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NEWSLETTER OF THE LAND FOR WILDLIFE SCHEME

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GROWING EREMOPHILAS IN THE WHEATBELT

Claire Dadd

Eremophila means 'desert lover' so it is the ideal plant for a waterwise garden. More than 500 variants of eremophilas are growing in our garden—there are about 300 species in the wild of which 217 are named. We believe we may have the most comprehensive collection in cultivation. The species is extremely diverse, with plant form ranging from ground cover to seven-metre trees, the foliage any shade between green and grey and the flowers, any colour of the rainbow! The flowers are generally tubular to flattened tubular and are excellent for attracting pollinating insects and birds.

Our garden in Goomalling has undergone many changes since we bought the property in 1981. Gone are the wraparound buffalo lawns and old pepper trees for shade, we have moved through the lawn and roses, cottage garden and self sufficiency modes of large veggie garden and orchard, and are now enjoying our waterwise garden of mainly eremophilas.

We first 'discovered' eremophilas after purchasing an old fashioned *E. maculata* 15 years ago. While all the other plants were suffering from lack of water and the less than friendly climate (hot dry winds, temperatures in the 40s for days and frosts in winter) we noticed that this plant thrived and attracted many birds to the garden. After scouring nurseries for more, we came into contact with Phil and Marlene James from the Eremophila Native Nursery and our exposure to eremophilas grew exponentially!

Eremophila glabra *"Rotto Red"*

After exhausting the commercially available varieties, Ron started growing his own - there wasn't a large range available in the nursery trade. However, unavailability is improving all the time as eremophilas become more well known. Our garden now covers over two hectares and contains many species, variants and hybrids of eremophila. Nearly all are in raised beds to promote drainage and the soil was brought in from our industrial block in town. This has had no agricultural fertilisers applied and is 'york gum and jam' soil.

We have also planted eremophilas along the road verge in front of our property and in a non-arable (rocky!) section of one of the paddocks. The eremophilas planted in this situation have only been watered over the first summer and sparingly at that. These have not achieved the growth that the garden specimens have but have coped well in their situation. These paddock 'roughies' flower

continued on page 4

EDITORIAL

Dear reader

At this time of year, several funding organisations call for grant applications from individuals and groups. Biodiversity and bushland management grants are often suitable to help fund on-ground actions planned by many *LFWers*. The Commonwealth, under *Caring for our Country*, the state's Environmental Community Grants, and various schemes administered by the regional NRM groups, are all available at the moment. Ask your *LFWO* which one might best fit the project you have in mind, then download the information from the appropriate website. You have to write the application yourself, but the *LFWO* can help you with wording, and perhaps maps. Good luck!

In April we will host Alan Fleming from the Royal Forest and Bird Protection Society of New Zealand. He is coming to Australia to study *LFW*, and will visit Melbourne, Brisbane, Alice Springs and Perth to see how the program is administered in different jurisdictions, with a view to introducing it in New Zealand. More about his visit will be included in the next issue of *Western Wildlife*.

An event that occurred while this magazine was in press was the 30th Anniversary of *LFW* Conference in Victoria. Claire Hall and Sylvia Leighton attended the event, and will write about it in the next issue.

Nationally, 2012 is 'The Year of the Farmer'. *LFW* hopes to hold some events later on in the year that will celebrate some of the outstanding farmers who are also outstanding biodiversity managers. Having healthy bushland on your property does not detract from farm productivity, rather it enhances it. Watch out for a 'Year of the Farmer' event near you!

Have you any suggestions for landholders we should be highlighting?

Penny Hussey

Silent Night

Trevor Walley writes: "The true meaning of 'Silent Night' on Christmas Eve can be found in a quiet spot in a bush retreat away from all the glitter and commercialism. I shared this latest Silent Night with a Tawny Frogmouth, along the Serpentine River in Baldivis."

INDEX

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

Contact details for *Land for Wildlife* Officers

Name	Location	Phone	Email
Heather Adamson	Mandurah	(08) 9582 9333	heather.adamson@dec.wa.gov.au
Avril Baxter	Narrogin	(08) 9881 9240	avril.baxter@dec.wa.gov.au
Fiona Falconer	Coorow	(08) 9952 1074	fiona.falconer@dec.wa.gov.au
Wayne Gill	Esperance	(08) 9083 2100	wayne.gill@dec.wa.gov.au
Claire Hall	Perth	(08) 9334 0427	claire.hall@dec.wa.gov.au
Mal Harper	Merredin	(08) 9041 2488	mal.harper@dec.wa.gov.au
Sheila Howat	Bridgetown	(08) 9761 2405	sheila.howat@dec.wa.gov.au
Penny Hussey	Perth	(08) 9334 0530	penny.hussey@dec.wa.gov.au
Cherie Kemp	Busselton	(08) 9752 5533	cherie.kemp@dec.wa.gov.au
Zara Kivell	Mundaring	(08) 9295 9112	zara.kivell@dec.wa.gov.au
Sylvia Leighton	Albany	(08) 9842 4500	sylvia.leighton@dec.wa.gov.au
Dorothy Redreau	Albany	(08) 9842 4500	dorothy.redreau@dec.wa.gov.au
Philip Worts	Kojonup	(08) 9834 2242	philip.worts@dec.wa.gov.au

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MEMBERS' PAGE

Wild Girl

Chris Murphy

In January 2003, Sheina and I were lucky to have been able to buy a 100-acre block of wandoo woodland on the south-west corner of the Boyagin Reserve. Our piece had been partly cleared in the early 1900s and farmed cereal and sheep. We named our bush hideaway 'Ballygin' and soon afterwards registered with *Land for Wildlife*.

Over the past nine years we have been building and revegetating the cleared areas. I'm the builder and Sheina manages the revegetation. Each year we have had family and friends camping out to help plant thousands of seedlings reared for us by Renate and her team at Anda-Lea Tree Nursery in Pingelly. The place has changed and grown and we now have only five years more before we move into the house of our dreams. We like to think the changes we're making are encouraging the native fauna, though I have heard Sheina grumbling about the resurgence of kangaroos who have been seen chewing the new shoots!

Imagine my delight on New Year's Day as I arrived at the house

site for another day of toil. There she was, looking straight at me as if to say "Happy new year, you funny-looking creature!"

