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NEWSLETTER OF THE LAND FOR WILDLIFE SCHEME

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A WOYLIE GOOD RESULT!

Gareth Watkins

The wildlife careers at Kanyana Wildlife Rehabilitation Centre had so many Woylies they didn't know what to do! The state NRM-funded Threatened Fauna Ark project had the solution – translocate the animals to a new and larger site to establish a new population.

The Woylie (*Bettongia penicillata*) is a threatened species. Habitat loss and predation from feral cats and foxes is certainly contributing to the decline of the species. Fox baiting (1080) which began in the 1970s did result in a significant recovery of the species, however in recent years, Woylie populations have crashed by an estimated 90%. It seems the main cause is predation by feral cats and foxes, but disease could also be a contributing factor.

To eliminate some of the threats that could have contributed to the decline in Woylie numbers the hunt was on for a site that was feral predator proof. The LFW property 'Heronsbrook' was chosen, because as well as having appropriate habitat, it is surrounded by an electrified predator proof fence (4kms) with a buried skirt and a floppy top. In conjunction with other feral control techniques the fence has been effective at excluding cats and foxes from the property. Heronsbrook is an old farming property that incorporates a family home, a commercial vineyard and olive grove and a valuable conservation refuge for both flora and fauna. This multipurpose property is situated near Margaret River and is 40.5 ha in size, with 8.1 ha of remnant vegetation.

The owners Mike and Mary McCall were overjoyed



with the prospect of having these animals at the property and agreed to the translocation. Over the years their property has been host to successful reintroductions of the Western Ringtail Possum (*Pseudocheirus occidentalis*), Western Pigmy Possum (*Cercartetus concinnus*), Brush-tailed Phascogale (*Phascogale tapoatafa*), and Quenda (*Isodon obesulus fusciventer*).

A winter creek that feeds into the Ellen Brook runs diagonally through the property supplying two dams, which provide habitat for a wide variety of birdlife throughout the year. The residual woodland is also largely associated with the creekline and includes WA Peppermint (*Agonis flexuosa*), Karri (*Eucalyptus diversicolor*) and Marri (*Corymbia calophylla*), with isolated remnant Blackbutt (*E. patens*) and Jarrah (*E. marginata*) in the paddocks. When the current owners took over the property the understorey had been largely lost through grazing by cattle and sheep.

Over the past 12 years the property has been progressively revegetated starting with rushes, sedges and melaleucas along the creekline and dam verges. Subsequent plantings of woodland species and understorey provide a series of corridors across the property. The resulting diversity of flora is remarkable with endemic species predominating apart from the garden area around the house, where there are exotic grevilleas, callistemons and acacias. Growth following planting has been rapid and the habitat for fauna has

EDITORIAL

Greetings all!

Thirty years ago, the Bird Observers' Club, Victorian Branch, decided to reward landholders who were looking after their bushland with a visit, a sign and a pat on the back, and thus *Land for Wildlife* was born. In this issue, the Victorian *LFW* Coordinator reports that during the 30 years of their operation, around 6,000 landholders have been involved. Currently registered landholders manage around 560,000 ha of land, with 168,000 ha as *LFW* sites.

We in Western Australia are only half that age, but nevertheless we have provided nature conservation management advice to around 2,200 landholders. Currently there are 1,898 properties on the *LFW* register, who collectively manage 1,226,571 ha of land, with 313,228 ha of *LFW* sites. This is a superb community achievement and shows how landholders in WA are committed to conservation.

This year the *LFW* staff workshop was held at Dryandra and, apart

from administrative and procedural matters, a field day was also organised where we were joined by local *LFW* members and NRM Officers. In Tutaning Nature Reserve, DEC Great Southern District staff explained about the encroachment of sheoaks into kwongan and the general difficulty of conducting small mosaic burns for biodiversity regeneration. This is a really interesting 'adaptive management' trial and we will report in detail once some results from monitoring are available. Later Mike Griffiths from WWF explained about the choice, use and general operation of motion sensitive cameras. We were also fortunate to be permitted to tag

along with scientists from DEC Science Division and so some of us got a good look at a wild Mardo. Thank you everyone for making these few days such a success.

Best wishes for the rest of the year.

Penny Hussey

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



Splendid Fairy-wrens (Malurus splendens) are so photogenic that lots of people take snaps of them. But we couldn't resist this one, taken at Yallingup by Roger Harris. Isn't this what Land for Wildlife is about?

INDEX

A Mardo as part of the household	8
A Woylie good result!	1
Biological control of Montpellier Broom	12
<i>Calothamnus</i> : when it's OK to be one-sided	4
Celebrating 30 years of protecting and enhancing wildlife habitats	10
Community science in action	7
Creating wildlife corridors	6
Discovery of the 'Megamouth Bee'	13
Editorial	2
European Hares in the Great Southern	12
In Brief	13
New books	13, 16
News	14
Propeller Banksia: a Methuselah among plants!	11

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continued from page 1

FAUNA

Woylies



A dam showing fauna habitat zones.

become increasingly valuable.

The dams, which resemble natural wetlands, provide very good fauna habitat, supporting some 80 birds (terrestrial and waterbirds) and at least six frog species. It has recently been confirmed that Water Rats (*Hydromys chrysogaster*) are using the wetlands (see January 2011 issue of *Western Wildlife*). As they are a higher order predator this is an indication that the ecosystem is in good health and is able to support a variety of species.

The translocation

In March 2010, 26 Woylies were translocated to Heronsbrook from Kanyana, to an eagerly awaiting Mike and Mary. Ten individuals were fitted with radio transmitters for monitoring by radio telemetry. This enabled monitoring of the initial survival rate and also assisted in determining the preferred habitat use by the Woylies. Mike and Mary did the majority of the radio telemetry and this gave them a unique opportunity to learn a new skill and be directly involved in monitoring the Woylie population at their property.

The results from this initial monitoring indicated that the Woylies were surviving well and by day refuge was sought in many of the dense plantings around the homestead. By night the Woylies appeared to be enjoying the space of their new environment and travelled throughout the majority of the property as they foraged.



A woylie in a cage trap during monitoring.

(All photos: Gareth Watkins)

Monitoring through trapping has also occurred (carried out by DEC) and Mike and Mary have always been eager to be present to see first hand exactly how the Woylies have been faring in their new home. Early trapping indicated that initially some individuals had lost some weight (to be expected coming from a captive environment) but these weights have since become steady and in many cases have increased from the initial release weight. The population is also showing some strong breeding success with a first generation present and some of the founder females successfully breeding twice whilst at Heronsbrook.

