

A photograph of a garden scene. In the foreground, a large tree with dense green foliage stands on the left, and a tall, slender tree with a light-colored trunk stands on the right. A wire fence runs across the middle ground. Behind the fence, there is a small pond and a grassy area. In the background, there are more trees and hills under a clear blue sky.

Visitors to an Australian Garden

Dagmar Parer

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Introduction

This collection of articles is brought together in memory of my beloved wife Dagmar, who died tragically from mesothelioma in November 2014, at the age of sixty-six.

Dagmar was trained as a biologist at the Australian National University in Canberra. The early arrival of her first daughter precluded her dream of a career as a research scientist, but she then worked for some years in the Division of Wildlife Research at the Commonwealth Scientific and Industrial Research Organisation (CSIRO), and maintained a lifelong interest in the natural environment. Through her mindfulness training over nearly 30 years before her death, she became particularly observant of the world around her, which she indulged in her daily walks around wherever she was living.

Dagmar's writings here were originally published in *Rural Fringe: Journal of the Hall District*, which has been the bimonthly mouthpiece of the Village of Hall and District Progress Association since 1994. Over 2007 to 2009, Dagmar wrote a series of articles under the by-line 'Watchful Eyes', designed to increase local popular appreciation of the range of flora and fauna of the Wallaroo area in which we lived, and with which she had had contact for over 30 years.

She entitled the series 'Garden Visitors', aiming to provide a light-hearted introduction to species that she had observed in or from the garden of our property in Wallaroo. The property comprises 40 acres (16 hectares), of which the immediate garden area around the house covers about one acre. Wallaroo is a locality within the State of New South Wales, but bordering directly onto the north-western boundary of the Australian Capital Territory (ACT), i.e. the Australian national capital, Canberra.

While Dagmar's publishing aims were modest, the value of bringing together her articles is that the collection can provide a snapshot



A typical Wallaroo scene

of the diversity of species in a particular small area of rural, but near-urban Australia, in a specific period. Some understanding as to why the species covered are to be found in a typical Wallaroo garden may provide a useful background.

The ACT region, of which Wallaroo forms a small part, lies at the confluence of three major natural habitats:

- The northern-most extension of the Australian Alps, with its snow gum woodlands.
- The south-eastern limit of the woodlands and grasslands which extend down from southern Queensland.
- The western extent of the wet forests of the hinterland ranges of the New South Wales coast.

The meeting of these habitats has meant that the region is hospitable to a wide biodiversity. For example, 35% of the bird species sighted anywhere in Australia have been recorded within the ACT. These include a number of regular migratory species.

However, the present Wallaroo terrain bears very little resemblance to how it must have looked prior to European settlement. Aboriginal

presences in the Canberra region have been dated back around 21,000 years. But the first Europeans to visit the area were probably Charles Throsby and Joseph Wild in 1820. The first European land settlement in the region followed quickly, by 1824. Occupation of the area was encouraged by the development of the nearby Hall and Ginninderra villages as stopping points near the long overland route which had been pioneered from Sydney to Port Phillip in Victoria by the Hume and Hovell expedition in 1824. By the 1840's the grazing of sheep and cattle over several large properties had become common.

The Wallaroo area includes several creeks, which were and remain prone to flooding as they conduct water in the infrequent times of heavy rainfall down to the Murrumbidgee River, which borders Wallaroo on the south and west. Some of the terrain is rocky, and the geology is of volcanic origin, with deep sandy loams, usually over deeper clay loams. However, attempts to grow food crops, such as wheat, corn and potatoes, foundered throughout the nineteenth century, impacted by regular frosts, droughts, rabbits and grasshoppers.



Murrumbidgee River

Contemporary early accounts of the area refer to ‘grassy open forests’, but today there are considered to be only two small stands of the yellow-box/ Blakely’s red gum woodland/grassland mixes that are believed to have been typical of the Wallaroo area prior to



*The two remaining stands of the open forest:
The Hall Stock Reserve (above) and the Hall Cemetery (below)*



European settlement. With increasing settlement of the area, and its later sub-division into smaller properties, widespread grazing of sheep and cattle led to many areas of bare ground, and the spread of weeds. The landscape also became influenced by the introduction of some intensive pasture improvement after the Second World War, including clover varieties and the use of superphosphate. By the 1970's the whole area was almost entirely cleared of native trees of all kinds, leading to increased erosion of the many creeks and some general soil degradation.

Since then, and particularly since the late 1990's, planting of trees, formerly undertaken mainly to stabilise creeks (e.g. willows), and as windbreaks (mainly pines, acacias and eucalypts), but recently more generally for aesthetic reasons, has served to change the landscape and habitat yet again. Most properties in the area now comprise 200 acres (80 hectares), with further subdivision currently disallowed because of perennial water shortages in the area. Most properties derive all their water from the capture of rainfall in one or more private dams on their land, and from capture in tanks via runoff from house and shed rooftops.