The camera was handy and the experts at DEC and at the Zoo have been so excited by the pictures that I have learnt more about my visitor than I had expected. Well, it's a girl and a wild one at that. You see, the breeding program produces numbats for release and those have collars. Also in the breeding season (Dec–Feb) the boys have a bright orange chest where they have a gland to rub a scent against the trees and rocks to advertise for girls!

They eat only termites by the thousands a day. This explains why "Wild Girl" was hunting around the dead wood on the slopes near the house site. I watched her for about half an hour before she disappeared as effortlessly as she had popped up. Off into a hollow log nearby is my guess. I will never move that hollow log. In fact I'm going to bring in a few more logs, after spotting a beautiful Wedge-tailed Eagle soaring in the house site's sky the next day.

Please ask all the farmers you know to support DEC's fox baiting program. Regrettably I have seen more foxes than numbats since 2003.

A delightful Christmas gift!

Lyn White

I thought you may be interested in the attached photo of a baby White-browed Scrubwren (looking like a little old professor, with the whiskers!) the day it emerged from the nest in a Hoya by my kitchen door. Not at all put off by the constant opening and closing of the sliding door, the parents persisted with their

chosen site at the base of the plant. (A good choice, as Hoyas are able to withstand long periods without water.) With trusting parents off gathering their single offspring's breakfast, the innocent new arrival allowed me my only opportunity for a memorable photo! The whiskers had disappeared a couple of days later, and he/she could fly a little, although a proper tail had not yet developed at that stage.

White-browed Scrubwrens are among the permanent garden residents, and appear to prefer the security of nesting close to the house, along with the convenience of pots and baskets.

(Wayne Gill, *LFWO* at Esperance, reports that a Fan-tailed Cuckoo parasitised his White-browed Scrub Wrens last year.)

continued from page 1

FLORA

Growing eremophilas

well and attract many birds to that section of the farm. The only problem is that they also attract rabbits which find certain varieties very tasty – this is solved by using netting guards. We have also planted eremophilas at the local golf course—again only the summer watering—and most of these are thriving. Some of the varieties found in the wheatbelt and worth trying in revegetation plots would be: *E. drummondii*; *E. lehmanniana*; *E. papillata*; *E. subfloccosa*; *E. caerulea*; *E. decipiens*; *E. caperata*; *E. miniata*; various subspecies of *E. glabra* and anything else suitable you might find in a good nursery. (Remember, if you want to try collecting material from the wild, you must have the appropriate licence from DEC and permission from the landowner.)

Through Phil and Marlene's contacts and knowledge Ron has managed to successfully cultivate many eremophilas through cuttings, cutting grafts and seeds. We have also gone on collecting trips with Andrew Brown and Bevan Buirchell (authors of the *Field Guide to Western Australian Eremophilas*) and their families. Through the collecting trips we have been exposed to the little-travelled but spectacular arid regions of WA as well as venturing to South Australia to catch up with fellow eremophila enthusiasts.

Propagation of some eremophilas can be easily achieved from cuttings, but are usually difficult from seed. The first rule is do not overwater!

Commercial nurseries have success with cutting material which is taken from young to semi hardwood. When taking cutting material ensure that you use clean secateurs. The cutting material can vary from 40mm to 75mm in length. They are then dipped in a hormone powder or gel, with the cutting placed in the prepared sterile mix, which consists of perlite/peat and/or cocopeat. The ideal time for this to occur is generally during the warmer months with the cutting striking and growing roots from three-six weeks. The successful cuttings are then placed into small tubes with a suitable potting mix

and hardened off. Ron uses cut-off 600ml coke bottles to place over the cutting pot making an individual hot house for each cutting. Using the cover means that watering is reduced as the potting mix does not dry out as much as an uncovered cutting.

Some species which are very difficult to strike from cuttings are grafted onto a suitable rootstock of *Myoporum insulare* and/or *M. montanum*. Some success has been achieved by using vigorous *Eremophila* species such as *E. glabra* or *E. denticulata*.

Another technique for grafting is 'cutting grafts'. This is similar to the above, the difference being that you prepare the stock as a cutting, attach the scion as described above, dip the stock into a suitable hormone powder or gel and place the cutting graft into the prepared mix. For both grafting techniques, the successful growing grafts can be removed from the container around three-six weeks later and hardened off similar to cuttings.

Eremophila cultivation is best in drier areas of WA and the other mainland states; however, some have proven to be adaptable to a range of soil types provided that drainage is very good and that light conditions are

Eremophila oppositifolia *purple variant, Western Weeooka*

continued on page 5

continued from page 4

FLORA

Growing eremophilas

adequate. As a rule, eremophilas will grow on relatively poor soils, from slightly acidic to alkaline limestones, sand, clays, gravels, ironstone and quartzite. They do respond to a range of fertilisers from the proprietry slow release brands of native fertilisers, to blood and bone, provided they are not applied too heavily and too often.

In the past year Ron has collected seed from the garden beds and has successfully grown some eremophilas from seed. Some of these plants have proven to be hybrids from various plants in the garden. These plants are mainly grown on as 'curiosities' as the parent plants are often found thousands of kilometres apart in the wild and would not cross naturally.

Eremophila muelleriana, *Round-leaved Eremohila.*

All photos: Ron Dadd

We have been encouraged by the positive feedback from visitors to the garden. We have been a part of the Australian Open Garden Scheme for three years and although it is hard work making sure everything is neat and tidy, the day has been enjoyable. We have also had a few groups of interstate enthusiasts visit and some bus tours now include us on their itinerary. In 2011 we had garden clubs come to visit due to the garden not being in the open garden scheme. In 2012 we will not be in the open garden scheme due to a family wedding but hopefully we will be open to the public again in 2013.

Ron and Claire Dadd of Goomalling can be contacted on (08) 9623 2244

OUR PIECE OF PARADISE

Glenys Salter

When we first moved to Banjup, 30 years ago, our block consisted of a few spearwood trees, paper barks and swamp gums in the lower wetter section; it previously was part of a goat farm which meant it was quite sparse. We started planting a variety of trees and shrubs. It was a bit of trial and error because Jandakot sand isn't the easiest to grow things in but we soon found suitable plants and now there is an abundance of foliage and flowers to cater for all appetites.