More recent trapping (January 2011) also yielded some positive signs in that individuals of the first generation that have been captured now weigh over one kilogram. It is anticipated that before long there will be evidence of a second generation at Heronsbrook (i.e. young from non-founder females) which will provide some indication of the longer term success of the translocation. At present (January 2011) more than 75% of the founding population are known to be alive. Secondary signs indicate that the Woylies have been feeding on a range of fungi species and much to the delight of the McCalls they have also been feasting on corms of Guildford Grass.

Predator proof fences

Heronsbrook was, in part, selected due to the control measures that have been put in place by the owners to exclude the feral predators, cats and foxes. The perimeter of the predator proof fence is frequently checked for incursions. Initially feral animals were removed by various control measures including 1080 baiting.

Whilst predator proof fences are not appropriate in all situations as they restrict the movement of some species, therefore preventing emigration and immigration, in this instance the fence has assisted in providing a refuge for native fauna and has paved the way for the fauna reintroductions.

The future

Future monitoring at Heronsbrook will determine the success of the translocation but the early positive signs are excellent. Mike and Mary are continuing their revegetation efforts to provide habitat for the growing Woylie population and other species. The McCalls have enjoyed their experience so far and are very conscious of the Woylies' wellbeing.

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FLORA

CALOTHAMNUS - WHEN ITS OK TO BE ONE-SIDED

Alex George

Readers of *Western Wildlife* will know the One-sided Bottlebrush, but do you know that there are many species of this genus, 41 in fact? They belong to *Calothamnus* in the family Myrtaceae and grow wild only in Western Australia. All are woody plants and in habit they range from creeping shrubs to small trees, some with papery bark. They have tough, needle-like or flat leaves. Their flowers develop on one- to three-year-old stems, in some species developing only along one side of the stem (hence the common name) but in others they are all around the stem.

The most conspicuous part of the flower is the stamens which are one to three centimetres long and joined into four or five claw-like clusters ('bundles'). In contrast, the sepals and petals are small and greenish, and the petals usually fall off as the flower opens, so the stamens form the bottlebrush. In many species the stamens are bright red (rarely yellow), the flowers generally have no scent and are pollinated by birds. In contrast, some species have dark red stamens and these generally produce



Calothamnus validus, East Mt. Barren. Note the stiff pointed sepals, fragile dome-shaped petals and the colourful bundles of stamens. (Photo: P. Hussey)

a rather sickly scent that attracts small marsupials. After pollination a small cylindrical, barrel-shaped or spherical fruit develops that, in the wild, usually remains closed until there is a bushfire, whereupon it opens and sheds a number of small brown seeds. If you're gathering seeds, be aware that the fruits contain sterile as well as fertile seeds (as do most eucalypts).

About half the species have a lignotuber (like a small mallee root) from which they sprout after fire. The others are killed by fire and must regenerate by seed. They take up to five years to reach flowering and fruiting, hence fires more frequent than this will wipe out populations before they can set seed.

Calothamnus (the name is from Greek and means 'beautiful shrub') have evolved to occupy many habitats, from wet swamps of the far south-west to dry sandy plains of the north-west, the eastern Pilbara and western desert regions. They are especially common in kwongan

(heathland) and tall shrubland. Some are confined to granite outcrops, one to the peaks of the Stirling Range. They are absent from the karri forest. Most flower in spring and early summer, but a few may be seen in flower at other seasons. *C. sanguineus* will begin soon after the first winter rains, while *C. brevifolius* may be seen in full flower at the height of summer.

The first species to be named (in 1806) was *C. sanguineus*, described by the French botanist Jacques-Julien de Labillardière from specimens that he collected at Esperance Bay in 1792. In the 19th century, further species were described by English, German, Russian and Australian botanists from specimens sent by plant collectors. By the time George Bentham published volume three of his *Flora Australiensis* in 1870 (containing the myrtle family), 22 species were known. Others were named over the following century, and in the 1980s Trevor Hawkeswood added another nine.



C. sanguineus, York. (Photo: P. Hussey)

continued from page 4

FLORA

Calothamnus

The most common species is the 'standard' One-sided Bottlebrush, *C. quadrifidus* which, in various forms, extends from Shark Bay to Busselton, east to Israelite Bay and inland to the Southern Cross area. Recent research* has resulted in the recognition of eight subspecies. Two of these subspecies were known previously as *C. homalophyllus* and *C. asper*.

In contrast, several species are known from only one or two localities, although none is considered endangered at present. One, *C. accedens*, was thought to have become extinct until surveys discovered populations between Watheroo and Perth, some of which had been wrongly identified as another species.

A most unusual species is *C. tuberosus*. As its specific name indicates, it has tubers along its roots, the only species among the 4,000 or so in the myrtle family to have evolved with this feature. The tubers are a water-storing device, very useful in the habitat of the plant—granite rocks of the south-east, inland from Esperance.

For those especially interested in these plants, recent research has clarified the name of several species. *C. kalbarriensis* is correctly known as *C. oldfieldii*, and the species that has been known by the latter name is

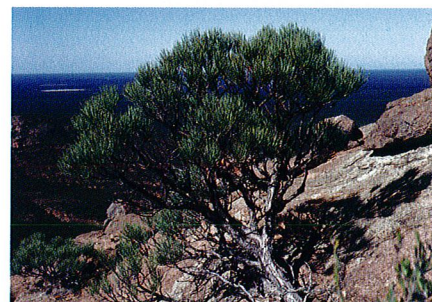
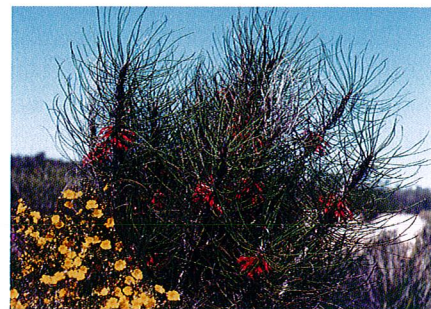
now *C. phellosus*. The species on the peaks of the Stirling Range, known previously as *C. crassus*, is now *C. montanus*, while the name *crassus* is correctly applied to a subspecies of *C. lateralis* that grows on the Scott River plains near Augusta.

A number of species have been cultivated. The most widely grown is *C. quadrifidus* in its many forms. Unfortunately, when this species has been used in revegetation plantings such as along main roads, there has been no or little attempt to grow a local provenance. Some of these plantings have become naturalised and are effectively becoming environmental weeds in their own state. Another species that is infesting native woodland is *C. rupestris*, planted some years ago along the Brookton Highway south-east of Karragullen.

Several species are grown in Britain, where a common name is Magic Pine—earned because the plants appear pine-like until the flowers burst from the stems. On a visit in 2005, I was intrigued to see bumblebees visiting flowers on a plant of *C. validus* at Tresco Abbey Garden in the Isles of Scilly.

[*For ref, contact Ed.]

Alex George is a botanical consultant and former Editor of Flora of Australia.



Left: *C. lateralis*, note colourful new foliage.

