



## INDIVIDUALLY MARKED WILD CARNABY'S COCKATOOS: A CHALLENGE AND OPPORTUNITY FOR KEEN PHOTOGRAPHERS

Rick Dawson and Denis A. Saunders

### Why and how are Carnaby's Cockatoos individually marked?

Carnaby's Cockatoo (*Calyptorhynchus latirostris*) is listed as endangered under State and Federal legislation and is the subject of a recovery plan. Since the late 1960s it has been the subject of detailed ecological and behavioural studies. Much of this work was conducted by CSIRO Division of Wildlife Research and more recently by the WA Department of Conservation and Land Management and successor departments, now Department of Parks and Wildlife (DPaW), as well as a number of universities and the Western Australian Museum (WAM).

Many of these studies involve cockatoos that have been individually marked with a numbered leg band, and sometimes with another device to aid recognition or remote tracking. Studies carried out by CSIRO, DPaW and WAM have resulted in large numbers of nestlings being banded in nest hollows, prior to fledging. Each nestling has been banded with a leg band with a number unique to the individual. Any subsequent recording of that number provides information on a Carnaby's Cockatoo of known age and known nesting provenance. Sightings of these individuals where the numbers have been verified



Figure 1: Early flat CSIRO band (210-01876) showing all the numbers. Photo: Rick Dawson

provide information on longevity, movements, nest-site fidelity, flock composition, food and roost sources; information essential for developing successful management programs for the species.

The bands used in these studies are all made of stainless steel and vary in profile (Figures 1 and 2), some are flat and more recent bands are round. Flat bands used since 1969 by CSIRO at Coomallo Creek and several other sites have the number 210 (which is the band size) followed by a hyphen and five other numbers (e.g., 210-08176, figure 1). More recent bands have a round profile with the number, a space then two numbers, a space and another three numbers (e.g., 320 00 797, figure 2).

Since 1969 many Carnaby's Cockatoo nestlings have been banded at Nereeno Hill, Koobabbie, Coorow, Coomallo Creek, Cataby, Moora, Minyulo Nature Reserve, Manmanning, Bindoon, Julimar, Yanchep National Park, Glen Forrest, Perry Lakes, Bentley, Kelmscott, Armadale, Martin, Tarwonga, Dragon Rocks, Kwobrup, Badgebup, Cocanarup, Lake King, Kojonup, Nannup, Tunney, Tambellup, Moornaming, Stirling Range and Borden.

In addition, a number of injured wild Carnaby's Cockatoos have been taken into captivity, rehabilitated, banded and released. In some cases, rehabilitated birds have been released

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## Greetings all!

I hope you have all had an excellent Christmas and New Year.

Readers will be aware that in *LFW* we believe strongly in the importance of Citizen Science – interested people assisting professional scientists to extend their studies. In the lead article in this issue, the black cocky researchers are calling for help in noting banded birds. It is astonishing how rapidly digital photographic technology has changed the things we can achieve with our cameras! If you do have zoom capacity, and you know of a cocky roost nearby, use your binoculars to see if you can pick up a banded bird. Then stalk it until it obligingly reveals its legs to the lens!

This issue also contains another article featuring the Kimberley, this time with some detail about the Monsoon Vine Thickets, those patches of dry rainforest that dot the coastline north of Broome. When one

thinks of ‘rainforests’ one thinks of tropical jungles with huge trees and constant rain. Our monsoon forests are different, but still fascinating, and are another example of the extraordinary biodiversity found in Western Australia. And like every other natural ecosystem, they have to be managed sympathetically, and it is really good to hear about how this is being done. In case not all readers are aware of this, *LFW* does have a number of properties registered in the Kimberley. Look on p17, eg, for a member’s contribution.

Once again we are privileged to have a number of pictures and stories sent in by members. Its clear that a person who observes carefully will see all sorts of fascinating creatures going about their daily lives. And with the electronic communication revolution, we can easily share our experiences with others. Please keep these stories coming in. Feedback from readers indicates that the stories are much appreciated. Very many thanks, also, to the specialists in many fields who respond promptly and cheerfully to our cries for help with identification and advice on management of both native and introduced species.

Summer is a time when many of us go to the beach so, although it is not strictly land management, an occasional note about the things that may be found washed up along the strand line may be of interest. Such is Heather Adamson’s recording of a Columbus Crab.

Several articles report on some of the fascinating and diverse workshops and field days organised by *LFWOs* in various parts of the country. If there is a topic you would like *LFW* to organise in your area, please contact your local *LFWO* to discuss the idea.

It is heartening to learn that the weather last year gave most of our primary producer members a good crop and, of course, it will be helping the bushland ecosystem too. Best wishes to everyone for the coming year.

*Penny Hussey*

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## CARING FOR A BOBBY

*Maggie Webb*

On a cold morning in May I found a large bobtail in the bush near our Chidlow property. It was still alive, just, so I picked it up and laid it along my hand and arm to carry it home. Once it began to warm up I could feel movement against my wrist, and realised that it was probably a pregnant female. I immediately took it to the Eastern Hills vet where they are kind enough to take in sick native animals and then send them on to Kanyana Wildlife Sanctuary in Lesmurdie.

Examination at Kanyana revealed that the bobtail was in very poor condition with possibly an upper respiratory tract infection, an injury to the head and was probably pregnant. It was decided to take the bobtail to the Wattle Grove vet where it was confirmed that she was pregnant with twins. The prognosis wasn't good but she was treated for the infection at Kanyana and monitored to see whether she started to improve.

Unfortunately there was little improvement over the next 10 days, in fact she was rapidly losing weight and showed signs of going into labour. So back to the vet she went where Gary



*Mum and two babies.*

*Photo: Peter Kerr*

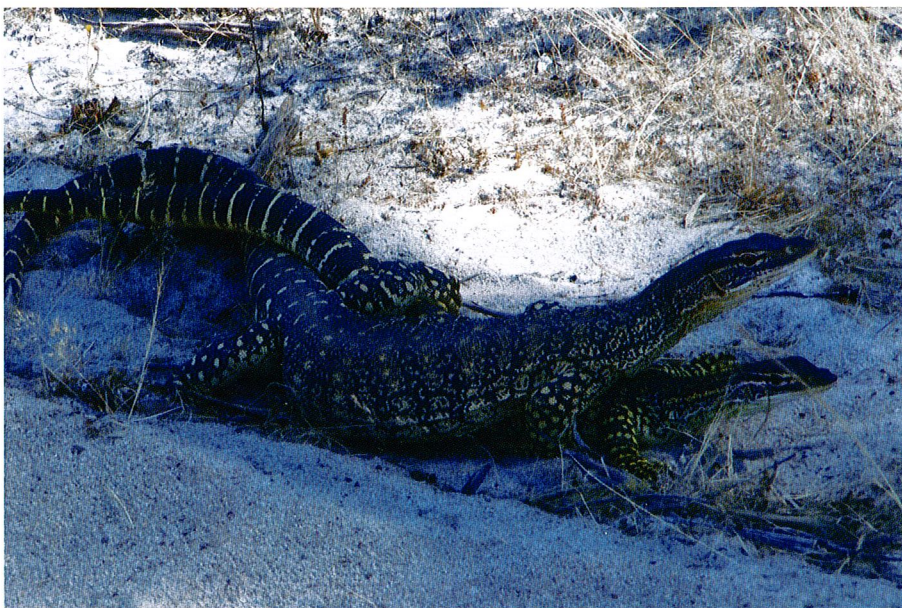
Beilby decided to do a caesarean. The two babies were small (70gm and 75gm) but in good condition. The mother weighed only 370g after the operation but, amazingly, made a rapid recovery and put on 100gm in the first week.