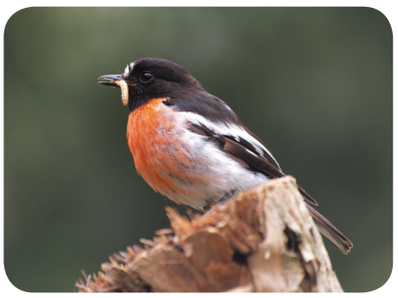
It was the norm to 'slash and burn' which meant we might have had a tidy block but we were unwittingly depriving all creatures great and small of their habitat to live, hide and breed in, so all branches that are on the ground or a tree that falls are now put into piles around our block and to see Splendid Fairy Wrens, Willy Wagtails and many other birds plus bandicoots and other small marsupials and I'm guessing the 'few' snakes enjoying their safe homes is very rewarding.

A family of Scarlet Robins call our place home now and so far we have seen two babies, dad very proudly brought them in to show us, and by the frantic activity going on as I write this (early December) I wouldn't be surprised if another lot of babies will hatch soon. There is a lot of dashing back and forth with a beak full of meal worms.

Possums also enjoy our company and at last count there were six including two new babies. I've had the privilege of seeing a possum baby as it emerged from the pouch and then promptly sat on mum's head as she ate a piece of apple!

As an avid photographer, life is never dull here in 'paradise' with the comings and goings of our feathered and furry friends.

Glenys Salter can be contacted by email on: unwooded18@hotmail.com.



Top: Scarlet Robin
Centre: Rufous Whister
Lower: Collared Sparrowhawk
Photos: Glenys Salter

FLORA RESEARCH

PERSISTENCE OF *CALLITRIS* IN A FLAMMABLE HEATHLAND

Chloe Flaherty

There has been an ongoing discussion in previous issues of *Western Wildlife* about the native cypress-pines (*Callitris*) and their persistence in landscapes that have been subject to periodic fire regimes (natural or otherwise). This is a topic that caught my interest, as a bright-eyed environmental science student, a few years back. For a year, I researched populations of *Callitris preissii* (more commonly known as Rottnest Island Pine) in the Lake Johnston region (WA Goldfields). My aim was to investigate demographic and environmental characteristics of this fire-sensitive species in relation to the past fire regime.

The first thing that I noticed about *Callitris* was how out of place they seem within the landscape in which they occur. Visually, they stand out immediately among the surrounding low-lying shrubs. *C. preissii* is a relatively common and widespread species throughout Australia's semi-arid regions. However, rather than forming extensive woodlands, this small-to-medium-sized tree tends to occur in small emergent 'patches' within heathlands of the south-west. The patchiness of their distribution is thought to be a consequence of fire rather than other abiotic factors such as soil nutrients or water availability.

C. preissii, like most other *Callitris* species, is considered fire-sensitive. They are killed outright by fire and are non-resprouting. They also exhibit a trait called serotiny, whereby seed is stored in woody cones in the canopy and released following fire. *Callitris* are also extremely slow growing, with some species taking up to 20 years to reach reproductive maturity. Therefore, if successive fires occur at intervals less than the time taken for seedlings to reach maturity, then populations are likely to decline. Population declines and extinctions have been observed following changes to the fire regime in *C. columellaris* populations from many parts of northern Australia (as Penny Hussey mentioned in her previous article on cypress-pines in *Western Wildlife* 15/1). This highlights just how important a role fire plays in the survival and distribution of *Callitris* populations.

The semi-arid heathlands in which *C. preissii* occurs are widely known as being one of the most flammable vegetation types in Australia. Predominantly made up of species from Myrtaceae (eucalypt family), Proteaceae (banksia family) and Ericaceae (heath family), the heath vegetation, in contrast to *Callitris*, is not only highly flammable, but also highly fire-adapted. Fire-adaptive traits such as thick bark, the ability to resprout from epicormics or lignotubers, fire-induced flowering/seed-release/germination, and persistent aerial or buried seed banks ensure post-fire survival for the dominant species that occur here. The Lake Johnston region is subject to a fire regime of large, mainly lightning-caused fires every few decades (fire intervals of the area varied widely from 10 years to >70 years). The region consists mostly of unallocated Crown land and conservation reserves and remains largely in an untouched state (minimal fire management, grazing disturbance, human inhabitation). This current fire regime is therefore considered to be the 'natural' fire regime.

Recently-burnt heathland in the Lake Johnston region, showing burnt Callitris preissii in the foreground and an unburnt patch at the rear. Photo, Chloe Flaherty

Many *Callitris* populations in Australia thrive in naturally fire-protected areas. I have observed dense populations occurring in deep gorges and gullies in the Pilbara region as well as on salt lake dunes in the Goldfields region. Rocky breakaways, slopes and granite outcrops could provide similar protection from fire. As fire is such a dominant driver of species and population distribution in Australian ecosystems, it makes sense that fire-sensitive species are confined to less flammable areas protected from the spread of fire. However, the extensive, undulating plains of the Lake Johnston region provide few opportunities for protection from fire. It seems that the fire regime of semi-arid Australia is incompatible with the development and continued persistence of *Callitris* populations. So, how does this fire-sensitive species persist in one of the most fire-prone vegetation types in Australia?

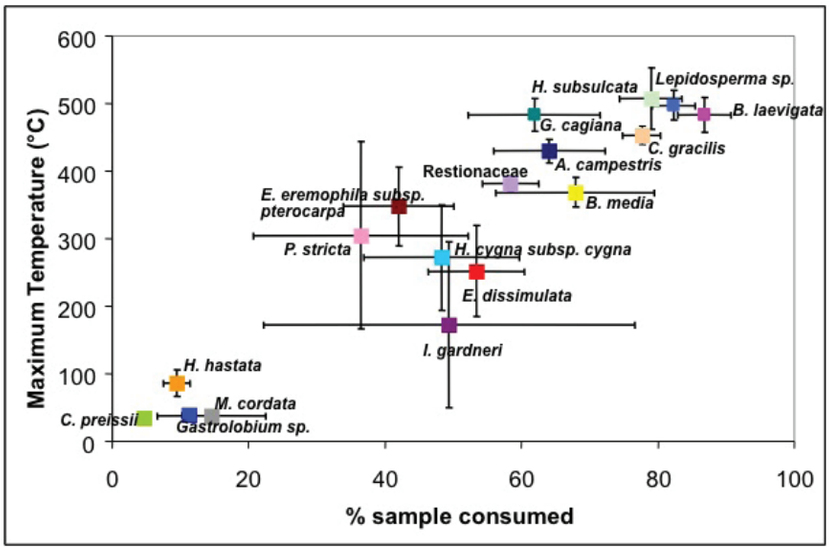
The spatial variability of fire seems to be the most likely answer to this question. Of the *Callitris* populations that I investigated during my study, all had experienced at least one fire event since the 1950s. Some patches had experienced two or three fires in the same time-frame, with the minimum inter-fire period being 10 years. (As fire scars remain evident in the landscape for many decades, the fire history could be determined back as far as the 1950s using satellite imagery and aerial photography.)

