predominant threats to reptiles.

PLEASE NOTE: If you change your postal address, phone number or email, please let *LFW* know.

Australian Plants as Aboriginal Tools

Philip A. Clarke

Rosenburg Publishing Pty Ltd. 2012.

This book describes and illustrates how Aboriginal hunter-gather societies lived by making objects from plants. Using historical information, it describes the species that were used to make weapons, tools, shelter, watercraft, clothing, ceremonial objects, ornaments and paint. It does not discuss food, but does mention the materials that were necessary in order to prepare it, for example leaves to line the cooking pit. As you might expect, most of the information comes from the north of the continent, where Aboriginal people continued with traditional ways longer than in the south, but it is none the less fascinating for that. The author concludes with a chapter on current trends , including the use of introduced plants.

This is a wide-ranging and well-illustrated text, the sort of book one could dip into many times, and always find something new. If you are interested in the manufacturing skills of Aboriginal people, and how they lived in this difficult continent, you will find it a fascinating and instructive read.

Penny Hussey

In brief

Adding deadwood to revegetation areas speeds up ecosystem recovery

Many landowners spend time and effort revegetating areas on their properties to attempt to recreate a 'natural' ecosystem. But woodland ecosystems don't just consist of plants and the fauna that will eventually be attracted to them, they may contain structural elements that are an important part of successful ecosystem recovery. Fallen deadwood, or 'coarse woody debris', is a case in point.

Deadwood has been lost from many woodland ecosystems as a result of such activities as logging, firewood collection, frequent fires or general 'tidy-up'. This deadwood has vital functions in the ecosystem, such as contributing to nutrient cycling and storage, soil forming processes and soil retention, retaining moisture and enhancing water infiltration, providing sites for litter accumulation and fungal growth, acting as nursery sites for plants, and acting as shelter and habitat for animals. While one would hope that, after a hundred years or so, the restored woodland would provide its own quota of fallen timber, what happens in the meantime? This time lag in deadwood accumulation is a barrier to restoration in woody ecosystems in the short-term because it potentially compromises the long-term persistence of some deadwood-dependent species and processes. So when replanting areas, especially on ex-paddock sites, why not add some logs and branches too?

A group of researchers at the Australian National University, Canberra, set up a study in woodlands near Canberra to investigate this idea. They added deadwood and investigated the effect of different vegetation densities and kangaroo grazing intensity on the population of fauna – choosing reptiles only so as not to be swamped by data.

After only four years, adding deadwood significantly increased reptile abundance. This was most obvious in open areas where significant kangaroo grazing occurred. They conclude that adding deadwood can definitely improve the effectiveness of woodland restoration programmes.

So don't 'tidy up' fallen branches! Drop them into revegetation areas to contribute to provide vital ecosystem functions.

[For ref: contact 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.

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All correspondence should be addressed to: The Editor 'Western Wildlife', Department of Parks and Wildlife, Species and Communities Branch, Locked Bag 104, Bentley Delivery Centre, WA 6983.