Acacias planted in 2006



The main dam at our property

The dams, together with bores, now facilitate a number of small-scale vineyards and some fruit trees, but in general, properties support only the grazing of sheep, cattle and a few llamas, and agistment of horses. On a few properties, where the predations of grazing have been limited by fencing, regeneration of a range of



A Wallaroo vineyard



A Wallaroo scene, after recent rain

native eucalypts and acacias has started to take place, while felled trees have sometimes been left in otherwise cleared paddocks, thus facilitating secure hollows for a range of fauna. Significant numbers of kangaroos roam widely, and introduced species such as rabbits, hares, foxes and even feral cats have become more commonplace, together with introduced birds such as the Common Myna (*Acridotheres tristis*) and the Common Starling (*Sturnus vulgaris*).

The Wallaroo biodiversity is of course strongly influenced by the region's climate. This is a relatively dry continental climate with warm to hot summers and relatively cold winters. Extremes of both heat and cold can be significant in some years, with Canberra recording a record high of over 42°C and a record low of -10°C. While snow is extremely rare in Wallaroo, frosts can occur up to 90 nights a year. Over the past 70 years, average minimum monthly temperatures have varied from -0.1°C in July to 13.2°C in January, and average maximum monthly temperatures from 11.4°C in July to 28.0°C in January. Mean annual rainfall has been 614mm, with rain falling on about 70 days per year. Perhaps of more importance for species is the wide variation in total annual rainfall. In some years,

species have to cope with periods of many weeks of no rainfall, and there are regularly periods of several years of relative drought. There is also emerging evidence of climate change in the region, with the average number of days with temperatures over 35°C since 1976 almost doubling compared with the previous three decades, consistent with nation-wide data showing an increase in extreme heat events. The region has been subject to perennial droughts since European settlement, most recently from 1997 to 2010, with records for Southeast Australia showing a trend to lower streamflows on average.

Many properties in Wallaroo have very sparse gardens around their houses, some with only a few trees as windbreaks. But over 30 years of occupation, Dagmar gradually built up our garden in a somewhat eclectic manner, with a range of native and introduced species, including flowering plants and supplies of water to encourage wildlife. In this, she was successful, in that over the 10 years prior to her death, we recorded sightings of around 100 bird species alone. We surmised that our own garden developments, together with the wider re-treesing of the Wallaroo area, would have significantly enhanced the attraction of Wallaroo for a wider range of species over the past 30 years, although there is no statistical evidence to support this claim. We believed it anyway!

Looking forward from 2016, the Wallaroo habitat seems set to change again over coming decades. As the ACT runs out of space for more housing, plans are developing to extend Canberra's suburbs over the NSW border into the south-western section of Wallaroo. Also, the Council of the Yass Valley Shire, in which Wallaroo is situated, has discussions underway to determine whether to permit smaller subdivisions of land within the Shire. This could result in a much higher density of population in the future, inevitably with different patterns of building and land use, and consequential impacts on the current flora and fauna which might be observed. Dagmar would have accepted this with equanimity, but I suspect would mourn the likely loss of diversity that may result.



The garden in 1983 (above) and in 2008 (below)



But Dagmar's observations are just a snapshot in time. The world constantly changes, for good or ill. If it is not always to be for ill, then it requires us to see the diversity of life around us, and be aware of what we may lose. For me, it has been a privilege to have lived with someone as observant and loving of the natural world as

Dagmar. Her legacy is visible in the flora and fauna that I see each day in and around our garden.

Inclosing, I must thank my good friend John Self, whom I have known since our student days together at Downing College, Cambridge. His initiative in proposing and then actualising this project derives from a conversation that he and Dagmar had when we stayed with John and his wife Ruth at their home in northern England. John himself has become a knowledgeable lover of the natural environment around their home, fuelled by his observations while running and walking around the locality. Some of his observations have been captured in his own on-line Drakkar Press works, such as his enjoyable 'The Wildlife of the Lune Region'. Thanks John.

Eric Wainwright
February 2017

Readers interested in learning more about the grasslands/woodlands habitats in and around the Australian Capital Territory are referred to:

- ACT Lowland Grasslands Conservation Strategy. Canberra, Environment ACT, 2005. (Action Plan no. 28)
- ACT Lowland Woodlands Conservation Strategy. Canberra, Environment ACT, 2004. (Action Plan no. 27)

and about the birds of the Territory to:

- Field Guide to the Birds of the ACT by McComas Taylor and Nicholas Day (1999).