continued on page 7

FLORA RESEARCH

continued from page 6

Callitris and fire



Experimental burning experiments were done on the dried leaf litter of 17 common heathland species from the Lake Johnston region. This graph shows the relationship between the maximum temperature obtained and the percentage of the sample which was consumed in the burn. The points represent means (all species n=3 except for I. gardneri *n=2) and the error bars represent the standard error. (Species names in full:* Allocasuarina campestris, Banksia laevigata, Banksia media, Calothamnus gracilis, Calltiris preissii, Eucalyptus dissimulata, Eucalyptus eremophila *subsp.* pterocarpa, Grevillea cagiana, Gastrolobium *sp.*, Hakea cygna *subsp.* cygna, Hakea hastata, Hakea subsculata, Isopogon gardneri, Lepidosperma *sp.*, Melaleuca cordata, Petrophile stricta, *Restionaceae.)*

The flammability testing apparatus. Dried leaf litter of the different species was placed on a fibre cement tile and ignited at a set point. Thermocouples logged temperature at one second intervals. Photo: Chloe Flaherty

I was able to use dendrochronology (where tree growth rings are assigned a calendar year and counted to estimate tree age) to estimate the average age of the *Callitris* populations to be between 60 and 104 years old. That these *Callitris* patches have been maintained in the landscape for over 100 years, surviving up to three fires in that time, suggests that the they have avoided (either by luck or through fine-scale spatial variability of fire behaviour and spread) being burnt, and therefore killed. My observations in the field also supported this idea. The *Callitris* patches that I observed in the more recently burnt areas, consisted of a core of unburnt trees surrounded by an area of fire-killed trees and seedlings at the boundary of fire spread. Despite the fact that the fire seemed to be at sufficient intensity to kill some mature trees (and thus trigger seed release and recruitment), it did not appear to move through the entire patch.

There has been speculation in the past that long-unburnt stands of *C. columellaris* in northern Australia may be less flammable relative to the surrounding vegetation, thereby promoting their own survival. I came to a similar conclusion with *C. preissii* populations in the Lake Johnston region. I tested fuel and flammability characteristics of *C. preissii* against 16 other species that represented the structural and biomass dominants of the area, thus contributing the most to the litter. Under my test conditions the majority of the species ignited easily and burnt at high temperatures (>150°C), while samples of *Callitris* litter failed to ignite or produce a self-sustaining fire and would extinguish almost immediately. The small leaves and tightly packed arrangement of *Callitris* leaves and relatively low litter loads in *Callitris* patches compared to the surrounding heathland may help explain this finding. The flammability of *Callitris* litter, or lack thereof, is likely to play an important role in altering fire-spread patterns, reducing fire intensity, and reducing the chance of ignition in these *Callitiris* populations. These vegetation-fire feedbacks are likely to be very important in homogenous landscapes, such as semi-arid heathlands of Lake Johnston, where topographic protection from fire is not available.

Fire is clearly a dominating factor in the survival and distribution of *Callitris* populations, and it has the ability to eliminate but also to renew populations. Given the fire-retardant nature of the litter, I agree with Dr Start (Letter to the Editor, *Western Wildlife* 15/2) that the frequent, fine-scale burns undertaken by the Nyoongar people in the south-west would not have been detrimental to the *Callitris* populations on the Swan Coastal Plain, (now listed by DEC as a Threatened Ecological Community) as there would always be some patches that remained unburnt. If this is indeed the case, *Callitris* patches may play important roles in the ecosystem as fire refuges, and therefore have a high conservation value. It would be interesting to hear any thoughts/observations on this matter from landowners with *Callitris* growing on their properties.

Chloe Flaherty carried out this work while studying Natural Resource Management at the University of WA. She is now working as a botanist for Biota Environmental Sciences and can be contacted on (08) 9328 1900.

ROADSIDES

FLORA ROADS, VEGETATION SURVEYS AND ROADSIDE CONSERVATION

Jana Sturis

The Flora Road program of the Roadside Conservation Committee (RCC) has been running for about 20 years. In that time, 38 Flora Roads have been declared by local government authorities and Main Roads WA. Flora Roads are found from the northern agricultural area to the forests of the south west. All have their special values which make them unique and are considered outstanding examples of the vegetation that is found in the region.

Robinson Road, Woodanilling. Photo: Kylie Payne

The main requirements of a Flora Road is that it should contain a significant proportion of high conservation value vegetation as close to its natural state as possible. The road should be greater than two kilometres in length and it is preferred that the nominated road links up to other roads or tourist routes. Anyone can nominate a Flora Road. Once the nomination is received, staff from the RCC will assess its value. If it is found to be suitable, the RCC will liaise with the managing authority in seeking agreement to have the road declared.

The RCC is currently updating the Flora Road database with the aim of making the data available by request for use with a mapping program, as well as on maps that will be accessible through the RCC's website. Until then, everyone is more than welcome to contact the RCC to request the location of Flora Roads. Not all of them are sign-posted but this will be occurring in the future.

A way of identifying potential Flora Roads is through the RCC's Roadside Conservation Value Mapping program. The mapping is undertaken shire by shire with help from volunteers that live locally. This is a fantastic way for local people to gain knowledge of the environment around them, as well as people knowing and understanding the roads they are recording.

The survey can identify roads of high conservation value. These are outlined in the report that accompanies the map produced from the survey (volunteers get to keep a copy of this report if they wish). Again, if a section of road is deemed suitable as a Flora Road, the road should be nominated and then the RCC will assess it for suitability. If you're wondering why the RCC will need to assess the road after it has already been surveyed, the reason is because the surveying only checks the conservation value status as part of the assessment. On a Flora Road survey, we also assess the quality and safety of the road, and gather the information necessary to present to the managing authority. For example, wide, stable shoulders or parking bays make it safer for those who wish to pull over to the side and get a closer look at the roadside flora.