It was a month before the family could be reunited because the mother needed to be clear of her infection. Even though they hadn't met before they went straight to each other. They then spent several months being cared for at Kanyana until they reached weights suitable for release.

On 26th October I went to pick up the bobtails. They were in wonderful condition, sleek and shiny. I'm sure that they polish them before release at Kanyana!

The photo shows them at release on our bush block.

Bobtail numbers have decreased on our block over the last 10 years and we try to do anything we can to help them. We couldn't do much without the expert support of the vets and Kanyana. So thanks to them all.



*Photo: Eric Sutton*

## DOING WHAT COMES NATURALLY!

Eric Sutton writes: "During November this year on our block at Beverley we saw several Gould's Monitors mating. The sightings have been on very hot days with temperatures in the high 30s."

After mating, the female will construct a burrow a metre or more long, with the final chamber not far below the ground surface. There she will lay her eggs. Over summer the ground heats up and incubates the eggs, which will hatch in February or March.

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## Banded Carnaby's Cockatoos



Figure 2 above: More recent round profile band (320 00 797) used on Carnaby's Cockatoo.  
Figure 3 below: Older style flat band showing how several photographs may be necessary to see all the numbers, in this case 210-01694. Photos: Rick Dawson



with radio transmitters and tails which have been coloured and marked with a letter to make them stand out. Transmitters and colour marking are short-term measures as the battery life of transmitters is short and the transmitters are usually attached to tail feathers that are moulted regularly, shedding the transmitters and the coloured lettering. At present, leg bands are the only permanent unique identifiers for Carnaby's Cockatoo, however, modern camera technology is providing opportunities for people other than the research

workers who banded them to gather more data on such banded birds.

### How can bands be seen and recorded?

Cockatoos have short tarsi (lower leg bone) and can only take a narrow band (figure 1). Leg bands are only 5mm wide, 36mm long and 1mm thick. When closed the band has an internal diameter of about 10mm. In the past, it was necessary to recapture the bird to read the band number, except for a few cases where

a cooperative bird, a good telescope on a sturdy tripod used by a patient observer in windless conditions, enabled the band number to be read. Occasionally an observant member of the public examining a dead cockatoo, saw that it was banded and took the trouble to notify the relevant authority of the time, place and circumstances of the bird's death. Such observations have been valuable, but fortunately they have been rare.

Modern digital cameras and telephoto lens have made a great difference to observations of banded birds. It is now possible to read bands and obtain a permanent record of the numbers without having to recapture the birds. We have had considerable success in reading bands using a hand held Canon 7D digital single lens reflex camera with an EF 100-400mm f4.5-5.6L Image Stabilisation USM telephoto zoom lens. The best results have been obtained in bright light and high shutter speeds (1/600th second or higher) and when the bird was overhead, perched on a dead branch so both legs could be examined from a range of angles. It has usually been necessary to take many photographs from a range of angles to ensure that all of the numbers have been seen (Figure 3). Good results can also be obtained using a compact camera when set at the highest resolution, highest number of pixels and the lens zoomed in on the band. Photographs can then be magnified on a computer screen which may allow the specific numbers to be identified over a series of shots (Figure 3).

### How can members of the public contribute to these studies?

Any observations of banded birds supported by photographs that show the band number clearly will be of enormous value to researchers working on Carnaby's Cockatoo.

continued from page 4  
photographing bands

They will enable more accurate maps of movement patterns to be built up, as well as providing information on survival and longevity. Carnaby's Cockatoos have a long life expectancy, but it is not known how long they live in the wild. At present, studies at Coomaloo Creek have shown that there were five individually marked females breeding in the population as at 2012. They were 22 and 26 (known age as they were banded as nestlings in the area) and at least 22, 27 and 28 years old (as they were banded in the area as adults and their ages when banded were not known). In addition, one male, banded as a nestling was found dead 34 years after it had left the nest hollow.

We encourage keen photographers seeing Carnaby's Cockatoos to look closely at the birds' legs to see if any are banded and, if so, to try to photograph the banded legs to see if they can read the band number. Anyone seeing and photographing banded cockatoos are asked to provide the photographs, together with information of when and where the observations were made and any other relevant information (how many birds in the group and what they were doing at the time) to the Nature Protection Branch of DPaW. Departmental officers will then establish which organisation banded the birds and let the observer know that information as well as when and where the bird was banded.

For more information contact: Rick Dawson on [Rick.Dawson@dpaw.wa.gov.au](mailto:Rick.Dawson@dpaw.wa.gov.au)

*Rick Dawson is Senior Investigator, DPaW Nature Protection Branch, Kensington and Denis Saunders is a retired chief scientist with CSIRO Ecosystem Services, Canberra.*

## OUR FRIENDLY HERON CHICK

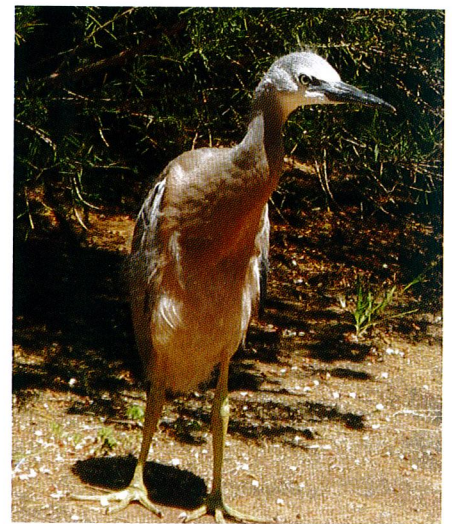
Jan Pittman

For the last few years we've had between one and three White-faced Herons living at our place. We live on 100 acres in Gidgegannup, 90+ acres of which is bushland, which can't be cleared, and borders onto 130 acres of bushland. We often see one near our dam but I don't know whether it's the same one or perhaps I'm seeing a couple of them individually, and don't realise it is more than one! Earlier this year I actually saw two of them, so I thought, hooray, he/she has got a friend!

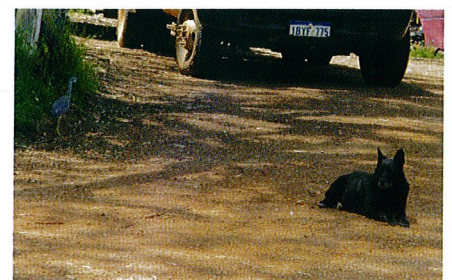
In October I was sitting inside, when I caught a movement at one of the picture windows at the front of the house. Thinking it was most likely a magpie or a blue wren, the most common visitors to the garden surrounding the house, I glanced up, only to see that it was something else - a heron chick. It didn't seem worried about our two dogs, and wandered around the house, picking at insects.

A couple of hours later I noticed that it was still picking insects, this time from a *Chamaelucium* (Denmark Wax) at the back of the house. I crept out of the laundry door, and managed to get within about 1.5 metres of it, while taking photos. The adults are about 70cm high, while this one was about 30 cm, and didn't have the full white face, only white on the chin, and had more brownish feathers than the adult. When it noticed me, it would stop eating insects and turn and look at me but obviously decided I wasn't a threat, and then would continue feeding. Eventually it walked slowly along the driveway, between the cars in the carport, towards our shed. I followed, taking photos, but realised that one of our dogs, a very enthusiastic heeler/kelpie, was lying near the shed.

The heron eventually walked along the driveway towards the shed.



I followed it at a distance, telling Tiffany not to touch it (she didn't even bark!). You can see she has her ears alert for any change in the instruction, but she did get a pat for being a Very Good Dog. The heron walked under the truck, and eventually continued on towards the creek, stopping to check out the pile of old metal/tyres which are part of every good bloke's shed!