Right: *C. torulosus*, note staminal bundles are different sizes.

(Photos: Alex George)



Top down: *C. brevifolius*, at Bruce Rock grows very close to the ground. Nectar-eating fauna stand on the ground and reach up. (PH)
C. phellosus, note corky outgrowths on fruits (Photo: Alex George)
C. longissimus, Gillingarra. (PH)
C. tuberosus, at Peak Charles, with tuberous roots excavated and partly eaten by fauna. (PH)

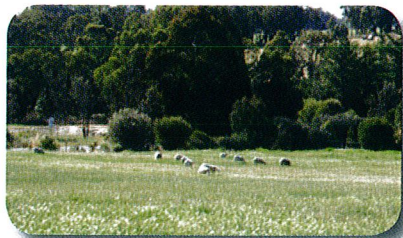
REVEGETATION

CREATING WILDLIFE CORRIDORS

Caril Barker

After 31 years of establishing a productive 30-acre farm in Mundaring, the steep hills, although breathtakingly beautiful, were starting to take our breath away in our more senior years! After five years of looking for flat land, with some wetland areas, we found 50 acres in Gidgegannup. It included an original 100-year-old home and a newer 40-year-old house. The land was overgrazed and the house area had a fully reticulated 'beautiful exotic English garden'. Soon after we moved in, two adjoining properties came on the market. This land had previously been used to extract timber and gravel for many decades, then as an export sheep holding area. With a massive weed problem, as well as plastic baling string and general rubbish inundating the area, we planned how to resurrect the landscape to try and mimic the original.

Fencing off the waterway/drain from animal access was the first step. With the planting assistance of Swan TAFE horticultural students, 1,200 plants were the beginning of the revegetation of the erosion channel caused by overgrazing. This planting program continued and a soak was put in with appropriate wetland trees and understorey. To protect this area from stock, it was completely fenced off.



This photo is looking north, with the creekline fence barely visible. The larger trees are Blackbutt (*Eucalyptus patens*). (Photo: Caril Barker, 2011)

Natural recruitment in the entire wetland area quickly took place, even in the clayey soil. *Callistemon phoeniceus* and *Astartea affinis* (was *A. fascicularis*) are very successful along the road verge as well as around the soak. Frogs and birdlife are abundant and a sheer delight.

As sheep breeders (Wiltshires), we quickly decided that these corridors not only provided habitat for birds and animals, but were also wind and sun protection. At the time (2002) the Susannah Brook Catchment Group was being formed. Over the next eight years, with the assistance of funding from SwanAlcoa Landcare Program for tubestock and fencing materials, we revegetated corridors along many dividing fences, providing access for wildlife from Toodyay Road to Susannah Brook and incorporating nearby areas of remnant bush. We also revegetated all adjoining road verges.

The understorey development was extremely

SIX YEARS OF GROWTH



To establish a corridor between the main property and the two adjoining ones, the Tasmanian Blue Gums (*E. globulus*) and *E. grandis* were removed in 2004 and a five metre corridor was fenced off. Although there is a lot of sheet rock on or just below the surface, the planted tubestock got their roots down into it. The remnant Marris within the corridor and on the right provide shelter from easterly winds. (Photo: P. Hussey, 2004)



The corridor continues on to Toodyay Road, a length of over a kilometre. Just visible on the left is one hectare of fenced-off remnant vegetation which is the next understorey establishment programme. (Photo: Caril Barker, 2011)

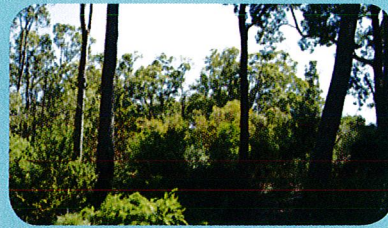
successful, though the tubestock did need protection from rabbits which pruned and also dug down to access the cool juicy roots resulting from my hand watering. The fenced off corridors with hakeas, mallees, melaleucas and acacias growing close to the ground provided a hidden cause of death. Rabbit burrows with many entrances are impossible to detect in these corridors until a large healthy tree suddenly dies.

The 50 or so Red-tailed Black Cockatoos consider the entire property as 'heaven', particularly because of

REVEGETATION - MEMBERS' PAGE

continued from page 6

Creating wildlife corridors



The area just inside the front gate was 100% marri saplings with long straight trunks and small canopies. The photos show 2002, 2004 and today. (Photos: Sarah McEvoy, Penny Hussey and Caril Barker)

the drinking troughs. At dusk, their noise is delightfully deafening.

Two open days held here have been well attended and promoted a lot of smaller scale ideas for small hobby farm and horse properties.

The current 2010-11 drought has caused minimal damage in the natural soil. However, around the house where building sandfill was

required the soil has become non-wetting with very disappointing results despite watering. Compost and rock dust (granite and diorite) as well as coarse mulch which allows water penetration is gradually building up the soil. The hybrid grevilleas are wonderfully drought-tolerant and bird-attracting plants. Whilst not native, like many callistemons

they do provide great habitat for many species of honeyeaters, blue wrens, robins, pardalotes, thornbills, spinebills, willy wagtails, and many, many more.

Caril and her husband Malcolm can be contacted on 9574 6726.

COMMUNITY SCIENCE IN ACTION

In March I was contacted by Paula King who wrote "I thought you may be interested to know this locust was found on our deck yesterday in Denmark, on Mt Lindesay Road. I have not seen another." A very good photo was attached and a request for information was duly dispatched to the Department of Agriculture and Food's 'Pest and Disease Information Service'.

Soon thereafter came this reply from Technical Officer Jessica Harrison who wrote—"I believe this is a Spur-throated locust; localised adult populations were first sighted during February in several localities in the Northern Agricultural Region including East Binu, Yuna, Tenindewa, Chapman Valley and between Geraldton and Mullewa. Pockets of them were also sighted in more southern locations including Wubin and Rockingham. The locusts have migrated from northern pastoral and subtropical areas into southern areas assisted by the cyclonic weather patterns. This is the first report I have seen of them as far south as Denmark, so I will forward this on to the people involved in mapping their distribution.

Thank you for taking the time to forward this photo. If you have any further queries on animal or plant pests, diseases or weeds please do not hesitate to contact the Pest



and Disease Information Service on freecall 1800 084 881 or email info@agric.wa.gov.au."

So next time you see something out of the ordinary it may well be worth letting people know so that collectively we can build up a better picture of what is happening in the natural world. There are too few scientists in the field, but we can all develop skills of observation and recording. (Photo: Paula King)

Dorothy Redreau

FAUNA

A MARDO AS PART OF THE HOUSEHOLD

John Pate and Karon Swan

Imagine the privilege of having a native marsupial, the Mardo (*Antechinus flavipes*), enjoying residency in the close proximity of one's dwelling and watching it and other individuals going about their daily business in the garden, on the verandah and even in the rooms of the house. Such was the situation at Pate's Patch during the autumn and winter of 2010 and now well into 2011.