There are still a number of shires that need to be surveyed as part of the Roadside Conservation Value Mapping Program, but we cannot do this without the support from local volunteers, as well as an interest from the shires themselves. Those who help out are registered as DEC volunteers for insurance purposes, and if you complete more than 50 hours of service, you can receive a DEC Park Pass.

A roadside flower-scape, Maddern Road, Chittering.

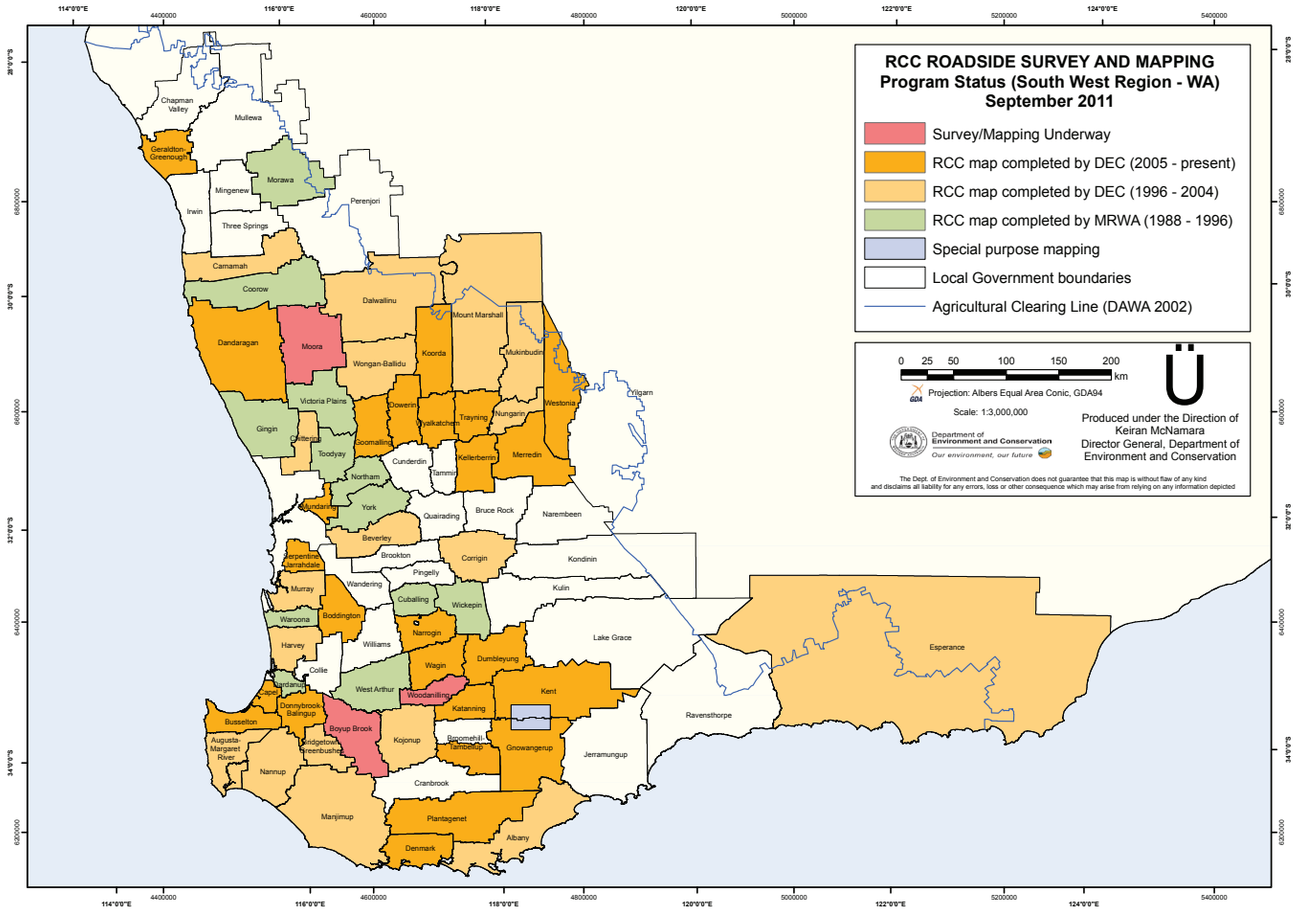
Photo: Cressida Lehmann

continued on page 9

continued from page 8

ROADSIDES

Roadsides



A roadside survey team consists of two people, a recorder and a driver. The recorder uses hand-held PDAs (Personal Data Assistants) to survey the roadsides; you do not have to have used this sort of device before but it is preferable that you feel comfortable in using this type of equipment. Training is provided to all volunteers and includes a session in the field to practice using the PDAs.

The information gained is valuable for the shire or local environmental groups to use to plan for activities such as weed control and revegetation. It can also be used by the shire as part of their regular works program, as the status of the roads will determine how they undertake maintenance activities.

Information on the Flora Road program and the Roadside Conservation Value Mapping program can be found on the DEC website at www.dec.wa.gov.au/content/view/5275/2199/ .

You can contact the RCC Executive Officer, Jana Sturis on 9334 0423 or the RCC Technical Officer (Mapping) Kylie Payne on 9219 8762 or email rcc@dec.wa.gov.au for further information on either program.

A GIANT BEE?

In early December, Steve Newbey noticed a couple of very large 'bees' on a Hollyhock in his garden near Collie. In this picture, the small one is a honeybee, but what is the larger? He asked Terry Houston, the bee expert at the WA Museum, who responded: "What you have observed and photographed is a very bee-like native wasp belonging to the family Scoliidae and sometimes called a Hairy Flower Wasp. Your wasp has long been placed in the genus *Campsomeris* but a recent publication suggests that name is incorrect. The females of '*Campsomeris*' seek out the larvae of cockchafer beetles in the soil and lay their eggs on them, their larvae feeding on and eventually killing the hosts. These wasps can deliver a painful sting if handled but, being solitary, are not aggressive." Has anyone else seen these animals?