The heron chick on the left walking calmly past Tiffany.

All photos: Jan Pittman

# MONSOON VINE THICKETS OF THE DAMPIER PENINSULA, KIMBERLEY: CULTURALLY AND ECOLOGICALLY SIGNIFICANT COMMUNITIES

Judy Fisher

Extending from Broome, north along the west coast to the tip of the Dampier Peninsula, and then south along the east coast to Goodenough Bay, are scattered patches of monsoon vine thickets (MVT). They are a dry rainforest ecosystem that occurs in patches within and behind the swales of often extensive coastal dune systems. They vary from clumps of a few trees, to patches of over 500ha, often in long, very narrow strands, with lengthy exposed edges. The dense canopies are dominated by evergreen trees and tall semi-deciduous shrubs often hung with native vines, creating a shady, moist understorey that supports a layer of leaf litter, scattered fruiting medium shrubs and few grasses. They form the southern limit of rainforest in WA and are classified as a Threatened Ecological Community (TEC).

There are 79 naturally fragmented, localised and restricted MVT patches, covering approximately 2,660ha. Although this area constitutes less than 0.01% of the Dampier Peninsula, they contain close to 25% of all plant species. They are classified as endangered under the Commonwealth legislation (1999 *EPBC Act*) and vulnerable by the WA Minister for Environment, but in addition they are also culturally significant to Indigenous people. The MVT patches are a primary source of indigenous bush foods, medicines, tools, ceremonial areas and law grounds, providing an interrelated network of traditionally important places throughout the coastal Dampier Peninsula.

The MVT patches also provide habitat and refugia for birds, bats, wallabies and other animals which



Part of a monsoon vine thicket patch. Towards the rear of the photo, the boundary between the thicket patch and the inland pindan can clearly be seen.  
Photo: Environs Kimberley

move between patches, eating and digesting the many fruits and seeds, dispersing them from one patch to the next, keeping the patches ecologically connected. The dense MVT canopy is in striking contrast to the surrounding pindan savanna woodland vegetation, creating a refuge that boasts seasonally abundant fruits and a protective, shady and humid microclimate for many plant and animal species. Species found only within and surrounding these patches include the endangered Gouldian Finch and the reptiles *Lerista apoda* and *Simoselaps minimus* (Dampierland Burrowing Snake).

MVT edges are particularly vulnerable to frequent fire, which can lead to a reduction in size of MVT patches and expansion of the savanna communities. Rainforest trees are able to regenerate and survive a single

fire, but are unable to survive recurrent fires. In contrast, non-rainforest trees are able to survive recurrent fires making the frequency of fires critical to controlling the boundaries of rainforest. As the tree community composition changes, wide-ranging impacts on the MVT vegetation structure, canopy-gap dynamics and plant and animal interactions will occur. Rainforest thickets are highly sensitive to external edge fluctuations such as fire, with small changes in local management practices at these edges likely to change the MVT ecosystem to one resembling the savanna woodland. To protect this network of culturally significant and ecologically connected patches that are also fire sensitive refugia, and to manage, monitor and adapt to future fire events, it is necessary to understand past fire events and



Bardi Jawi rangers conducting weed control at the edge of a monsoon vine thicket patch  
Photo: Judy Fisher

vegetation structure within, at the edges of, and outside the MVT.

As part of the Environs Kimberley West Kimberley Nature Project, funded by Caring for our Country, Bardi Jawi and Nyul Nyul Indigenous rangers, facilitated by the Kimberley Land Council and Environs Kimberley, with advice from elders and the community, have developed management plans for six MVT sites on their respective countries. These plans, including protective, ecological fire management, tourism management, weed control, planting of MVT species and monitoring, have been implemented by the rangers over the last three years. In 2012, 14 MVT patches were included in refugia protection and management planning.

To gain a greater understanding of the nature of change particularly associated with fire, weed invasion and management of the MVT patches, at the edge and outside the MVT, Environs Kimberley working with the indigenous rangers managed the development and implementation of vegetation structure and ant community protocols with assistance from myself, as an ecologist and knowledge broker. The project aimed to assess and understand the impacts

of fire, weed invasion and invasive ants and the potential to adapt management by indigenous ranger groups based on the results. As part of this, a study of ants as bioindicators of environmental change was also conducted.

Vegetation field sheets incorporated traditional language names, with training provided to the rangers for ongoing data collection. Vegetation structure and ant communities were measured across three habitat types; the middle, edge and outside of the MVT patches. Leaf litter and canopy cover information were collected to determine relationships between these three locations and to measure change in community structure, canopy-gap and litter dynamics and also determine differences between the five MVT patches studied.

Remote sensing across the 79 MVT patches was used to determine the number of fires (between 1989 and 2010) within 1km of the patches, and to identify canopy change over time and its relationship to the number of fires. This showed that, in these 21 years, 69% of MVT patches are burnt frequently, 50% experienced five or more fires and 71.4% experienced a short fire return interval of 1-3 years between fires. Of all fires, 68% occurred in the late dry season, when conditions are driest promoting very hot damaging fires compared to those earlier in the year.

Vegetation structural measurements of trees, shrubs, climbers, herbs and grasses across five MVT patches found a significant relationship between canopy loss and the number and frequency of fires and area burnt. Where the fires were more frequent, a significant loss of trees over 10m high, shrubs, litter depth and volume, and an increase in bare ground was found, particularly at the edges of the MVT patches, compared to the middle. Grass species (including the invasive Buffel Grass, *Cenchrus ciliaris*, which



Inside a monsoon vine thicket patch  
Photo: Judy Fisher

increases fuel load and intensity, and is normally absent in the middle of MVT patches) showed a significantly greater cover at the edges than at the middle. These fire-related impacts have profound consequences for the cultural and ecological function and viability of the MVT network.

We found a similar relationship between fire and ant communities at the middle and edges of the five MVT patches. The number of ant species increased from the middle to the edge to outside, with more species adapted to open canopy found at the edges and outside. The ant species within the MVT patches were different to the other two habitats, and were comprised of species that prefer cooler, relatively dense vegetation and a thick litter layer. Ant species at the edge habitat resembled more closely those found in the savanna woodland, reflecting the frequency of fire leading to a more open habitat, further demonstrating the changes to MVT patches directly related to fire. Two invasive ant species, *Paratrechina longicornis* and *Monomorium destructor*, were found in the patches and, in common with many invasive ant species, *P.*

*continued on page 8*

# Research

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## Monsoon Vine Thickets



Bardi Jawi rangers setting ant traps in pindan woodland, outside the monsoon vine thicket patch. Photo: Judy Fisher

*longicornis* comprised 43% of the total ant numbers.

These results indicate the importance of vegetation structure and ant communities to assist the interpretation of the impact of fire and the use of these measures over time to assess the effects of changed management practices, such as preventing fire near and inside the thickets, and the effectiveness of

invasive species control of both plants and animals.

The results of this study have provided the indigenous rangers with evidence identifying the need to:

- i) reduce the number and frequency of fires,
- ii) ensure a sizable unfired buffer surrounds the MVT patches,
- iii) prevent and restrict fires to



Nyul Nyul rangers conducting ant studies. Photo: Judy Fisher

early dry season burns, particularly limiting or preventing fires in the late dry season,

iv) control fire-promoting grasses such as Buffel Grass to prevent further invasion and canopy loss, and

v) control invasive ants to prevent irreversible changes to native ant communities which play an important cleaning role within the MVT patches.