Through the winter and spring of 2010 at least two antechinususes entered the cottage at Pate's Patch, so long as a door or basement window had been accidentally or deliberately left open. They would dart about inspecting kitchen, lounge and bedrooms for spiders, cockroaches and other delicacies, and even pilfer meat left out for them on a

The Mardo is one of a dozen or so Australian members of the genus *Antechinus* and its species name *flavipes* refers to its supposedly yellow feet. The most abundant and widespread member of the genus in Australia, it has populations in North and South-East Queensland, New South Wales through Victoria and just into South Australia. Our subspecies is confined to the lower south-west and is somewhat drab in colour compared to eastern counterparts. Noted for the light colour of its undersides, it also has white rather than distinctly yellow feet - so hardly honours the epithet *flavipes*!

Most species of antechinususes inhabit remote areas so have proven hard to study. In stark contrast, *A. flavipes* is commonly associated with agricultural land and even comes into suburban gardens - especially, as in our case, where the latter borders on bushland. Indeed, when early settlers in the Denmark region were clearing land for farming in the late 1920s, Mardos became common occupants of living quarters, outhouses and barns. Although they earned the unfortunate reputation of killing chicks and ducklings, they must have been decidedly beneficial in keeping down numbers of European house mice and black rats introduced by the same settlers. An old resident of Denmark once told us that fellow children of his vintage adopted Mardos as household pets and even encouraged females to nest and raise young behind cupboards or even in chairs and settees of a lounge room. Mostly gone, it would seem, are those wonderful days of having wild animals as specially-prized guests in one's house.

kitchen bench! Indeed, they proved to be wonderful undemanding house guests. Unlike mice, they did not leave nasty smells and dropped only the occasional dry poo when in the house. When ranging outside, our Mardo scrambled up into the canopies of climbing plants on the verandah and even entered the roof space.

Our principal interactions with Mardos during 2010 occurred mostly at or near our feeding station on the back verandah. The star performer, on which this account is mostly based, proved remarkably easy to tame. First coming up to one's feet, it quickly learned to climb up a trouser leg and sit on an open hand. There it delicately accepted scraps of raw meat or mealworms. Our Mardo then came into conflict with fairy wrens, golden whistlers, scrub wrens and grey shrike thrushes, all of which have insatiable appetites for any goodies which we supply in moderation on the verandah. These visitors were instinctively wary of our Mardo and scolded loudly whenever it peeped out from where it was hiding. However, one shrike thrush defiantly held her ground, charging with wings outstretched when the unsuspecting Mardo came out to feed. Our special Mardo at first retreated when confronted in this manner but then pranced in the air and darted forward repeatedly, until the thrush backed off! Confrontations of this kind are likely to occur in natural bush settings since mardos spend a great deal of time fossicking around in leaf litter and there is always the temptation to climb up and raid a nest of eggs or young.

continued from page 8

FAUNA

Mardos

Determining the sex of a Mardo when viewed from the side or above is difficult because of the similar sizes, coat colourings and habits of the sexes. Furthermore, both males and females mark their territories by raising and swinging their tails sideways to deposit a fine spray of scent-laden secretions. Once we had trained our Mardo to sit quietly feeding off a hand, one could gently stroke his back, slowly lift up his tail and look at his private parts close up to confirm his masculinity!

To our great good fortune a second Mardo appeared on the verandah in mid August whereupon the two started chasing each other all over the place at high speed. Confirmation of female status came upon viewing it from beneath. The lady in question had prominent wounds on her body and face, presumably resulting from fights with other members of her species and she was referred to from then on as 'Scarface'. She could thus be easily distinguished from our special male, or indeed from any other member of the fraternity which happened to turn up on the verandah.

Studies on species of antechinuses in the wild have indicated that the two-week mating season is strategically timed so that young reared by a female are weaned just when food is likely to have reached peak availability. Males evidently expand their territorial ranges and become increasingly active during the day as they continuously search out females and engage in conflicts with similarly preoccupied males. Males then die shortly after the mating season finishes, allegedly due to a suppression of their immune system, associated with increased levels of testosterone and various imbalances to their endocrine system. Susceptibility to disease and predation increases under such circumstances.

Based on superficial shape, colour and size, a Mardo might easily be mistaken for an introduced Black Rat (*Rattus rattus*). Mardos are fortunately carnivorous so are unlikely to be attracted to the cereal-based baits normally used to kill mice and rats, but there are probably many cases in which humans have mistakenly slaughtered this delightful native species by mistake.

Anyone having close acquaintance with a Mardo should be able to deduce that it is not a rat. They move differently – the Mardo has a delicate darting gait, with a somewhat hesitant sideways-style of progress as they continually nose out food and sense possible danger. Their bodies also adopt a characteristic posture when running, resulting in a looping fashion of progress. The tail is shorter relative to the body than in a rat, and the jaw more pointed. The principal difference from mice or rats of course relates to absence of the buck teeth typical of such rodents.

Although books on Australian marsupials class antechinuses as nocturnal, local naturalists in Denmark

seem to be well aware that *A. flavipes* can be seen out and about in bush or around homesteads during the day. Indeed, one can often be alerted to the presence of a Mardo simply by the remonstrations put on by birds. Then, if one is lucky, the animal concerned will be seen noisily scrambling up a tree trunk scavenging for insects, exploring exfoliating or fallen bark, or just bulldozing its way noisily through layers of fallen leaves.

By the end of September 2010 we reluctantly concluded that Mardos were no longer to be found in the vicinity of the cottage. We were then left wondering whether our special friend did indeed mate successfully with Scarface and, as very special icing on the cake, would she survive to raise a family in the garden or thereabouts?

Well, in late January 2011, a baby Mardo was spotted coming into the study through a partly open door! It explored under the desk and even over a pair of human feet and did so in the very same unconcerned manner which we had associated with our special friends of the previous year. So, together with subsequent glimpses of another bigger and paler antechinus fossicking in the beds below the front verandah it would appear that a new generation is present in Pate's Patch and now well into independent life.

Isn't it nice to end with a hurrah sometimes!

Emeritus Prof. John Pate is writing a book about local fauna, in collaboration with Karon Swan. This story is a shortened version of one of the chapters. The book should be a delightful read!



Facing page: the tame male.

Above: Scarface, the female. Note that, when compared to a Black Rat, the Mardo's tail is hairy and shorter relative to the body than a rat's tail.

Photos: John Pate

LFW INTERSTATE NEWS - VICTORIA

CELEBRATING 30 YEARS OF PROTECTING AND ENHANCING WILDLIFE HABITATS

Peter Johnson

The first *Land for Wildlife (LFW)* property was established in November 1981, at Winchelsea in Victoria. This acknowledged the importance of private land in conserving habitats and species not represented on public land, in maintaining links between public reserves and other private land, contributing to sustainable landscapes, and creating a sense of connection between like-minded people.