MEMBER'S PAGE

FIRE AND RECOVERY

Allan and Julie Standering

Our *LFW* property is seven acres of remnant Jam woodland very close to the centre of Northampton. We purchased it in 2005 and over the first two years the region suffered from severe drought—during 2006 it rained only three times over the six months we where there. By 2007, 50% of our older Jam had died. Over the next two years there was enough rain to promote weed growth and keep wildflowers and other understorey species alive but not to revive the wattles.

In 2010 there was a greater amount of rain which revived the bush. In October a fire started at the front of our block. This area had been mown and so it advanced relatively slowly until it reached longer grass and a stronger breeze at higher ground. By this time the local fire brigade was on site and had the house area secured and machinery was cutting another fire break across the top of the block to stop fire spreading to adjoining properties. It took three days to extinguish completely. With the house and about three acres unburnt, the wildlife population was concentrated in that area.

In 2011, consistent rain has helped recovery. The first animals to move back in were spiders and ants. These, along with other invertebrates, started a food web that spread and became more diverse. By spring we had recorded three new bird and four new plant species, along with all the species we had recorded up to that time. Of the weeds, lupins were the first to jump away and by targeting them over the early stages they are now well under control. Poisoning Wild Radish, Cape Weed and Soursob also brought these species to manageable levels. Wild Oats and other grasses were mown and as far as possible prevented from seeding. Following good winter rain wildflowers exploded and even at this time (Oct–Nov 2011) are continuing to flower and spread. The other encouraging thing was that many of the larger Jams that had had their leaf cover burnt away were regenerating, and many small trees were re-sprouting from the base. The understorey of Kurara and Standback were also thriving. Many different seeds germinated over winter.

It would have been better to have a more controlled approach to fire management but dealing with what happened has awakened us to the advantages as well as the disadvantages of fire.

One year will not tell the full story, particularly as we were lucky to have a very wet follow-up year post fire. Overall, it would be hard to say whether we would have reached this level of diversity via less dramatic means, but we certainly have seen an increase in number and extent of plant, invertebrate and higher order species. Yet we are encouraged by what has occurred and are determined to conserve this type of ecosystem, of which only 5% still exists and what is left is degraded and fragmented.

The above photos show the new fireline that was cut to edge the fire and the growth of annuals that occurred on it by October. A real problem for us in this situation is, how do you control the Wild Oats, while still permitting the everlastings to flourish? (Apart from hand weeding every seedling, of course, an impossible task!) Is there a herbicide that would do it?

John Moore, Senior Research Scientist, DAFWA, Albany, who has an encyclopedic knowledge of weed management, says:

"Use 500 ml/ha Select + 1% spray oil as an overall spray. This should kill most of the grasses without affecting broad-leaved native species."

Allan and Julie can be contacted by email on:

aljulie@ausi.com

continued on page 11

MEMBER'S PAGE

continued from page 10

Fire and recovery

Allan Standering photographed this survivor a couple of days after the fire, and asked if it could be identified. Two students doing work experience in DEC's fauna section were asked if they could solve the problem. They came up with Gerrard's Lerista (*Lerista gerrardi*), but it wasn't an easy task, as they explain below.

PHOTO ID FOR SNAKES AND LIZARDS

Rebecca Kay and Myrto Robert

The wealth of knowledge we have accrued about our wildlife comes from a variety of sources including opportunistic encounters. Just about anyone can contribute to science by simply reporting sightings of unusual animals. The order Squamata which includes the snakes and lizards in particular is very diverse, with more than 800 species identified in Australia. Although there are many readily distinguishable species such as the common Bobtail (*Tiliqua rugosa*), many are small and require close attention to detail. Often the presence, absence or shape of a specific scale must be determined to accurately identify an individual. Scientists may encounter difficulties when trying to identify individuals photographed where critical features are not represented.

Standard morphological traits used to accurately classify Squamata to species level include the scale arrangement on the head, total length and snout to vent length of the animal. Colouration is regarded as a third class characteristic, however markings such as stripe patterns can be useful to supplement identification. Recommended photo angles suitable to encompass these characteristics include an overall dorsal and lateral view (birds-eye and side view), close-up dorsal and lateral view of the head, and a scale object (common objects like a pen or coins, not variable natural occurring items) as a size reference. If a specimen is too quick to be photographed with a scale object, maintaining the field of view and providing a scale object alone is still useful. A description of the location, time of day and the type of habitat the animal was found in is also useful to provide background knowledge on the ecology of the species.

New information is highly valued, though keep in mind that safety needs to be a priority, especially when you are unsure of the nature of the animal you have encountered.

MONSTER SPIDER

We were out on the property in Toodyay yesterday (February) doing some work and almost collided with this spectacular spider. I just caught my husband, Greg, in time from meeting it face to face! He/she is worthy of some attention and I hope your team can identify him and that the photos are useful. We noted that there were two other smaller spiders close and they both appeared to be simply 'hanging out'. They could have been on a good wicket with all of the food this monster had stored away.

In the photos you can see that the thread is really golden in colour and very tough. I gave it a pull and shake to see if he would move for a different photo opportunity, that is when I realised just how rigid the web was. Now that the photo shoot is over he or she has been left in peace and won't be disturbed by anyone of the human kind at least.

Susan and Greg Griffin, Toodyay

[This is one of the Golden Orb Weaver spiders, *Nephila*. They are found Australia-wide and up into the islands, and their strong golden silk webs can often be seen strung between verandah posts, or across tracks in the bush. They leave the remains of their prey tied up in a garbage line, usually vertically on the web. You can tell this photo was taken in summer, as the small spider is a male. He has to be pretty nippy to mate with her, lest she thinks he might be a snack! Mark Harvey of the WA Museum identified it as *Nephila edulis* - the specific name because it was eaten by Indigenous people in New Caledonia. - Ed.]

MEMBER'S PAGE

A NEST TOO SMALL

Wayne Gill

Willie Wagtail nests are not uncommon, but can still provide a lot of pleasure to the patient observer. When I discovered a small nest in the low limb of a Coastal Wattle (*Acacia cyclops*) on our seven acres just out of Esperance there were two things that initially caught my attention. One was the low height of the nest which was built on a horizontal limb just above waist level. The second was the size of the nest. Although typically a small cup of webs, sticks and bark this nest was unusually shallow such that I thought it may be the work of first time parents. This was combined with the fact there were four young chicks already rapidly filling the tiny space.