Previous to this research, rangers have used early season buffer burns to prevent fire from entering the MVT patches. These burns, informed by the Bardi Jawi seasonal calendar and cultural advisors have guided fire management planning and protection around the MVT management sites. Our findings strengthen the need for this MVT fire protection model to be utilised, with larger buffer zones, when planning and managing fire within the Dampier Peninsula. It is important that all stakeholders work together to get the best outcomes for communities, outstations, cultural sites, TECs and Threatened Species.

[For references, contact Editor]

Dr Judy Fisher is an ecologist with a particular interest in fire and weed invasion of natural communities. She can be contacted on [ecologist@westnet.com.au](mailto:ecologist@westnet.com.au)

### Would your group like to visit ALCOA's Marrinup Nursery?

In the October issue of *Western Wildlife*, David Willyams described how ALCOA propagates geophytes for minesite revegetation. He has offered to conduct a nursery tour this autumn for groups involved in practical propagation and revegetation. If you are involved with a group that might be interested, you can contact him on:

Dr David Willyams, Propagation and Revegetation Research Officer, Marrinup Nursery, ALCOA. Email: [David.Willyams@alcoa.com.au](mailto:David.Willyams@alcoa.com.au)

# THE TENTERDEN FIRE - TEN YEARS ON

Sylvia Leighton



The northern boundary, 2004.

Photo: Penny Fewson



The northern boundary, 2013.

Photo: Mike Ody

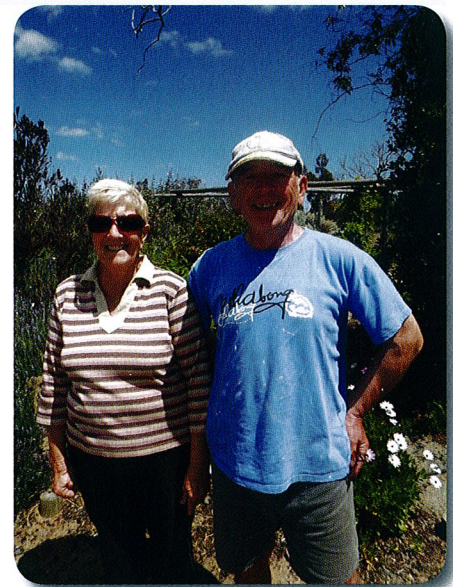
It has been fascinating to revisit a LFW property ten years after it was a victim of the very destructive Tenterden wildfire on the 27<sup>th</sup> December 2003. The property is located approximately 10km north east of the Kendenup townsite and 2.5km from the western boundary of the Stirling Range National Park. This property was originally registered with LFW by Robert and Patricia Horwood who were avid bird watchers and bird banders. Prior to the fire, some of the large wandoo trees on the property were estimated to have been at least 300 years old. Mike and Sue Ody purchased the property in 2012 and contacted LFW to do a revisit to look at the healthy, vigorous regeneration.

The 40 ha property is completely vegetated except for the house site and some boundary tracks. It shows a change in vegetation communities from the north to the south of the block as the elevation gently shifts and the geology and soils change. There are seven different kinds of eucalypt growing in the two dominant vegetation associations of wandoo woodland on the lower elevations and jarrah woodland in the higher elevations. There is a diverse range

of middle and lower storey species including a wide range of colourful wildflowers, shrubs, geophytes and annuals, throughout the growing season. These include at least four different *Gastrolobium* poison plants - the presence of which is possibly why the block was spared clearing through stock grazing.

The Odys have taken a set of photos to complement the photos taken ten years ago just after the Tenterden fire swept through the property. These are a great photographic monitoring record of the regeneration on the property. The vegetation has regrown steadily in this area after the extremely hot fire event. However, the majority of the regeneration is still less than 2m in height and the eucalypts have only produced seed set in the past one or two years. It is this slow time to seed production that means frequent fires may eliminate species.

This property has five resident brush tailed wallabies and an ever-increasing mob of grey kangaroos. Carnaby's Cockatoos feed on the banksias. The Odys look forward to the day that they use some of the burnt but still standing wandoo trees as nesting sites.



Sue and Mike Ody. Photo: Sylvia Leighton

**Don't forget -**  
**if there is something you would like to show us,**  
**or a story you think is worth telling,**  
**please contact your LFWO to arrange a 'revisit'.**  
**We love to see how the revegetation is coming along, for example!**

### THE SATIN AZURE BUTTERFLY



During October I did a *LFW* visit to a 'Carbon Conscious' property west of Ajana. The remnant vegetation was a glorious sight with numerous flowers, including many different grevilleas. The flowers attracted hundreds of insects, including this one photographed on a *Grevillea pinaster*. In flight, the upper wings showed brilliant electric blue and the antennae are clubbed, so it was one of the blue butterfly group, Family Lycaenidae, but which one? With

the help of Brian Heterick at Curtin University, and Matt Williams at DPaW, it was identified as the Satin Azure (*Ogyris amaryllis*). Matt commented: "This is quite a widespread species in Australia but fast-flying and not often seen. As in your photo, they are attracted to flowers to feed, especially red ones. Note the proboscis extended into the flower - he is having a drink! I would be most interested in any butterfly records you turn up in your part of the world; we are always on the lookout for rare species and new range records."

Blues have complicated lifestyles, often associated with ants. This one lays its eggs on a mistletoe - there were several in the area that they could use. The larvae probably feed at night, and during the day hide in cracks or crevices of the host tree or in borer holes in branches carrying the mistletoe food plant. There they are attended by small black ants, which could be from one of several genera. This story is just one of the of fascinating interactions that make up the bushland ecosystem.

I feel very lucky to have seen this butterfly although I couldn't photograph it in flight to capture the brilliant blue on the topside of its wings because it flies so fast. Please note Matt's comment, if any reader in the northern Wheatbelt has butterfly data. He can be contacted at: [matthew.williams@dpaw.wa.gov.au](mailto:matthew.williams@dpaw.wa.gov.au)

Fiona Falconer

### NATUREMAP

Recently a *LFWer* contacted me at the Busselton DPaW office for a list of species that are likely to be in a local reserve. In the past I would have needed to think about the soil types and the local vegetation and write up a list each time this request came in from landowners, local government, planners, or NRM groups.

Now it is much easier, we can all access NatureMap which is a wonderful system put into place by the Department of Parks and Wildlife which is available to the community: [www.naturemap.dpaw.wa.gov.au](http://www.naturemap.dpaw.wa.gov.au).

If you search on this link, it will ask you to register and provide you with a login, or if you just want to look up one area as a one off, you can search as a visitor to the site. You can either search a particular

site, for example a national park or nature reserve, or you can put in exact coordinates and the map will show your area of search.

Next you can put in a search area of between five or more kilometres within that national park or GPS location.

The website will come up with a report for all the species, both flora and fauna, that have been recorded within your requested search area. I usually choose to have the list in conservation status order, but you can choose to have it in alphabetical order if you wish. You can print this off, save to your computer or just read through.

This is very handy to find out what plants grow in your local area, so that you can choose a rehabilitation/

revegetation list of species for your property and take to your local community nursery, or even if you just want to know what birds and animals are visiting the area regularly.

Caution: when choosing a revegetation list from this site, not all plants will be suitable or hardy for revegetation purposes on your property, and you may need additional information, e.g. soil preferences - contact your local *LFW* Officer for additional information about what plants are most suitable.

If you have any trouble accessing this wonderful application, you can ask the website coordinator questions through the actual site, or feel free to email me at [cherie.kemp@dpaw.wa.gov.au](mailto:cherie.kemp@dpaw.wa.gov.au). Enjoy!