Dagmar at peace on her last day in her garden

1. Squawking Babies

December 2006

Our garden is full of squawking babies. We wake up to the piercing call of ‘more’, ‘more’, ‘more’ emitted by a host of avian babies. It reminds me of my little 17 month old grandson at feeding time. He points to whatever takes his fancy, like strawberries or chips or mangoes, and chirps ‘more’, ‘more’, ‘more’! As well as baby Blue Wrens, our main charges are the youngsters from our resident Australian Magpie (*Cracticus tibicen*) flock and our Pied Currawong (*Strepera graculina*) family. Both have two young each and both are at our front verandah, extended family in tow, every morning demanding breakfast quite loudly.

Now I know that the wildlife experts say we shouldn’t feed wild birds as it makes them dependent on handouts, or worse still it leads to malnutrition due to them being offered inferior food to their natural fare. However, I can no more ignore the squawking of a fledgling



Pied Currawong



Australian Magpie

than I can ignore the cry of a hungry baby, so I try to ensure that I give my feathered friends only small daily amounts and that the food I give them has high protein value for the youngsters. I rationalize that this relieves the onerous load each set of parents has bringing up their offspring to maturity. The adult birds seem to be constantly on the go. It wearies me just watching them and makes me wonder how I ever got through bringing up our brood.

But what entertainment they give us as we sit eating our breakfast on the deck. We watch the adult birds squabble and enforce pecking order amongst the troop. We watch how the magpies have the upper hand over the currawongs and we laugh as we see the fledglings attempt to have baths in the bird bath we provide in the garden. They are such rascals and such noisy ones.

The bird bath was a source of concern recently. I'd always provided water on ground level during the summer so that both frogs and birds could get access to water, but to my dismay I found that, this summer being so hot and dry, the bird bath also attracted snakes who were after the frogs. So now I have a raised bird bath, which

the birds love, but now I fret over the frogs. I hope they manage to survive till the next rain.

A great book on magpies which I received as a birthday present is *Australian Magpie – Biology and Behaviour of an Unusual Songbird* by Gisela Kaplan. It's available at the National Library of Australia bookshop and is a great read and will give you all the information you ever wanted to know about magpies. I am now looking for a similar book on currawongs.



Honeyeater on bird bath

2. The Fox and the Hare

January 2007

I have a corner at the front of the property where a fox and a hare family have been living in harmony for a few generations. I always thought it strange that they both choose to share the same territory but I've only rarely seen them elsewhere on the property so they must be happy co-habiting. I usually see one hare bolting across our road and running towards the orchard as we drive into our place, but unusually, since last month I've seen three hares in one sighting, two quite often running together as a pair. Mr. Fox, resplendently handsome with a big red bushy tail, appears to be a solitary character as I have only ever seen him by himself, though there must be a Mrs. Fox about as I saw two lovely young fox cubs running near our front gate as we drove in one night.



The drive into the property

There are many children's stories and tales about the Fox and the Hare, and there are even pubs called 'the Fox and the Hare', so having a fox and hare family sharing the same territory may not be that strange, as other people have also associated the two together over time.

The Brown Hare (*Lepus europaeus*) at first looks a little like a rabbit as they have a similar shape but hares are longer, bigger and more athletic than rabbits. Hares can grow up to 60 cms in length and a male hare can weigh up to 3.2 kgs, which is much heavier than the top weight of a rabbit which is about 2 kgs. Hares have much longer hind legs than rabbits and they can run really fast, accelerating up to 50km per hour for short bursts which helps them escape predators. They can run that fast as their body is mainly made up of dark 'slow' muscle, which is well oxygenated by their generous heart/lung capacity and large blood volume. I've seen them run at great speed, swerving and zigzagging as they dash away. Hares have tawny, flecked fur and long black tipped ears and this colour combination lets them blend in with dry grass and tussocks when frightened. Added to this camouflage, they also have excellent hearing, and exceptional eyesight and smell, so it takes a bit to catch a hare.



Brown Hare

I've seen hares respond to danger in two ways. The first is to bolt, and they do this if they locate me from some distance away and they know that I have seen them. Then they do their crazy zigzag run and off they go at a fast pace. Occasionally I have seen the other response, where they see me but think I haven't seen them and they flatten themselves low on the ground, put their ears right back and freeze, and you know what, I can't find them when they do that even when I know where to look. They just blend in with the grass, tussocks and rocks.

Unlike rabbits, hares do not burrow, but rest in 'squats' during the day, the squats being flattened grass between rocks, logs or amongst tussocks. Mr. Hare seems to have a favourite 'squat' near our front drive so he's sometimes flushed out as I walk or drive by. Not having burrows also means that hare babies, known as leverets, are born above ground with their eyes open. I'm told that a hare can have up to three litters a year, each comprised of one to four leverets. The babies are left alone during the day, with the mother hare returning at night time to feed them. Hares eat mainly grass but interestingly they also eat roots, twigs, bark and any farm produce you have growing in your paddocks or veggie plots. If hares get past the vulnerable leveret stage, and survive predators, they can live up to seven years.