By 1990 there were 800 properties registered in the scheme. At that time, *LFW* was substantially upgraded with the appointment of a state-wide coordinator, part-time extension officers, establishment of a centralised property register, initiation of the newsletter and notes series and regular field days and other events. The additional resources addressed a real gap in biodiversity extension on private land at this time. In 1997 there were more than 4,000 properties registered through the program, and this has grown to almost 6,000 properties in 2011. Since 1997, *LFW* has also extended interstate, where it operates under a common set of principles and standards.

The current area of private land in Victoria being managed by *LFW* members is approximately 560,000 ha – an area almost equal to the Victorian Alpine National Park, representing about 4% of privately owned regional and rural land in Victoria. Included in this is 168,000 ha of land dedicated to wildlife habitat. In other words, more than one-third of the total area of *LFW* properties being retained and restored is equal in area to the Grampians National Park.

LFW is consistent with the principle of not adding to existing social or economic burdens of

landholders. In recognition of the contribution being made by landholders to wildlife conservation no fees or costs are associated with joining the program. *LFW* doesn't alter the legal status of a property in any way, making it appealing to many landholders. The *LFW* status applies to the whole property, as the aim is to manage all land in an integrated way, even though the focus of habitat retention and enhancement may only be on a portion of the property.

From a recent survey, landholders estimated that they were spending \$2,100 on conservation management each year. This equates to an annual investment of around \$10 million. By this measure, the private investment in conservation activities far exceeds that made by government. Almost half have 60% or more of their property set aside for conservation management. Most properties are relatively small, with 32% being less than 5 ha and a further 35 % under 20 ha. Most landholders in *LFW* do not rely on farming for their income - less than a quarter are primary producers. Almost all members are dedicated to nature conservation, believing it is their own responsibility to take action.

Involvement in *LFW* provides landholders with the sense that they belong to a 'kind of club'. When landholders read about others in the newsletter, this helps them find a sense of belonging to a community. This is especially important when people feel they don't have the appropriate knowledge or skill to 'get involved' in actively managing their bushland. Landholders with a *LFW* sign on their front gate also report being a source of knowledge for neighbours. The sign seems to attract questions from neighbours about things like

bird identification and indigenous plants, potentially helping to trigger an interest in conservation for those living nearby.

The *LFW* sign itself has become more than an outward expression of conservation values, it is also an affirmation of the biodiversity value of the property itself. For those landholders who are employed away from their property, coming home and seeing the sign reinforces the habitat values, and the importance of keeping up with weed control and other management tasks. The *LFW* sign alone carries a powerful community message, building a sense of social connectivity, while landholders work on their properties restoring and enhancing the physical landscape.

LFW has been quietly enriching and improving connections between community and wildlife landscapes ever since it began in 1981. The original idea arose out of regular meetings held between the then Fisheries and Wildlife Service and the Bird Observers Club of Australia. At one of those meetings it was recognised that landholders voluntarily protecting habitats for wildlife on their land should be encouraged and supported. Since then, more than 9,000 properties have been registered as *LFW*, engaging and motivating more than 20,000 people in Victoria alone. This, plus the several thousand requesting to be on the mailing list, has broadly influenced outcomes for *LFW* locally, interstate and internationally.

Peter Johnson is LFW Coordinator for Victoria. He can be contacted on: Peter.Johnson@dse.vic.gov.au

FLORA - RESEARCH

PROPELLER BANKSIA: A METHUSELAH AMONG PLANTS!

In the low kwongan between Dandaragan and Eneabba you can find Propeller Banksia (*Banksia candolleana*). It is a dense, low shrub, seldom reaching much above waist height, but spreading out to form a multi-stemmed clump up to 10 m across. It is not spectacular - the flowers and fruits are buried inside the bush - but it is interesting in other ways, as individual plants may be more than 1,000 years old!

Clumps of Propeller Banksia are all one 'clone', that is, they all arose vegetatively from one individual plant. Prof. Byron Lamont of Curtin University has investigated this species (and all other banksias) and writes:

"I excavated small plants and examined the underground stems. Each time there is a fire, the underground buds shoot and extend the rhizome along the ground by 5 cm on average and then produce new vertical shoots from that. All subsequent growth is from the aerial shoots until the next fire. Using aerial photos, my colleague Ben Miller showed that the area has been burnt on average every 15 years over the past 40 years. In the past, lightning fires would have been more

frequent as they were not confined by the effect of land clearing and roadways as they are today. So we suggest a mean of 10 years is reasonable before that. So a radius of 500 cm divided by 5 cm every time there is a fire gives 100 increments of growth and each of these represents a 10-year interval so we end up with a maximum age of 1,000 years. We must point out that we have measured the diameters of hundreds of *B. candolleana* and the largest has just fallen short of 10 m (one problem is that the clones break up when they are extremely old so that it is difficult to know if the separated clumps belong to the same plant or not, so we excluded these), but then a 10-year fire interval might also be considered overly frequent, so that some plants might well survive even longer than 1,000 years."

Byron and his colleagues have looked at the role of fire as a selective force in the origin and evolution of plant traits, and come up with some amazing conclusions. As an example, here is what their recent paper*, that looks at traits in both extant and fossil banksias, reveals about Propeller Banksia. Again, Prof. Lamont explains:

"You might note that *B. candolleana* evolved about 13 million years ago; the ability to form



Banksia candolleana, showing retention of dead leaves, flowers and large, propeller-shaped follicles.
(Photo: P. Hussey)

clumps evolved among banksias about 17 million years ago; retention of closed woody fruits that open in response to fire (the follicles of this species never open in the absence of fire heat, even if the cone is removed from the plant) and retention of dead flowers (fire-enhancing) arose about 62 million years ago, when *Banksia* separated from its tropical rainforest ancestors; while retention of dead leaves evolved among banksias about 25 million years ago (this provides extra heat to ensure the follicles open during a fire). By the way, *B. candolleana* has the largest fruits and seeds of all 85 Banksia species and so probably needs all these extra fire-adapted traits to ensure seedling recruitment after fire (it is still extremely low despite this)."

What a plant! And what an extraordinary place the bushland of Western Australia is!

[* The reference from which this information is taken, the article "Banksia born to burn", is packed with such data, but is very technical. Nevertheless, I can email a pdf to a reader on request. Ed.]