Fast forward a week and the young chicks were getting lots of feathers and making the lack of space look uncomfortable such that the parents sitting on top of them looked something like a cherry on a cupcake. After a particularly windy night I did my routine morning check on them to discover one had been ejected by its stronger siblings at some stage. After listening and hunting around in the understorey I discovered the unfortunate little guy, cold and wet on the ground. Although still being fed by its parents it was too young to survive for any length of time out of the nest so I took it inside to show my partner and two boys.

Toying with the idea of trying to raise it ourselves I had a sudden brainwave due to the fact we have a collection of nests. I got a nest from last year and put the chick in it so it could warm up in familiar surroundings. I then wondered whether if I managed to place this nest next the existing one, due to the fact it was very reachable, would the parents accept this situation. So out I go and, while being sworn at by two irate parents, I carefully wedged this nest, with chick inside, in the fork right up close to the existing nest. I then observed with my camera in hand until I was sure the parents would still feed it. Sure enough within five minutes they had accepted this ad hoc duplex housing arrangement. Although they would only sit on the main nest I figured it had more chance this way than being on the ground.

The next day I was working at the Esperance Agriculture Show when Lisa came in and explained that more strong winds had knocked the nest down again so she had resorted to duct taping it into the tree, which was equally well accepted by the parents. From this point onward there was a fair bit of bed swapping going on; sometimes two in each nest and sometimes all four back in the original (which seemed to defy most laws of physics).

The end result was all four chicks made it to the fledging stage, although unseasonal wet weather for October, and maybe predators or bullying wattle birds resulted in only two out of the four surviving to adulthood. We helped this process along by catching moths from our shed and throwing them up such that the parents would come and snatch them out of mid air in thrilling aerial displays of manoevrability accompanied by a swift crack of the beak. A pastime which our kids and their visiting friends thought was second to none.

Wayne Gill is LFWO at Esperance.

MEMBERS' PAGE

A green frog in my boot...

There's a **green frog** in my boot –
"Out you go - scoot!"
And a **spider** with hair – I'll move him with care.

There's a feather as well
And something else I can tell.
I give it a shake... it's a **tiger snake**!

I can now hear a sound,
Something's moving around
Then up pops the tail of a **phascogale**!

Opening wide
What else is inside?
Whooo else can I see? Whooo is looking at me?

A **boo-book owl** is down there
With big eyes that stare
And a **grey kangaroo** is in my boot too!

And a **honey possum** with a stripy back
A **wallaby** with a babe in her sack
A **bandicoot** with her nose in the air
And a **ring-tailed possum** with a tail with no hair,
A big-eared **bilby** and **Gilbert's potoroo**
Have now made my boot smell from all of their poo!

Can you believe it?
Is it all true?
Can all of those creatures fit in my shoe?
My boot I've upended
'Cos I just pretended
That all these bush creatures would come 'round my place.

They come out at dark
So it's best not to park
Your boots far away from the door
But if you're not careful
If you don't care
None of these creatures will ever be there!

Kathy and Kevin Collins run 'The Banksia Farm' at Mt Barker. They can be contacted by email on: banksia@comswest.net.au
Kathy is aiming to illustrate and then publish a book with more of her delightful poetry in the near future.

Did you know that ...?

... the Martu people on the western edges of the Great Sandy desert often burn the desert vegetation, but it is not done at random. They have three reasons for burning bushland. Firstly, to warn a spirit that you are approaching its territory. Secondly, to signal to other groups of people. Thirdly, for hunting, usually to clear away spinifex clumps so that goanna burrows can be located and the animal subsequently dug out. Back in camp, fire is also used for cooking, and for warmth at night.

Peter See, Kanyiminpa Jukurrpa

Did you know that ...?

... about one-fifth of the world's population can no longer see the Milky Way, because of light pollution emanating from human activities?

Fred Watson, Astronomer-in-Charge, Australian Astronomical Observatory, Coonabarabran, NSW.

IN BRIEF

LOCUSTS – THE TREES

Adrian Price

The ornamental trees Honey Locust (*Gleditsia triacanthus*) and Black Locust (*Robinia pseudoacacia* see photo) have much in common. Both are native to North America and may be planted as potential fodder trees, but they are highly invasive, especially in the south-west along the Blackwood River. They are also found on roadsides near Southern Cross. They have long sharp spines, treated by some animals as an electric fence! In Queensland, a Mr McConnel planted Honey Locust for fodder, but it quickly spread along a waterway, preventing stock from reaching the water. It was not long before the tree was locally named 'McConnel's Curse'.

The reasons why this tree is considered to be a problem include:

• the long, sharp spines are capable of inflicting injury to humans and livestock as well as causing punctures in tyres of motor vehicles and tractors

• spreading by seeds and suckers, these trees can invade pastures and grain crops, displaying a resistance to most herbicides. When disturbed by machine or fire they will produce dense regrowth forming an impenetrable barrier

• seeds are able to be spread by birds, livestock and flowing water

• the trees can outcompete and replace native vegetation

• cultivars of both trees are sold by some nurseries as thornless, but suckers and seedlings from them often produce thorns.

I am concerned that people may be planting these species in their gardens, without being aware of the future problems they could give rise to.

Adrian Price is NRM Officer in the Shire of Dowerin.

WILDFIRE AND GROUND-NESTING BEES

In the July issue of *Western Wildlife* last year (WW 15/3) we mentioned the recent discovery of the 'Megamouth Bee' in the Perth area. Like many native bees, it makes its solitary nest by constructing a burrow in the ground. Have you ever thought of the fate of these underground bee larvae in a wildfire?

Two American researchers tested their local ground-nesting bees' tolerance to various intensities of fire, and concluded that only the very shallowest-nesting species would be affected*. Thus most of these bee larvae/pupae will survive and emerge into a fire-devastated landscape. One could assume our species would be similar. But the next big question, of course, is "Will there be enough pollen or nectar from regenerating plants to enable the bees to survive and reproduce?"

*[*for ref, contact Ed.]*

THE SEVEN IMPEDIMENTS IN INVERTEBRATE CONSERVATION AND HOW TO OVERCOME THEM

Although they are diverse, very numerous and immensely important in ecology, invertebrates are often neglected in biodiversity conservation policies. A recent paper* identifies seven impediments to their effective protection:

1. invertebrates and their ecological services are mostly unknown to the general public

2. policy-makers and stakeholders are mostly unaware of invertebrate conservation problems;

3. basic science on invertebrates is scarce and underfunded

4. most species are undescribed

5. the distribution of described species is mostly unknown

6. the abundance of species and their distribution in space and time are unknown

7. the species' ways of life and sensitivities to habitat change are largely unknown.