I just watch Mr. Hare and family on my farm, but elsewhere they are hunted for 'game' meat and also for their pelt as it is used to make Akubra style hats. Though rabbit fur is mainly used in the millinery trade, the size and natural colour of hare pelts make them a preferred product. In fact the Rural Industries Research and Development Corporation in 2000 checked out the feasibility of 'hare farming' in Australia. Since hare farming occurs in Northern Italy, France and some other European countries, they wondered if it could be profitable in Australia. However they found that although hare

breeding is technically possible, given the high animal loss rates due to stress and disease as well as low reproduction rates it was not economically viable and unlikely to succeed in Australia. Hares have obviously not been domesticated to the extent that they can be successfully ‘farmed’ but they can quite happily survive in an urban environment. The National Botanic Gardens in Canberra reports that hares are “unfortunately fairly common in the Gardens”.

But is it just coincidence that the fox and hare family live in the same area on the farm or is something more sinister afoot, such as, is Mr. Fox staying close to a food source?

There have been a number of studies to find out what foxes eat, as foxes have been classed a pest for some time now and farmers want to know if foxes kill and eat lambs. The Red Fox (*Vulpes vulpes*) first came to Australia from England and was released in Melbourne in 1871, and since then they have spread over all mainland Australia. Because the fox is classed as vermin, pest management programs have been used to reduce their numbers. These programs mostly use



Red Fox

poisoning, trapping or shooting but as they are labour intensive, and foxes breed quickly to replace lost numbers, these programs have not been as successful as hoped. Research by the Bureau of Resource Sciences is now focusing on immunocontraceptive techniques or fox antifertility to target the breeding ability of foxes. But of interest to me is that most of the management studies have looked at the diet of foxes to see what they eat. In England they report that foxes eat hares, but the Australian studies I've looked at (and I've only looked at a few) don't show hare on the fox menu. In 2002/03 Parks Victoria looked at the fox diet in six Victorian national parks and though mice, rats and all sorts of animals were eaten by foxes, hare was not reported as part of the diet. Similarly, the Final Report to the National Feral Animal Control Program, analysed 1,317 fox scats (that's fox poo), over four seasons, collected from five different sites, and they found that the fox diet was composed of 21.8% mammal prey, made up of the following little critters: Brushtail Possums 17.3%, Ringtail Possums 26.3%, European Rabbit 18.1%, Black Rat 23.2%, House Mouse 12.6%, Sugar Glider 0.4% (they identified the prey eaten by foxes, and the proportions eaten, by the critters fur left in the fox scats).

They also found that the fox diet had 12% bone fragments mainly from scavenging, 5.2% birds, 17.9% insects, 9% unidentified plant material, 1.8% seeds and lots of blackberries when in season. (Yes I know this doesn't add up to 100% - blame the scientists not me!!). However what I was interested in was that neither of the studies showed hare pelt in the fox scats. Maybe our fast hare is indeed a hard one for Mr. Fox to catch; though I'm sure he must get a few. Mr. Fox probably gets easier picking along the creek where there are rabbit burrows and lots of bunnies, but that's another story.

3. Close Encounters with Wings and Webbed Feet

April 2007

Some garden visitors keep a respectful distance, others come up really close. Two adventurous visitors come right up to our front door and windows and have even come into the house. Their motivation for daring to come that close is food. One comes at night for the insects attracted to the light; the other comes in the morning to feast on the debris of the night. Yes, my courageous garden visitors, the ones that will brave my peering at them through the windows day or night, are no other than some gorgeous little frogs and a delightful Blue Wren family.

My night visitors are the little frogs, the Common Eastern Froglet (*Crinia signifera*), and with their little suction feet they hop up our window panes chasing and catching any insects that alight on the windows. They are beautiful little fellows only about 30mm long and are brownish green, pretty nondescript really, and are one of the most common ground dwelling Eastern Australian frogs. They



Common Eastern Froglet

generally hide out under logs, rocks and clumpy vegetation. I guess they live near our verandah to get the moisture from the pot plants I have scattered about. I'm not too sure how the general frog population is surviving this dry summer. It's the male that calls and he gives out a chirping, cricket-like sound, that's quite loud given his small size. I'm waiting for rain drenched moonlight nights when our creek comes alive with the chirruping of frogs – that, and the sound of rain on a galvanized iron roof, is heaven to me. Rain also means lots of tadpoles, and in spring, our semi-permanent pools of water in the usually dry creek swarm with tadpoles. It's great fun for grandchildren, catching tadpoles in a jar, just as I did when I was a youngster.