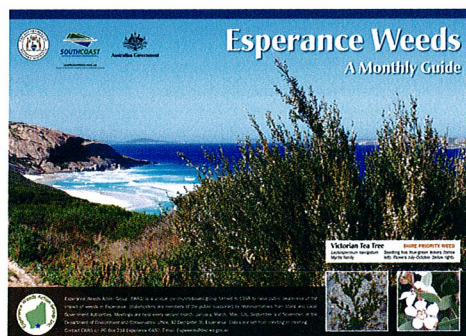


Excavated plant, showing growth increments by rhizomes.
(Photo: Byron Lamont)

WEEDS and FERALS

CREATING A GUIDE TO ESPERANCE WEEDS

Congratulations to the Esperance Weeds Action Group (EWAG) on the birth of their new baby, the long awaited document *A Monthly Guide to Esperance Weeds*. Following a grant to the group of \$20,000 from South Coast NRM nearly two years ago, it was decided to create a photographic weed identification document, with the aim of increasing the awareness and profile of weed issues within the region. As a follow up, a supplement of management techniques for those weeds within the document was produced and included with the guide.



The guide is a perpetual annual calendar whereby there are no dates, just the twelve months of the year with the six or more focus weeds for that month represented in various photographic forms that should make them easily recognisable by everyone. The weeds within each month are either active, or in need of management, within that month. It has also been produced to be long lasting with laminated front and back covers so that a user can learn the weeds within the document over several years and then pass it on to a friend.

The guide took many hours of work from EWAG members, producing the photos, creating a layout and collating the information. It will be distributed free to all Esperance small landowners and LFW members, as well as two copies to each of the 16 schools within the district. Hopefully this increased profile and recognition of common weed species will result in greater action being taken by more individuals. Weeds are one of the major threats to local biodiversity and controlling these invasive species has a positive outcome for the health and condition of the native flora.

If you are within the Esperance district and wish to have a copy of the guide but do not have one yet, you can either contact the local DEC, Shire or SCNRM office. It is possible that other South Coast residents – right across to Manypeaks - may find this document useful. Please contact your LFWO to find out how to obtain one. Weeds are an issue which we all need to be proactive about or the problem will keep getting bigger.

Wayne Gill

EUROPEAN HARES IN THE GREAT SOUTHERN



European Hares were introduced to eastern Australia in the 19th century and have established and become a severe agricultural pest there. WA is free of them – or was. A hare was shot last year at Lake Norring, near Wagin. There have been other reports from near Williams, Narrogin and Kojonup. If you are in this area, please keep a good look out and report any possible sightings to your nearest DAFWA office. Hares look similar to rabbits, but are larger with longer hind legs, black-tipped ears and a tail-down gait when running.

We really do not need another pest consuming our scarce paddock and bushland feed. (Photo: Vera Buhl)

BIOLOGICAL CONTROL OF MONTPELLIER BROOM

Montpellier Broom (*Genista monspessulana*) is a large shrub with bright green trefoil leaves and yellow flowers in spring. Imported from the Mediterranean as a garden plant, it is spreading



steadily through the wetter forested areas from Perth to Albany, being especially aggressive around Manjimup. The plant is also a problem in South Australia, and a group of scientists there have been looking for a biological control. They are hoping to bring in a particular psyllid (the group of insects that form lerps) to feed on the leaves and so bring this weed under control. Once all the protocols have been successfully undergone, the insect will presumably also be brought to WA.

(Photo: Rod Randall)

IN BRIEF

DISCOVERY OF THE MEGAMOUTH BEE



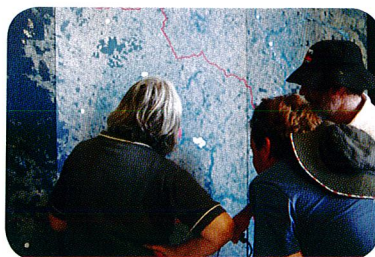
A bee new to science has been found in Jandakot Regional Park south east of Perth! The WA Museum's Curator of Insects, Terry Houston, and Museum volunteer Otto Mueller went looking for a rare bee species in mid-December but found something even more astonishing - a completely unknown species. About the same size as a honeybee, the females were carrying pollen from paperbarks and spearwood into small holes in the ground. The males were cruising around and sometimes entering a hole where he let in the female, but appeared to prevent entry by other males. This is very unusual behaviour for solitary bees. Because of the males' big jaws, the animal is being called the 'megamouth bee'. To read more, download the Information Sheet *Discovery of the megamouth bee* from the museum's website: www.museum.wa.gov.au

How on earth has such a striking species remained undiscovered for so long, living as it does only 20 kms from Perth CBD? Perhaps it is because it is active in summer, when most human observers are not out in bushland? Whatever the reason, its discovery emphasises the importance of all remnant native vegetation.

LOOK OUT FOR MYRTLE RUST

A leaflet on Myrtle Rust has been produced by DEC. Although this devastating disease has not yet been found in WA, if you live in an area where WA Peppermint trees grow, you might like to obtain a copy to keep for its clear photos of the effect to watch out for. Contact your LFWO for a copy of the leaflet.

(Note: Myrtle Rust has been confirmed in Lamington National Park in Queensland.)



WOOLORAMA

As usual, Woolorama was an enjoyable and stimulating event. Here, I am showing some landholders that their bushland can be seen from space.

Avril Baxter (Photo: Maria Lee)

DENMARK WORKSHOP

More than 50 people attended the workshop *Caring for wildlife on private properties*, held at 'Pate's Patch' in Denmark. Here Bob Smith demonstrates nest box construction.

(Photo: Yvette Carouso)

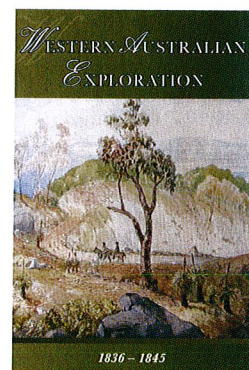


Western Australian Exploration 1836-1845

Marion Hercock & Sheryl Milentis with Phil Bianchi, Eds.
Hesperion Press. 2011
\$95.00 + \$5.70 p&h

This is the second in the WA Explorers' Diaries Project, which aims to publish the narratives of exploration of WA from the time of British settlement. One hundred reports of expeditions of exploration in colonial WA have been annotated, summarised and indexed in this volume. There are also appendices on the native plants and animals listed in the text, as well as one on the relations between Aboriginal people and the explorers. Anyone interested in the early history of this state, and especially those who would like to understand how the early settlers felt about the countryside, will find this material fascinating.

Penny Hussey



Coastal Plants Pocket Guide: Northern Agricultural Region

Peta Williams & Jenna Brooker, Eds.
Northern Agricultural Catchments Council
\$5.00 from NACC office in Geraldton (08 9964 9774)

This little spiral-bound picture book really is small enough for a pocket! Printed on stiff card, it contains photographs and brief information on the common plants growing in the coastal strip from Kalbarri to Guilderton. If you visit this coastline, you will find it useful.

EXCITING NEWS!