Cherie Kemp

## The energy cost of deterring seed predators

In our kwongan vegetation, banksias and hakeas keep their seeds well protected within thick woody fruits. These can be held in storage on the plant for many years, until a fire triggers them to open and release the seeds. But those strong, woody fruits also deter seed predators, such as Carnaby's Cockatoos. They provide a mechanical defence and act to increase food handling times, so slowing the bird's feeding rate.

When we compare the carbon cost of producing such large mechanical defences we find that banksias and hakeas allocate about 150 times more biomass to these structures than they do to the seeds. Members of the same family growing in the fynbos of southern Africa have a defence to seed ratio of only 15, some 10 times less than is the case in WA. Why the difference? Well, the fynbos has fires too, but no large seed predators.

*Will Stock, Edith Cowan University.*

## Birds in urban bushland and gardens

Urban bushland reserves may retain a number of bird species, but how many of these also utilise surrounding gardens? To investigate this question, researchers recently studied an area in the north-west of Kings Park, together with nine gardens across Thomas Street to the west\*. Unsurprisingly, the species richness was greater in the bush than in the gardens, but they also recorded that the garden users were a specialised subset of the birds. They were urban exploiters, such as Spotted Doves, generalists such as Red Wattlebirds and nectar feeders such as Rainbow Lorikeets. Insectivores were conspicuous by their absence from gardens. The natural history of the birds was discussed in detail in relation to the study's findings. They also investigated whether the six-lane

Thomas Street proved to be a barrier to birds. It was found that 40% of the birds recorded in Kings Park were never observed crossing the road, and this included most of the insectivores. Clearly, such major roads are a barrier to connectivity for many birds. This study has implications for urban design where development infringes upon urban bushland remnants.

*[\*For reference, contact Editor.]*

## Natural history of the Forest Red-tailed Black Cockatoo

Two very detailed studies of the Forest Red-tailed Black Cockatoo have recently been published in *Pacific Conservation Biology*\*. Authors Ron Johnstone, Tony Kirkby and Kim Sarti provide, firstly, a detailed analysis of preferred nest trees and their hollows, showing that most of the nests are in very large, very old, mature Marris (95% of nests in Marris are in trees older than 209 years). The second paper looks at breeding behavior and diet, including the observation that the birds have recently discovered and are learning to use Cape Lilac fruits. If you are interested in these beautiful birds, the papers are well worth detailed study.

*[\*For reference: contact Editor.]*

## Woodland birds persist at Dryandra

Woodland birds have declined across southern Australia, even to the point of local extinction. However, Dryandra Woodland presents a contrasting picture to this decline, as it retains almost a full community of birds, many of which have declined or disappeared from the surrounding wheatbelt. Graham Fulton of Edith Cowan University has drawn together published and unpublished records to present a picture of what has happened to Dryandra's birds from 1953 to 2008. As well as listing the birds, he discusses the reasons for persistence, and future considerations. If you live

in the south central wheatbelt and are interested in birds, you will find a lot of information here that you could apply to your own bushland.

*[For reference, contact Editor.]*

## Eating products from Marri

George Fletcher Moore is one of my favourites among the early settler diarists and letter-writers, because he comments on all sorts of topics – from society scandal to sandflies, food to flowers. He was also friendly with Aboriginal people and made serious attempts to learn from them, eventually writing a dictionary of Noongar language. Here, for example, are two of the notes he made regarding the food Noongar people were eating during the month of March in 1834:

“Tuesday March 18th: This day I have had a number of natives here. I went tonight to their bivouac which is close to this place. Some of them were busy sucking the honey water which they extracted from the flowers of the red gum tree.”

“Sunday 30th: Easter. This morning I killed a lamb for our entertainment. The natives have been feasting on a sort of grub or worm which they find in numbers under the bark of the red gum trees. Those that I have had cut down present a fine store for them to have easy access to. The grub is a sort of long four-sided white worm or maggot, with a thick flat square head and a small pair of strong brown forceps set on the end of the head.” (*Millendon Memoirs* p 317/8)

This clearly shows that borers were a common occurrence in Marri trees at the time of the first European settlers, but it also shows that these borers have lost a major predator since human food tastes have changed!

*Penny Hussey*

# Weeds and Ferals

## SIAM WEED HASN'T GONE AWAY



Left: a dense infestation of Siam Weed on Cocos Island. Right: Siam Weed flowers.

Photos: Brad Rayner, DAFWA

In 2000, Australia was involved in peacekeeping in Timor, with military personnel and equipment operating on the island. The Australian Quarantine Service was very worried about the possibility of returning troops bringing back to Australia one of the world's most serious tropical weeds, Siam Weed (*Chromolaena odorata*), and elaborate precautions were taken

to prevent its introduction (see WW 4/2, April 2000 – it's on *LFW's* website).

It seems that this plant is now a serious problem on the Cocos (Keeling) Islands and officers from the Department of Agriculture and Food have been battling it since 2010, training locals, including Shire staff, on how to control the weed.

Hopefully, this will reduce the risk of it being transported back to mainland WA on machinery after it has been used on the islands.

Well, I suppose, if you have to do weed control, a few weeks a year on a tropical island paradise isn't a bad work place! Seriously though, watch out for this thing, especially if you are in the north. It's a real bad guy.

## MITES ON A BUMBLEBEE

Last July we mentioned a Bumblebee in a raspberry punnet, and noted that it was carrying mites. Although they have not been officially identified yet, DAFWA entomologist John Botha thinks they are from the family Scutacaridae.

The adjoining photo by Ron Pilcher shows a bumblebee mite (*Parasitellus fucorum*) with a much smaller mite clinging to its back, just behind the head. This is a *Scutacarus acarorum* and our mites are probably in this same genus.

Mites have complicated life cycles, and this one is a nymph, not a full adult. It does not bite the bee, or the other mite, merely uses it for transport from flower to flower. In fact the *Scutacarus* nymph does not even have functional mouthparts, merely a sucker plate for attaching itself to its transporter.

The world is full of marvelous things, isn't it!

*Penny Hussey*



“Elephants have little fleas  
Upon their backs to bite ‘em.  
The little fleas have smaller fleas  
And so *ad infinitum*.”

(after *Jonathan Swift*)

## MAIL ORDER MENACE

Sandy Lloyd

When living in a remote area, or close to the city but working long hours, it can be tempting to use mail order catalogues to buy garden plants. However, those colourful catalogues for spring-flowering bulbs should sound the alarm bell. Foetid haemorrhagic diarrhoea, for example, won't be listed in the bulb catalogues, but it could end up on your property if you buy a particular spring flowering bulb.

Since European settlement, many garden plants have become 'garden thugs'. That is, they were planted as ornamentals, but they have jumped the garden fence and gone feral. Classic examples are Paterson's Curse, Cape Tulip and Arum Lily. Seed of Paterson's Curse, for example, was available in mail order garden catalogues in the 1840s, it became a weed in South Australia in the late 1800s and was spreading across southern Australia by the 1930s. Research by the Weeds Cooperative Research Centre has shown that about two-thirds of the weeds found in Australia originated as garden plants.

Going back to foetid haemorrhagic diarrhoea, that is the name of a condition animals get when they eat Chinchinchee. It's a popular garden bulb from South Africa and is also used as a cut flower. Its scientific name is *Ornithogalum thyrsoides* and you'll find it in many catalogues, gardening magazines and so on. In WA, only sheep have been affected to date. In South Africa however, this terrible condition has been recorded in a range of animals including sheep, goats, horses, cattle, rabbits and guinea pigs, even dogs that have chewed the bulbs. The main sign is the production of putrid bloody diarrhoea that can be smelled from some distance. Cattle also go blind after about two weeks. In a flock of sheep, it would be expected that 80%

of animals would get the diarrhoea, and about 10% might die.