After heavy rain

We have a couch on our verandah that leans against the windows, and the little frogs use that both as a launching pad to get up to the windows and as a hiding place during the day. I gingerly sit on the couch now for fear of squashing them. I've also found them hiding in the folds of our deck umbrella! At first I thought the frog had

got trapped there, but I've subsequently found frogs there again as I've unfurled the umbrella to cover our breakfast feast. It's a really strange hiding spot though.

A less common frog in our garden, but one that I had to rescue out of our bedroom, is the 'Variegated River Tree Frog' (*Litoria citropa*). Well that's what I've identified him as, a handsome fellow of a golden to rusty brown hue with green flashes along his side. He is known to be a resident of Canberra, but appears to be a rarer visitor to our garden.

Variegated River Tree Frog



If you want to know more about the frogs living in Canberra go to this excellent website on frogs: www.frogs.org.au/frogs/.

As well as frogs, I have a Blue Wren family of seven that also comes up very close. Though they live and flit around in the grevillea bushes in the front garden, each morning they come and clean up any dead moths and insects along our windowsills, and at times haven't stopped at the windows but flown right into the house. I've wanted to get to know this little family, much like you'd want to get to know new neighbours. Who's the Mum & Dad, how many kids? What do they do? Well, with Blue Wrens it's easy to tell who the Dad is, he's the blue one. But more of that later. It's the Dad's role to find and keep the family's territory on which they depend for food,

shelter and protection, and the male Blue Wren protects his territory by song and less often by chasing off other males. In times like this hot dry summer, the male may need to extend his territory to ensure there is enough food for all. As they eat mainly insects, the size of the territory they live in is in proportion to the abundance of insects around, which is pretty well all they eat.

A Blue Wren weighs around 7gm and CSIRO studies have shown that a wren needs to eat around 7gm daily to live, that is, his own weight in food each day. In the breeding season, where on average they have three chicks in the nest, each bird needs to gather a total of around 14gms of insects each day to cover their own and their chick's food requirements. A number of studies have shown that birds are the most expensive vertebrates on earth to support kilogram for kilogram. A typical bird will eat about 31% more dry matter and 45% more fresh food per kilo than does a mammal. No wonder the expression “eat like a bird”, that is, a little each time but often!



Blue Wren

But the most interesting thing about the little Blue Wrens is their family life. Generally a family will have an adult pair who maintain this relationship for a long period, plus up to five helpers who are the young males from previous clutches and who have not yet moulted into full adult plumage. This can take up to four years. The young female wrens leave earlier to join other territories or form new ones. The breeding female wren therefore has a great support team in her sons to help her find the food required. This relieves the adult male of much of his parental duties during the nestling period, and frees him to pursue other entertainments, namely forays into neighboring wren territories to court the ladies there.

The adult male only retains his blue plumage for the breeding season. He becomes a dull brown like the rest of the family in winter and his nuptial plumage only returns some time before the next breeding season starts. The onset of his nuptial plumage is a bit dependent on the fellow's state of health, testosterone levels and social status, and the lady wrens appear to take great note of all of this and judge the fellow's 'suitability' by how early in the breeding season his plumage appears and on his endurance in his courtship displays.

Ecologists think that the purpose of the male display is to advertise their availability and prowess as suitors. And I say suitors, plural, as Blue Wrens are what is called socially monogamous and sexually promiscuous, that is, they will form enduring partnerships but also mate with other individuals. Scientists found that less than half of the offspring produced in a male's territory will be his. These sort of fascinating findings have come out of studies on Blue Wrens in the Botanic Gardens by Dr. Andrew Cockburn from the ANU. He found that not only do visiting male Blue Wrens come into adjoining and nearby territories to display to female wrens, but the lady of the house also goes out looking for some 'extra marital action'.

Dr. Cockburn used radiotracking and DNA testing (their terms were

microsatellite genotyping and radiotelemetry) to track females and test their offspring for paternity. They also set up a DNA database of all adult males, females and chicks in their study group to be able to identify the paternity of the chicks. They found that a female will make pre-dawn forays into another male's territory a few days before laying an egg resulting in as much as up to 70% of her chicks being fathered by another male. Their paternity data even uncovered that in 29 out of 165 cases, broods had two extra dads!

The scientific conclusion drawn from all this is that Blue Wrens do this to stop inbreeding – one could draw other, less moral, conclusions!

All I know is that often I have up to three Blue Wren males surrounded by a family of five brown wrens. Whether some of our three blue feathered males are visitors, advertising their wares, or real residents I don't know, but they are a most charming and delightful family who give us endless joy as we breakfast on our verandah, listening to their chirruping amidst the croaking of our frogs.