The paper discusses these impediments in detail and suggests various possible solutions for how they may be overcome. If you are interested in invertebrates, or if you are concerned with NRM policies and goal setting, you will find that this paper provides much food for thought. *[* for ref, contact Ed.]*

THE WAY WE WERE

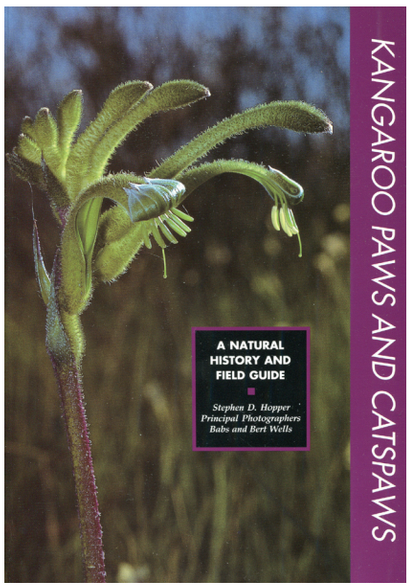
Wildflower lover and artist Emily Pelloe wrote the first popular book on WA wildflowers, Wild Flowers of Western Australia*, in 1921. In it she describes her collecting expeditions:*

"I was fortunately able to combine the study of wildflowers with my favourite pursuit, riding, and most of my bush excursions were made on horseback. Many of the flowers painted were too delicate, and withered too quickly to allow of their being done at home. So I used to sally forth on 'Snowdrift' with my paints and some sandwiches in a little bag attached to the saddle, for long delightful days in the bush to make my sketches from the flowers where they grew. Sometimes I took oats for 'Snowdrift', who usually grazed around where I sat. But there is not much nourishment for horses in the bush feed around Perth, and he used to get tired of waiting, and whinny and neigh loudly when he saw me making preparations for moving on. He was fond of eating many of the flowers, and I have been very cross with him sometimes for gobbling up some particularly beautiful specimen.

I used to go out frequently to the limestone hills beyond Jolimont. 'Snowdrift' hated that locality with its thick and prickly undergrowth and rough going. It is a good place for flowers, within walking distance of a tram terminus and a railway station (Subiaco). Orchids are very plentiful there. There is a plank road to the ocean from the old lime kilns, so prettily situated at Jolimont overlooking a lake, but to ride straight out through the bush from One Tree Hill to the beach (about three miles) is well worth the scramble it is to avoid being scratched by prickly shrubs and the difficulty of getting through the scrub at all in places, for the joy of seeing so much that is beautiful and not found in spots easier to get at.

Excursions to 'the hills' as the Darling Ranges are called, are very popular with Perth people in the spring. Many go by motor, Mundaring and Armadale being frequently their destination, as the roads are good to both these places. The view looking back towards Perth as the road climbs up the long hills to Darlington, on the way to Mundaring, is magnificent. Special 'flower trains' are run. These and the usual weekend and holiday trains are always packed with city folk eager to explore the bush and gather the lovely flowers. Glen Forrest (late Smith's Mill), Darlington, Gooseberry Hill, Kalamunda and Serpentine are all favourite haunts of the flower-seekers. The best bit I know of in the ranges for flowers is between Swan View and Darlington. These two places are on different lines, and to go to one station and walk across country to the other is a delightful way of spending an afternoon in the early spring. If the expedition is for the sole purpose of flower-hunting, be sure to go from Swan View to Darlington, and turn your back on the view. Otherwise you will spend a lot of time gazing out over that wide expanse of country with the ocean gleaming in the distance, and possibly miss many of the floral treasures at your feet."

NEW BOOKS



BARGAIN!

Kangaroo Paws and Catspaws: a natural history and field guide
Stephen D. Hopper
CALM (now DEC) 1993
Was $24.99, now only $4.99 (+ $6.35 p&h – see below for options)

This delightful book is as much a pleasure to read now, as when it was written nearly 20 years ago. Describing and illustrating all the kangaroo paws and catspaws, it includes detailed chapters on distribution, history of discovery, cultivation and lots of natural history – pollination, reaction to fire, etc. Become a full bottle on this iconic endemic Western Australian genus! At this price, you could buy one for yourself, and one for a friend!

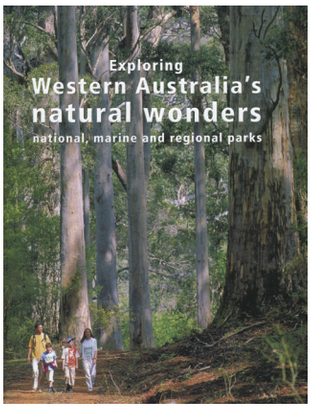
You can buy a copy for the reduced price (no p&h costs) by calling in at any DEC office, but it is suggested that you contact your LFWO first, so that they can ensure that copies are available. Otherwise, order through DEC's website, as for other books. www.dec.wa.gov.au/shop

Exploring Western Australia's natural wonders: national, marine and regional parks.
Samille Mitchell
Department of Environment and Conservation, Perth. 2011.
$39.95

This large book - 327 A4-sized pages - is a tourist or holidaymakers' planning guide, giving brief details of 64 DEC-managed parks and reserves across WA. Each location has several pages with notes on history, natural (and man-made) attractions and what a visitor can do. There are excellent photographs (especially of recreation activities) and an outline map that shows facilities areas. Introductory chapters discuss the value of parks and reserves as well as matters such as visitor health, safety and minimum impact enjoyment of the natural resource.

If you know of anyone considering a trip in WA using their own transport, this book will help them plan their itinerary.

Penny Hussey



The Hills Angels Motorbike Frog Club

Here seen enjoying a quiet moment in the sun! Photo: Jake Peetoom, Mt Helena

This newsletter is a compendium of articles written by many different people. The views expressed are those of the authors, not necessarily those of the Department of Environment and Conservation.
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All correspondence should be addressed to: The Editor '*Western Wildlife*', Department of Environment and Conservation, Species and Communities Branch, Locked Bag 104, Bentley Delivery Centre, WA 6983.