One of WA's rarest birds, the Noisy Scrub Bird (*Atrichornis clamosus*) requires long-unburnt vegetation in which to survive. However, our drying climate increases the risk that a wildfire could wipe out a whole population, and so a decision was made to undertake a series of translocations. One was to Bald Island, east of Albany, where 11 birds (eight males and three females) were released between 1992-94. The most recent monitoring recorded 99 males singing to proclaim their territory! Presumably there are an equivalent number of females. This marvellous result can be attributed not just to the lack of fire, but also to the absence of cats and foxes.

NEWS

NIGHT MOVES - TRACKING BATS IN RURAL LANDSCAPES

On Saturday 5 March 2011, at the time of the new moon, an enthusiastic group of locals gathered at sunset on Doug and Roma Parker's 'Priinga' property at Mingenew to spend an evening surveying bats with citizen scientists Nick Dunlop and Bob Bullen from Bush Heritage's Charles Darwin Climate Change Observatory.

Earlier in the day Nick and Bob had checked out potential sites to set up a mist net to catch bats and bat detectors to record bat echolocation calls. The southern tributary of the Irwin River runs through the property and is bounded by scarps and breakaways. There were pools of water along the river from recent thunderstorms. When tested, the water was found to be too salty (in excess of 1,200ms/m) to be suitable as drinking water for bats. A farm dam was selected as the most likely place to trap bats because its location provided a 'flyway', the water was of good quality and there were likely to be lots of insects.



A breakaway cave, roosting site of the Inland Cave Bat.

Photo: Fiona Falconer

Insectivorous bats (microbats) can easily go unnoticed by people. Microbats roost by day and forage by night and, with the exception of the White-striped Freetail Bat (*Tadarida australis*) whose echolocation call is audible to most people with reasonable high frequency hearing, bat calls are not generally within

the range of human hearing. The scientific name for bats, Chiroptera, means 'handwing'. The wing of the bat resembles the human hand, but modified for flight with a flexible flight membrane stretched over. There is a relationship between wing shape and style of flight, foraging habitat and echolocation calls. Each bat species forages in the 'aerospace' they are designed for.

No bats were caught in the mist net but the White-striped Freetail Bat was seen and heard foraging over the dam. The bat detectors recorded the presence of five bat species. The five species are the 'arid zone community' that is extant across the Murchison region to the north and east of the property, rather than the south-west WA community of forest bats.

The species recorded were as follows:

- Gould's Wattled Bat (*Chalinolobus gouldii*)
- White-striped Freetail Bat (*Tadarida australis*)
- Inland Cave Bat (*Vespadelus finlaysoni*)
- Lesser Long-eared Bat (*Nyctophilus geoffroyi*)
- Inland Broad-nosed Bat (*Scotorepens balstoni*)

Bats are an integral part of our ecosystems, providing insect control, seed dispersal and pollination services. It was great to confirm the presence of bats on 'Priinga' and everyone is keen to have another bat tracking/listening night.

The UNEP *Convention on Migratory Species* (CMS) and *The Agreement on the Conservation of Populations of European Bats* (EUROBATS) have joined together to celebrate the Year of the Bat 2011-2012. See <http://yearofthebat.org/>

Fiona Falconer

DIEBACK WORKSHOPS IN BUSSELTON SHIRE

A major issue in quite a few parts of WA is the control of *Phytophthora cinamomii* (Dieback, Pc). In the Busselton Shire, the problem is spreading through many lifestyle bushland properties (many of whom are registered with LFW) and the local community decided they wanted to do something about it. A Busselton Shire Dieback Working Group was formed and Glenn Tuffnell from Dieback Treatments was contracted to do some dieback mapping and presentations to the group.

This has stimulated the attack on dieback and many landowners have obtained dieback mapping, hygiene and treatment on their properties. In addition, a brochure has been sent to landowners in the shire and I wrote a series of news articles, that were run in the local paper over a few months. Finally, around 100 people have attended three dieback workshops.

The one I attended gave me a wealth of knowledge, even though I had attended dieback training workshops previously. Glenn Tuffnell ran it and explained exactly what Pc was, how it spread, how to look for it and how to sample for it. (Note: LFWers can send in samples to their LFWO and get them checked without cost at the DEC Health Centre – contact your LFWO for details.)

Attendees then did a planning exercise in how to manage dieback on a property, which was very interesting and showed how much everyone had learnt about the pathogen, its spread and suitable management techniques.

After lunch it was off to look at some Pc in a bushland setting in Leeuwin-Naturaliste National Park in Yallingup, a thin strip of

NEWS

continued from page 14

Dieback workshops



Demonstration of tree injection. (Photo: C. Kemp)

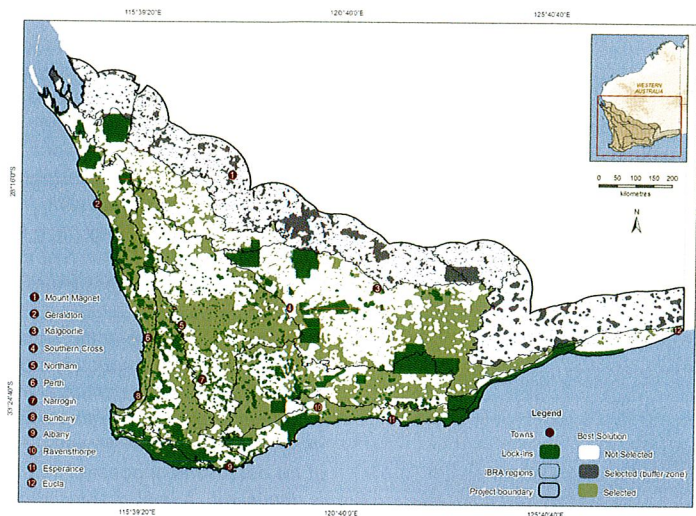
the national park that has been utilised for horse riding, walking and sand extraction. We looked at sections that had been affected by dieback and then Glenn showed everyone how to inject some trees; all participants were surprised at how easy an exercise it was. The day was finalised by travelling through some semi rural subdivisions where bushland has been subdivided and the development has brought Pc into the area.

It would be great to see these workshops held in every area affected by dieback, as Glenn pointed out that 40% of our vegetation is vulnerable to the pathogen. Thank you to the organisers and sponsors, the Busselton Shire, Geocatch and Lotteries Commission.

If you live in Busselton Shire, you can obtain more information on Pc, or arrange for dieback mapping of your property, by contacting either the Busselton Dieback Working Group or myself. The parent Dieback Working Group has produced a booklet *Managing Phytophthora Dieback in Bushland* contact: www.dwg.org.au.

Cherie Kemp

CONSERVATION PLANNING IN THE SOUTHWEST AUSTRALIA ECOREGION - WHERE TO ALLOCATE LIMITED RESOURCES?