4. Kangaroos and Cockatoos

June 2007

This summer we've had a big mob of kangaroos and an equally big flock of cockatoos gather in our front orchard. As we had no stock grazing in the orchard the kangaroos came for the grass, and as we were one of the few that still had some water in our dam, it made the orchard doubly attractive. In fact the kangaroos became so 'tame' that when we drove past the orchard on our way in and out of the property they didn't even bother to get up from their mid-day siestas under the shady trees. Only a few youngsters would raise themselves to stare at us, the old buck though would barely glance our way. At its peak the mob got to about 40 roos composed of mums, youngsters, babies in pouch plus the one big buck.



Kangaroos on the property

The roos in this area are Eastern Grey Kangaroos (*Macropus giganteus*) and vary in size from 3 – 8 ft (0.9 – 2.4 m) and weigh around 40 – 200 lbs (18 – 95 kg). They are noted for being gregarious and forming open-membership groups. Ecologists have found that the size of kangaroo groups varies quite randomly, with animals joining and leaving as they please, the composition of a group therefore changing continuously. Apart from the close association of the mother and her young, a relationship that lasts for some time after weaning, there appears to be little social cohesion within groups.

The assumed advantage of forming groups, even if not permanent ones, is that it helps reduce the risk of predation, which makes sense as there's always safety in numbers. Scientists noted that vigilance behaviour was mainly displayed by females with young when they were at the periphery of the group. The extent of their vigilance depended on the risk of predation in the area. In our orchard they are as safe as eggs.

However there are risks and kangaroos do need to be alert. You'd think the main risks faced by kangaroos in our area would be being hit by a car, chased by stray dogs, or maybe even shot at occasionally by a farmer, but it appears that an additional risk is that young roos are vulnerable to fox predation. Studies in Namadgi National Park showed that female roos retained their young by between 25 and 40% more when in areas where no foxes lived compared to areas where foxes existed. This higher survival of emergent pouch young resulted in a significantly higher proportion of juveniles in kangaroo populations at fox control sites, resulting in a significantly higher annual growth rate. In an earlier article I mentioned that our Fox family lives adjacent to the orchard so Mr. Fox may have chosen his place of residence wisely although fox scats haven't, up till now, contained kangaroo fur.

Seeing it was a drought stricken and hot summer I assumed that the attraction of our orchard was not only the shade provided but also the availability of water in our dam. However I read that kangaroos are highly adapted to dry conditions and though they drink freely when water is available they can also cope quite well in dry times. The thermoregulation in kangaroos is quite complex but all kangaroo species have a relatively low basal metabolism and body temperature, which helps them cope, and they regulate their temperature through evaporation by panting and licking themselves.

Kangaroos eat mainly grass, but they also consume a considerable number of native woodland species and exotic pastures. In one study scientists found that kangaroos ate thirty-one taxa of native plants. So they are not just restricted to eating grass. I can vouch for that as the roos in the orchard nibble almond tree leaves, hazelnut bushes and even come into the front garden to nibble on my roses!

The most amazing thing about kangaroos though is how they reproduce. No other animal has quite as complicated a reproductive cycle as our kangaroo. The CSIRO not only studied the mating behaviour and birth of kangaroos but also filmed it and produced a most amazing and award-winning film back in the mid 1960's called *The*

Birth of the Red Kangaroo.



Kangaroo young

This remarkable film recorded the mating of kangaroos, the female's preparation for birth and the birth itself. It showed how the young makes its way, unaided, to the pouch. The kangaroo young are born at an extremely early stage of development. The babies develop in the pouch rather

than in the uterus as human babies do. The film showed the moment of birth and followed the embryo's long journey up over the fur to the pouch where it develops as an externalized foetus. The remarkable thing is that the foetus at birth is only three to six weeks old, weighs only about 350 – 400 milligrams, is hairless, has eyes closed, has only tiny stumps for legs with which it has to make its long perilous journey.

But that's not the end of the amazing story. Despite the immature development of the newborn, it can nevertheless travel from the birth canal to the mammary area in the pouch, attach to a teat and begin to suck. The mother may then mate again while the young is in the pouch, but the fertilized egg (called an arrested blastocyst at that stage) does not develop until the first young leaves the pouch at about 11 months of age. The presence of the youngster suckling at a teat stops the development of the blastocyst and it remains in a state of suspended animation until big brother or sister is almost ready to move out of the pouch, and though no longer then permanently in the pouch, the young joey will still suckle from its mother until about 18 months old.

The mother kangaroo then has two babies on the go, one almost grown but still hopping in and out of the pouch and the other which is permanently attached to a teat in the pouch. It's a great survival tactic. Should anything happen to the older joey she has a spare baby at the ready. Once the first joey has left the pouch and the second one is on



Kangaroo joey

the teat, the mother may mate again and keep a third joey in the arrested embryonic state until the first joey is completely weaned and the second joey has started leaving the pouch. This way a female kangaroo can support three offspring at the one time, each at a different stage of development. There's no time wasted. It means that a female kangaroo is always reproducing unless times are really tough. This allows kangaroos to repopulate rapidly after a drought or other disaster.