*Ornithogalum* is a genus of about 200 species of bulbous herbs from Europe, western Asia and Africa. The name comes from Greek and means 'bird's milk' – apparently an expression used by the ancient Greeks for some wonderful thing (like 'hen's teeth' perhaps?). Now another species from the same genus has turned up at Ravensthorpe - Star of Bethlehem, *O. umbellatum*. It is a smallish plant having starry white flowers with a green stripe down the back of the sepals and petals. It comes from around the Mediterranean. It could be a significant risk to agriculture as it is an alternative host for Barley Rust.



Illustration by Marjorie Blamey from 'The Illustrated Flora of Britain and Northern Europe'

To avoid problems like these, choose your garden plants carefully and avoid anything that could be weedy or toxic. You should never dump garden rubbish in or near paddocks, bushland or waterways as this could start a new infestation.

Sandy Lloyd is a weed scientist with DAFWA.

## MORE SPECIES OF DUNG BEETLES ON THE WAY

This country used to be famous for the 'Australian salute' - a wave in front of the face to get rid of flies. Even when I arrived in 1970, they made picnics a misery. Then came the introduction of dung beetles from South Africa, which did such a wonderful job of burying stock dung that the population of bushflies in Perth went from 14,000/ha to only 700/ha by 2003. (See *WW* 2/2 April 1998 and *WW* 7/2 April 2003; they are on our website or ask the Editor to send you a copy.) But the problem with these beetles is that they are summer active, and some flies breed before they do.

To plug this gap, CSIRO researchers have identified two dung beetles from Europe that are active in spring, and are breeding them up in Canberra. DAFWA is surveying the south-west to look for good release sites. In 2014 they will start releasing the new beasties, so hopefully there will soon be even less bush flies to plague us on warm spring days!

Penny Hussey

### Please note,

for anyone who may be searching for articles in back issues of *Western Wildlife*, all issues from Volume 1 (1997) to Volume 13 (2009) are now on the LFW website.

We also have an up to date index to all volumes.

If you would like a copy of this (by email only, please)

contact Claire Hall.

## LFW OPEN PROPERTY VISIT AND MORNING TEA AT LAKE CLIFTON

Dodging between wintery showers, 14 dedicated LFW members arrived at Wayne Goring's property on the eastern side of Lake Clifton. Hot coffee and treats were enjoyed as Wayne explained the transformation of his property from weeds to providing shelter and safety for wildlife.

Previously covered with Cottonbush and other serious weeds, Wayne's determination eventually turned this property around. Mulching was the best option after initial weed spraying. Having his own tree care business and no end of recycled timber at hand provided the newly-fenced corridors with mulch and hollow logs as habitat.



Seedlings were soon planted, the aim was to join the west remnant bushland to the east, via boundary corridors, and to incorporate the permanent water supply (soak) as well. Two paddocks were planned for stock and recycling wood supplies and more fencing was required to protect the lake from any straying stock. The soak that provides water for surrounding properties was cleaned out and 'log-scaped' for marron habitat, which now are abundant in the crystal clear water. Frogs are also present, and numerous birds visit all year round. Nest boxes for bats, birds and phascogales were ready to be installed on the property, and local LFW members are encouraged to contact Wayne on 0402 274 259 if they would like to add hollow logs or nest boxes to their bushland or rehabilitated areas.

Wayne couldn't emphasize enough to members on the day the importance of good access to your property for fire purposes, as he had the terrifying experience of being woken by the noise of a fire that he previously thought was extinguished, and everything else going wrong at the same time – including the firetruck having trouble reaching the fire then running out of water and getting bogged, all in the dark of night.



On the property everything looked lush and green, the soil was saturated under foot and many species were flowering. Lake Clifton was the fullest it had been for years - a beautiful jade green color with white caps being whipped up by a chilly breeze, giving you the impression that time indeed had stopped.

Thank you, Wayne, for your hospitality and inspiration; everyone enjoyed it immensely and congratulations on your achievements and dedication to the future of our native wildlife.

*Report and Photos: Heather Adamson*

### PORONGURUP COLLABORATION

The recent 'Conservation Culture Collaboration in the Porongurup' conference had a great variety of topics and was very inspiring.

Koreng-Noongar man and South Coast NRM's Cultural Connections Officer Graeme Simpson welcomed us to country with his didgeridoo.

He told us about the significance of the Porongurup Range, its connection to the Stirling Range and to his family and its expression in totems, moieties and Noongar culture.

UWA's Professor Stephen Hopper spoke on Caring for Country and Rediscovering the Porongurup as the Home of all Totems, focusing on how flora and fauna evolved and its links with indigenous culture. We learnt that the State's ocean levels, topography, soil age, stable climate, and lack of volcanic events or recent glaciation led to the diverse flora and fauna we enjoy today.

Peter Luscombe, farmer, seed collector, conservationist and member of the Ranges Link Team explained about this project and what it hopes to achieve.

DAFWA's John Moore talked about 'New Aliens in Old Landscapes', discussing the weed species and how to manage them. His knowledge and experience flowed through making it easy to understand.

Andrew Young presented his research on moths of the south-west, highlighting the important role they play. Andrew has discovered several hundred unnamed new species after starting with just 39 known ones.

Klaus Braun went through the Porongurup weeds project from 2007 to the present day.

The concluding panel Q&A session hosted by ABC's John Cecil included a variety of stakeholders. They discussed what they believe the Porongurup Range could be like in 2038.

The conference brought together useful information. It is a great model for others to follow. Have any LFWers got thoughts about where a similar conference could be based?

*Report by Dave Broadhurst, South Coast NRM, abridged by Dorothy Redreau, LFW Denmark.*

# KULIN FLOWERS

Avril Baxter

As *Land for Wildlife* Officers we visit some amazing patches of bushland. Last year Ken Randall whose property lies 30 km east of Wickopin, took me to a 160 ha sandplain patch. It was October and it was a flower garden.

Ken had been photographing the patch for many years and was keen to name the species in his photographic collection. This seemed like an ideal opportunity for a *Land for Wildlife* field day - *Photography and plant ID*.

The Kulin Regional Herbarium quickly came on board. Mainstays Sandra Murray and Robin Campbell have built up species lists for many of the public reserves in their area. Here was an opportunity to visit privately owned bushland and increase their knowledge of plants in the western part of their Shire. Botanist Alex George was also keen to explore the sandplains and help us with plant identification.

The exercise spanned two days. During the first day 19 people explored the sandplain. We began with Alex George instructing us on how to take photographs to aid in plant identification. We then split into three groups led by Alex, Sandra and Robin and collected and pressed 170 plants!

The next day seven keen botanists continued on to the Kulin Regional Herbarium and with the help of Alex gave many of the plants a preliminary identification. Sandra and Robin continue to identify and prepare specimens. Some, for example those not listed in Florabase for the Shire of Kulin, will be sent to the WA Herbarium in Perth.

A CD is being prepared for Ken and his family of plants identified on the day and a smaller publication will be available in the Kulin Herbarium.



Alex George explaining collecting technique. Photo: Avril Baxter



*Callitris arenaria*, Sandplain Cypress. Photo: Trish Medlen, GPM Photographics



Above: Robin Campbell and Sandra Murray preparing specimens for transport. Below: Working in the Kulin Herbarium. Photos: Avril Baxter



*Waitzia acuminata*, Orange Immortelle.