The Southwest Australia Ecoregion is an international asset - a jewel of the Australian continent. One of the most biologically diverse areas on Earth containing approximately 16,000 taxa of plants and animals (including native and introduced species and subspecies), the ecoregion has a high level of endemism, resulting from its old, weathered, nutrient-deficient landscapes. It is 686,871 km² in area, approximately 27% of the total area of WA or nearly 11 times the size of Tasmania.

Unfortunately, within this area, expanding human populations and a history of land clearing and fragmentation has led to dryland salinity, feral animal and weed invasions and the spread of disease such as *Phytophthora Dieback*, resulting in a rapid deterioration of native ecosystems. Alas, the nature reserves and national parks that it contains are not enough to safeguard biodiversity, so we have to look to conservation on the surrounding land. But, given limited resources, what sites would be most important to target?

A consortium of concerned conservation experts met informally in 2001 and created the 'Southwest

Australia Ecoregion Initiative' (SWAEI). The objective of the SWAEI project is to deliver a coordinated, strategic planning framework for sustaining the biodiversity in the ecoregion, with the first step being a biodiversity assessment and prioritisation project using mathematical modelling developed using Systematic Conservation Planning principles.

Using the reserve system as the building blocks, this project has identified highly prioritised areas or 'Zones for Conservation Action' which are highly recommended for investment, both on-ground implementation and protection, because they offer a set of places that are likely to return the highest conservation 'bang for buck' (see map). This suggests the best locations for the allocation of limited resources in this large and precious landscape.

This has been a joint project involving collaboration with experts in many fields, and WWF is very appreciative of their support. Now, this planning tool needs to be used! To find out more, contact Danielle Witham at dwitham@wwf.org.au

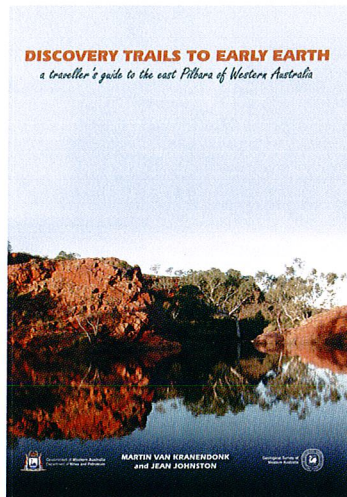
Danielle Witham

NEW BOOKS

Discovery Trails to Early Earth: a traveller's guide to the east Pilbara of Western Australia.

Martin van Kranendonk and Jean Johnston
Geological Survey of Western Australia.
2009.
\$25.00

If you ever wanted an excuse to spend five days in and around Marble Bar, here it is!



This excellent book describes and illustrates the geology as seen from the roads between Port Hedland, Marble Bar and Nullagine. It takes you back on a journey into an incredibly distant past, 3,500 billion years ago, three quarters of the lifetime of this planet. Six trails are described, with stops along the way where you can see geological features that mark events in the history of the landscape, from past to present. Other chapters give more detail of the history of the Earth, from the Big Bang to the advent of humans. Would you like to see fossil stromatolites? Tiny glass beads formed when a giant meteorite hit the Earth? Pavements grooved and polished by glaciers? Petroglyphs inscribed by Aboriginal people, or abandoned gold mines? (And this year they have had good rains, so the wildflowers should be good too.)

The authors read the landscape like a book, and provide annotated photographs and diagrams accompanied by clear written text that enables the traveller to do likewise. All told, you will get a sense of the processes and vast time frames involved in the formation of the Earth, and the landscapes we see around us today.

Penny Hussey

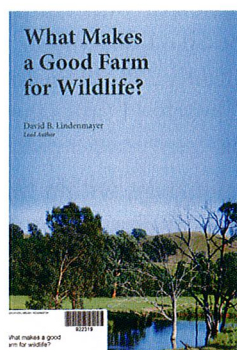
What Makes a Good Farm for Wildlife?

David Lindenmayer et al.
CSIRO Publishing. 2011.
\$39.95

For the past 15 years, a team of scientists at the Australian National University has been studying temperate woodlands in south-eastern Australia. They have investigated the interactions of a wide range of vertebrate and invertebrate fauna with the environment, including human landuse. In this book they have taken their findings and put them together to demonstrate that it is possible to conserve fauna on farms and maintain a productive agricultural enterprise at the same time.

The fauna information is organised into chapters on environmental assets: woodland remnants, plantings, paddocks, rocky outcrops and waterways. Fauna use of the asset, and suggested management, is discussed. A final chapter brings it all together into a landscape-scale perspective.

The book is presented attractively with full-colour illustrations, lots of case studies and snippets of information culled from the research, which is extensively referenced. But for a WA reader, it suffers from major disadvantages. It does not contain WA examples, and the ecological interactions discussed are often not relevant, or even useful, for our conditions. As an example, it does not consider soil salinity or fire – except by citing the latter as a threat to biodiversity.



In summary, this book showcases for the general public the results of 13 years of ecological research. To persons living in the area concerned it would be very valuable. Western Australians would find it less useful, though professionals in the landcare/bushcare field may find material that can be used as examples and to suggest new approaches.

Penny Hussey

A guide to the beetles of Australia

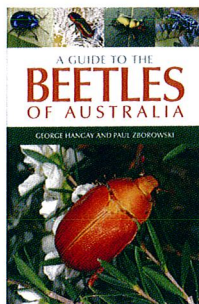
George Hangay and Paul Zborowski
CSIRO Publishing. 2010
\$44.95

Did you know that the number of described beetle species in the world – around 350,000 – is more than six times the number of all vertebrate species? In Australia there are around 30,000 beetles and this book is designed to help people recognise most beetle families that may be encountered here. After introductory chapters giving examples of these amazing insects and their life histories, the book provides descriptions of 91 families, illustrated by over 400 superb photographs of common genera. An interesting feature is the 'boxes' giving extra details of interesting features or importance to humans. I had no idea so many beetles were tiny (1mm adult length) or that so many ate fungi in leaf litter or rotting logs. And what about the family of beetles that

are parasitic on cockroach larvae!

This is an excellent guide for those who would like to know a bit more about some of the smaller creatures we share our world with.

Penny Hussey

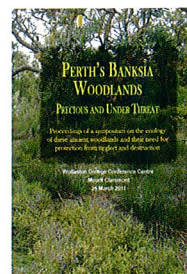


Proceedings of the Banksia Woodland Symposium

Proceedings of the Black Cockatoos Symposium

Urban Bushland Council. 2011
\$25.00 + \$3.00 p&h for each symposium, for either printed or electronic version.

In total, over 300 people attended these symposia, recently held in Perth. For those who could not attend, but would still like to read the presentations, the Urban Bushland Council is offering the proceedings for sale. Contact: ubc@iinet.net.au for further information.



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.

Published by the Department of Environment and Conservation, Perth.

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