Given this reproductive model, a mother kangaroo could produce 25 offspring in her lifetime should they all survive. Scientists were of course fascinated with this discovery and wanted to know how this worked. They were even more amazed when they discovered that each baby was being fed a different form of milk. When the mother is nursing joeys of two different ages she is simultaneously producing two types of milk of very different compositions, one for the joey in the pouch and one for the older joey that is outside of the pouch. Each have their own teats in the pouch which they use exclusively until fully weaned. Even when a youngster leaves the pouch it often pops its head back in for a suckle, but continues to only use its own personal teat. That way the mother is able to supply two different types of milk simultaneously, to both the older sibling and to the developing baby. Amazing!

As well as kangaroos we had a flock of Sulphur-crested Cockatoos (*Cacatua galerita*) take up summer residence in the orchard. They stripped the trees of fruit and nuts well before the fruit ripened and roosted in a big gum tree right in the middle of the orchard. Much to my dismay I learnt that once a flock finds a favourable roosting site they occupy it for years. Not only did they strip the trees of fruit, they ripped off new branches and generally left a mess in their wake. But their most annoying habit was flying over the house at 5.00am in the morning screeching out their good morning wishes to us. We needed ear plugs!



Sulphur-crested Cockatoo

The Sulphur-crested Cockatoo is a noisy and destructive bird but not as destructive as its cousin, the Yellow-tailed Black Cockatoo (*Calyptorhynchus funereus*). We had a flock of ten fly in the other week and they ring-barked and killed two mature eucalypts and three acacia trees by stripping off the bark right around the tree trunk and branches, chopping out chunks of wood in their hunt for borers. I hope they don't visit too often if they leave such a trail of destruction behind them. They are a beautiful large bird though and are easily identified by their mostly black plumage, with most body feathers edged with yellow, though not fully visible at a distance. They have yellow cheek patches and yellow panels on their tails and they have a distinctive call. The contact call is a drawn-out "kee-ow" though I heard some pretty loud screeches from them as well.

The Sulphur-crested Cockatoo is common in many areas of Australia and eats a varied diet of berries, seeds, nuts and roots, and as we have a bird tray in the garden for the rosellas, I discourage the cockatoos from coming in close, as they would just take over and make a horrid mess of our front deck. They generally breed in the hollow of dead trees and both parents incubate and then raise up to three young. The chicks leave the nest after about 70 days but stay with the parents all year round and then become members of a permanent family group, quite unlike our kangaroo mob.

Though I may be giving the impression that the Sulphur-crested Cockatoo is not one of my favourite garden visitors I do concede that they are a handsome and smart bird. Many people love them dearly and keep them as pets teaching them to talk and do all sorts of tricks. The ones that fly into our garden are also pretty smart and have learnt to mimic me so now, when they are flying over the house, I hear them screech “P...ss Off”! I’ll need to watch my language.



5. Where Have All the Flies Gone?

August 2007

Winter has come and we all have our ways of coping with the cold. I cope by eating more hot, yummy, stodgy food like steak and kidney pies and bread and butter puddings, but others, like some of my regular avian garden visitors, sensibly leave for warmer climates. The tiny Silvereyes head north and the honeyeaters en masse leave the ACT as the chill sets in. But I've also noticed the absence of another regular summer visitor – the Bush Fly (*Musca vetustissima*), which made me ask “where have all the flies gone?” There are so many of them in the summer constantly annoying us when breakfasting or entertaining on our deck that their absence is very noticeable. Do they also fly off to Queensland in order to escape the cold?



Well no, they die as winter set in as it gets too cold and wet for them. They can't survive in temperatures below 10°C and nor can their maggots, so it's rather a dramatic way of escaping the cold. Sometimes you'll still find the odd fly in your warm house during the early parts of winter, but they aren't too active depending on how hot your house is. At around 12°C they become still and stay put on the warmest surface they can find until the temperature goes up again, when they can buzz around a bit. If your room temperatures plummet below 10°C over-night then those last remaining flies will quickly disappear.

So if the Bush Flies all die off in the winter, how do they come back in the summer? I got my answers from an online publication by Jim Heath called 'The Fly in your Eye'. According to Jim, flies don't die in the northerly parts of Australia where the winter is warm - they just keep living and breeding there quite happily. Then from August to November, when the warm winds stream down our way again, clouds of pregnant female Bush Flies get swept up by the wind and blown down south. The flies can be blown hundreds of kilometres at a time, and they eventually reach Canberra around the middle of September. The interesting thing is that the flies don't get blown back when the wind shifts towards the north. The wind acts like a one way valve: when the wind blows from the south, it's too cold for the flies to get airborne so they never go back north again. Clever isn't it? And they really are dependent on the wind for their transport, as the Bush Flies themselves aren't very strong flyers. Their top speed is around 8 km per hour. You can see that they would never make it to Canberra from Brisbane on their own at that speed, as their life span is only 15 - 25 days.