Photo: Trish Medlen, GPM Photographics

## BIRDS OF LAVENDER NATURE RESERVE

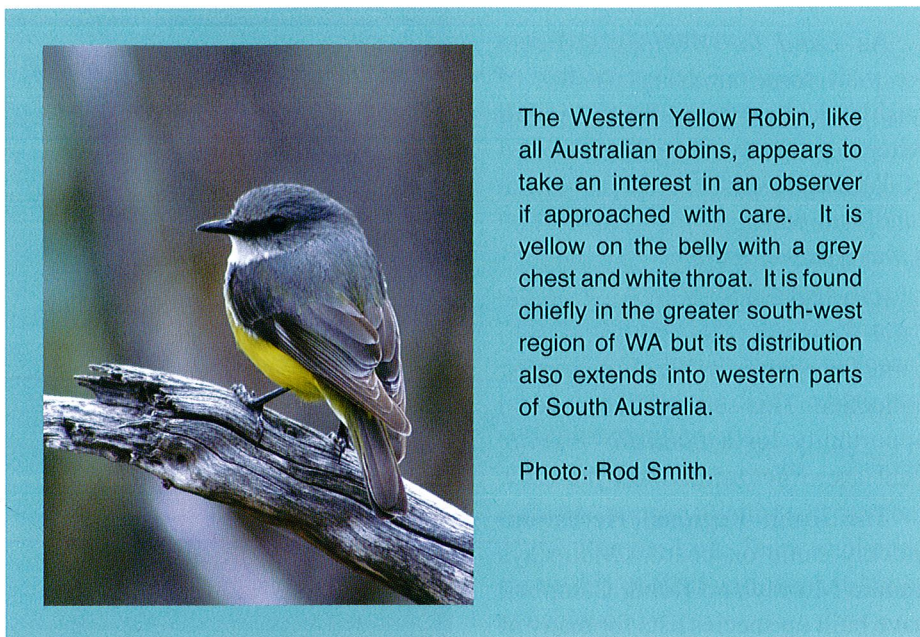
Avril Baxter

The combined Landcare display at Wagin Woolorama 2013 proved to be a one-stop shop for *Land for Wildlife* member Louise Higham.

Louise, a resident of the Shire of Williams, noted that the largest patch of intact bushland in the Shire was Lavender Nature Reserve and wanted to know what plants and animals could be found there. An approach to DPaW revealed limited species lists that were built up as officers visited the reserve for maintenance requirements.

At Woolorama Louise called into the *LFW* stand – could we help organise bird surveys of the area? The next connection was with Rod Smith from BirdLife Australia, could BirdLife Australia help provide the expertise and training on bird identification? It proved to be a very successful partnership.

Together we set up six two-hectare sites which we surveyed for 20 minutes and the bird species seen or heard were recorded. We then decided to survey each site four times per year for two years to build up a



The Western Yellow Robin, like all Australian robins, appears to take an interest in an observer if approached with care. It is yellow on the belly with a grey chest and white throat. It is found chiefly in the greater south-west region of WA but its distribution also extends into western parts of South Australia.

Photo: Rod Smith.

comprehensive picture of bird use of the reserve.

An article in the local newspapers and an invitation to *LFW* members resulted in 25 people taking part in the next two surveys. At each survey we divided into two groups led by ornithologists Rod Smith and Greg Marston and so far have recorded 34 bird species.

To help us with our bird identification Rod created a

PowerPoint presentation of birds of the Quindanning area, including bird calls. Slowly our bird identification skills are improving. An early morning spent bird watching and a fascinating PowerPoint presentation topped off by lunch at the Quindanning Hotel – what a great way to learn!

Our next bird survey will be in early February. If you are interested in joining us please contact me for further details.

[avril.baxter@dpaw.wa.gov.au](mailto:avril.baxter@dpaw.wa.gov.au)



Local bird enthusiasts at the meeting in the Quindanning Hotel.  
Photo: Rod Smith



Absorbing Rod Smith's presentation 'Birds of the Quindanning area'.  
Photo: Avril Baxter

## THE JOHN MASTERS BIRD HIDE, TOODYAY



The John Masters Bird Hide is a long awaited dream that has finally come to fruition! A number of members of the Toodyay Naturalists' Club (TNC) searched out bird hide styles, both in Australia and overseas, and the Toodyay hide is now one of the best. It fits into the environment in its style and toning and is a comfortable place in which to spend time; the location is ideal for observing water, wading and land birds. It has been built along the newly-launched Bilya Walk Track, a Toodyay Friends of the River project, and is a restful area for walkers.

In the early months of 2012 funding was obtained from the Wheatbelt Natural Resource Management, for which the Club was extremely grateful, to contract a designer of the structure. In April 2013 permission was granted by the Department of Water and the Toodyay Shire Planner with, once again, the wonderful support of the Wheatbelt NRM funding, to build the unique structure now in place. It was also fortuitous that the building of the bird hide was undertaken by local master craftsman, Michael Shepherd, himself a keen 'birdo'. There was a need for



Swans alighting, photographed from the hide.

Photo: Wayne Clarke

Left: The John Masters Bird Hide.

Photo Desraé Clarke

some in-kind contribution by TNC members and friends, which was freely given, as the hide had a tight building schedule with a completion date of 31st May 2013.

The name 'the John Masters Bird Hide' recognises, and hopes to demonstrate, the appreciation the TNC has for John's incredible contribution to those interested in ornithology. John, Regional Coordinator BirdLife Australia, has lived alongside the river for most of his life, but has also travelled widely; his knowledge of both the water and land birds is insurmountable. The TNC is extremely proud to have this 'dream come true' and named The John Masters Bird Hide.

Desraé Clarke

## A NORTHERN JEWEL BEETLE



Sharon Griffiths sent us this photo of a jewel beetle photographed on her property in Broome. Brian Hanich from the WA Museum identified it as *Cyphogastra pistor*, which occurs across northern Australia.

Jewel beetle adults fuel up on nectar, while the larvae of most species are borers, feeding on the roots or wood of trees, where they form flattened excavations.

## WA'S RAREST DUCK REPORTED ON LAKE MEALUP

Readers may remember the article last July about the flooding of Lake Mealup. Lake Mealup Preservation Society members were delighted to report that WA's rarest duck, the Freckled Duck, has been seen there three times during October! This is an extra confirmation of the conservation value of the work they have done.

## AN AVIARY WITHOUT WALLS!

When retired broadacre farmers and LFW members Maxine and Peter Robertson purchased a small commercial orchard in Donnybrook's Preston Valley they were faced with the question of "What can we do with this?" Having worked as a stockman, Peter says he was not remotely interested in being an orchardist. He did however have a lifelong interest in birds and landcare and considerable revegetation skills, so they grabbed the opportunity to marry conservation and lifestyle in a practical way to re-establish diversity and especially birds to a fairly lifeless block.

They removed and burned all but scattered groupings of fruit trees, then ripped and sprayed weeds at the end of summer in preparation for the following year's biodiversity planting. Peter said: "While we were waiting for the break we laid down groundworks for two other specific planting areas. One was to clean up a heap of rubbish on twin leach drains to create a mound where we would plant shallow rooted low and prostrate natives. The other was to dig out an area at the end of our entrance drive to establish a reed garden watered by rainwater runoff to create a seasonal wetland". Mature fire retardant and bird attracting exotics around the house such as Pittosporum, Coprosma, Olives and New Zealand Christmas Tree were retained along with Native Frangipani.

When it did rain they planted a dense thicket of sheoaks, melaleucas, eucalypts, acacias and hakeas. The mound was covered in eremophilas, verticordias, myrtles and dianella and the excavated depression with rushes, reeds and some bottlebrushes able to withstand inundation. All plants were watered by drippers when necessary for the first three summers.

"It really didn't take long for the birds to come," says Peter. "Within two years we could record 10 different species coming in to water within an hour. The birdlife now is wonderful. Parrots and black cockatoos come in and destroy the apples, pears, mandarins etc, then the singing and yellow-winged honeyeaters and silvereyes clean up the spoilt fruit, which also attracts insects, small flies etc, which the grey fantails and willie wagtails feed upon. The robins sit on a twig staring at the ground until a luckless worm appears...poor worm. The Red-eared Firetail Finches eat the florets off the casuarinas, which also feed the Western Rosellas. Parrots also utilise the lawn: twenty-eights, rosellas, redcaps and elegants eating cellulose, while firetails find the miniscule seeds."

Now six years later, the property is transformed to a vibrant, buzzing, noisy, bird and small mammal safe haven. Literally an 'Aviary Without Walls'!

Sheila Howat



Peter Robertson with Pincushion Hakea (*Hakea laurina*) in his biodiversity thicket.

Photo: Sheila Howat

## A LITTLE SPOTTY CRAB



This pretty little spotted crab is about the size of a 50 cent piece. They are from the family Grapsidae and live mainly in the North Atlantic Ocean. Colouration can be variable, according to its surroundings. It is possible that it was seen by Christopher Columbus as far back as 1492 hence its common name.

The Columbus Crab (*Planes minutus*) inhabits a variety of substrates, including floating sargassum weed, drifting timbers, ship hulls, and is often associated with Loggerhead Turtles, for which it performs a cleaning role. After continual stormy weather last August this one was found alive and well in seaweed washed up at Nairn near Coodanup.

Perhaps other beachcombers may see this, it is totally different to all the local crabs.

Heather Adamson

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

## ON TRACK

Greg Warburton

It was a proud moment for Toodyay Friends of the River at the official opening of the Bilya Walk Track and the John Masters Bird Hide on the 10th of August this year, as it represented the culmination of three years of planning and hard work. Thoughts of a river walk track in Toodyay had been around for a long time. But it wasn't until the development of the Glen Coe Estate a few years ago that the idea began to take shape. Here, a 1.5 km sealed walkway along the banks of Millards Pool to Nardie Cemetery had been constructed as a part of the development. Why not try to continue the track along the river bank into town?

In 2010, with funding from Wheatbelt Natural Resource Management (WNRM), Toodyay Friends of the River installed a picnic shelter, table and interpretive signage at Millards Pool which has subsequently become a very popular spot for visitors and walkers. Fortunately, an uninterrupted stretch of Crown land ran all the way to Duidgee Park. It included some of Toodyay's most important and historical river locations like Red Banks Pool and Extracts Weir as well as Millards Pool and Nardie Cemetery. Such a walk track would provide many benefits to health, tourism, conservation and as a focal point for Toodyay Friends of the River river-care activities. It was a project that was begging to happen! The committee voted to name the proposed track 'Bilya', that being the Noongar word for river.

A number of well-attended community meetings led to enthusiastic support from the community and the Shire. Consequently, over twenty letters of support were included in the funding application to Lotterywest through the Department of Sports

and Recreation Tracks and Trails Program. Toodyay Friends of the River was successful in receiving a \$12,000 grant allowing planning and work to begin in earnest.

By utilizing the strategic fire breaks and existing tracks along the river it was a matter of now cutting about 2km of new track to create the 6km continuous route. This included Lloyd Reserve, which was already under a Toodyay Friends of the River management agreement and had been developed in 2002 with a seed orchard, walk tracks and interpretive botanical signage.

By Christmas 2012 a series of orange markers had been placed to clearly delineate the track. Over the ensuing months picnic tables, seating and signage were ordered and installed at strategic locations along the length of the track. A guide brochure was designed and 1,000 copies printed. Also, happening at this time was the design and construction of the John Masters Bird Hide at Red Banks Pool. This was a project of the Toodyay Naturalists' Club supported by Toodyay Friends of the River and funded by WNRM (see p. 17 of this issue). It was a wonderful addition to the Bilya Walk Track project further enhancing the concept of connecting

the community to the values of the natural river environment.

Another important component of the Bilya Walk Track was the construction and installation of a footbridge over Harpers Brook. The bridge was fabricated in steel and timber off site and transported by truck. Due to the crossing spot being difficult to access it required an all day effort to position it using crane, 4x4 and block and tackle.

Up until a few days before the opening event final tasks were being carried out such as additional signage, steps and marking. The opening event went off without a hitch with over 60 people from far and wide in attendance.

Already a stream of positive comments have been received along with requests for additional brochures. Toodyay Friends of the River believes the Walk Track/Bird Hide project has a significant role in the future as a benefit for conservation and the Toodyay community but is mindful of the need to maintain and protect this asset. To learn more, visit: [www.toodyayfor.org.au](http://www.toodyayfor.org.au).

*Greg Warburton is a Project Officer with Wheatbelt NRM.*



**GARDENS FOR WILDLIFE WORKSHOP**



*LFW* members gathered in Bridgetown in October to workshop techniques for maintaining biodiversity for wildlife, with guidance from celebrity gardener Sabrina Hahn, DPaW fungi expert Richard Robinson and *LFW* Officer Sheila Howat.

The large group of members travelled from far and wide for a day full of information, fun and fellowship.

Q & A sessions became a highlight as they turned into round table discussions and swapping of success and failure stories.

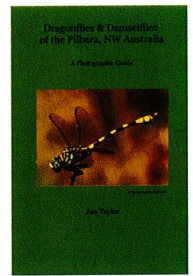
As requested we are hoping to offer a propagating workshop with Sabrina in the new year towards the end of summer. Watch out for details of this and the 2014 October workshop in *Western Wildlife* and the *LFW* Facebook page.

*Sheila Howat*

**Dragonflies and Damselflies of the Pilbara, NW Australia**

*Jan Taylor*

published: author



This 20 page booklet is designed as a field aid to the identification of the Pilbara species. The first two pages are made up of tables presenting the key identifying features of 36 species. This is followed by a photographic guide together with text giving distinguishing features and details of behaviour and distribution.

Copies are printed in America and can be seen at:

<http://au.blurb.com/b/4511644-dragonflies-damselflies-of-the-pilbara-nw-australia>

The booklet can be ordered through this site, but I can currently provide copies @ \$12.00 plus \$1.20 postage each to cover my costs. (It costs more if ordered through blurb.)

Anyone interested can contact me by email: [jmtay5@bigpond.net.au](mailto:jmtay5@bigpond.net.au)

*Jan Taylor*

**VALE:** Dr Jan Taylor passed away at the beginning of December 2013. His extensive knowledge and willingness to help others will be greatly missed. On behalf of all members of *LFW*, we offer deepest sympathy to his family - who have assured us that they will honour his sale offer given here.

**'THE MARRI APP' HELPS RECOGNISE MARRI CANKER**

A mobile phone application, 'The Marri App', is now available for public download. It provides a platform for information sharing between researchers and anyone interested in preserving this important species.

The app helps users identify the disease Marri Canker (caused by *Quambalaria* fungi) and how to recognise it. There are uncertainties

surrounding the distribution, severity and dispersal of the disease and The Marri App hopes to address some of these unknowns. Using the app, people will be able to log their sightings and GPS coordinates. The data collected will help researches at Murdoch University design treatment trials and monitoring activities to protect this keystone species.

The Eastern Metropolitan Regional

Council (EMRC), in partnership with Murdoch University, received funding from the WA Government's State Natural Resource Management Office to develop the mobile phone application.

For more information and links to the app, please contact EMRC's Project Officer, Jaya Vaughan on (08) 9424 2276 or [jaya.vaughan@emrc.org.au](mailto:jaya.vaughan@emrc.org.au).

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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