Once they hit Canberra they breed pretty quickly. The blown-in females carry about 55 eggs, each ready to lay, and once the eggs hatch (which takes 5 hours at 39°C and 17 hours at 21°C), the

hatchlings themselves are ready to breed within a few days. Though the flies may be able to pump out the eggs, the success of Bush Flies' breeding depends on the amount of fresh cow manure around. The more they have access to soft sloppy cow poo to lay their eggs in, the quicker the fly numbers go up. Bush Flies are prolific breeders and for such small beings, they take mating seriously. In laboratory conditions they stay joined for an average of 1 hour 20 minutes, which rivals many a larger animal!

If you've ever wondered why the flies pester you so much in the summer, it's because they want protein. Well actually it's the female Bush Fly that needs the protein in your sweat for her egg production. Of course she's quite happy also to target your tears, saliva, nose mucous, blood, or any body fluid or by-product of yours in order to get her needed supply of protein and minerals. The males buzz around you as well but only because they're keeping close to the females. They don't need the protein, and generally there's only one male for every three females pestering you.

So there is one benefit of the cold weather – no flies. But now you know that when those warm northerly winds start coming our way again in September, they will bring clouds of flies with them, and before we know it we'll be swatting flies whilst breakfasting on the balcony again.

6. Wood Ducks and Blackbirds

October 2007

It's spring and to my great delight some garden visitors I'm particularly fond of have arrived. A small flock of Wood Ducks (*Chenonetta jubata*), sometimes called the Maned Duck because the male has a dark mane at the back of his head, has taken residence. I raised some abandoned ducklings to adulthood years ago and have loved the 'Woodies' ever since. They are often referred to as one of the 'perching ducks', along with the Pygmy Goose, because during the breeding season they perch high in trees looking for cavities in which to nest.

A number of breeding pairs have established nests in a big old dead gum tree at the back of our house paddock and will breed from September to around November. They form monogamous breeding pairs and stay together for life. The nests are high up and the birds



Wood Ducks

will line it with thick down and lay 8 – 14 eggs. I can't wait to see the little fluffy ducklings emerge. The mother duck does most of the incubating with the male often standing guard. It takes around 28 days for the hatchlings to appear and once they appear they have to take the most amazing leap of faith. They need to jump out of their nest hole and join their parents who are calling to them from the ground below. I've seen the tiny little bundles hurl themselves off their nest and tumble down to the ground like little balls of fluff. They then quickly re-group and their parents lead them to water for safety where they'll stay until they can fly, which usually takes around 50 days. The ducklings hatch with a covering of waterproof down and so can enter water almost immediately.



Wood Ducks generally use the same nest year after year, and unfortunately, the suburban spread of Canberra has meant that many of their traditional nesting grounds and water habitats have gone, with the result that you occasionally see a mother duck, who has still



used a suburban tree to nest in, leading youngsters across very busy roads in the forlorn hope of finding traditional water holes. A few years back I saw a brave band being led across Belconnen Way and on a number of occasions I've seen mums trying to get their brood across the Wallaroo Road, hopefully without being run over.

The little mites start grazing as soon as they hit the ground, as does their mum who is particularly hungry at that stage and has to regain weight after sitting on the nest for 28 days. Both parents are very protective of their brood. I've seen the adults go into elaborate distraction displays, limping along as if with a broken wing, so as to distract an enemy from where the young are hiding.

Wood Ducks are grazers and generally just eat the grass in the paddocks and along road verges, along with an insect or two. They rarely venture onto open water but prefer to dabble and forage in shallow water, so we often see them around our dam or along the creek. However they can cause damage as they quite like to graze on young crops of oats, lucerne, rice and other yummy green crops. They have been declared a pest in West Australia because of the damage they do to agricultural crops and a number of botanic gardens regard them as a pest when their numbers get too high. However, generally across Australia they are a protected species under the *Wildlife Conservation Act 1950*.

I just love to hear their constant chattering, regularly interrupted by the female's loud and rising 'gnnow', answered by the male's shorter higher-pitched call. Woodies are not aggressive, and though shy, become quite used to you and don't fly away every time you approach them.

Interestingly, the Wood Ducks have a completely different strategy to raising their young to another one of my garden visitors, the shy Blackbird. We have a pair of resident Blackbirds that scurry and

dart along the ground from bush to bush, only stopping to rapidly peck and forage amongst the mulch in their search for food.

Wood Ducks are classed as precocial by scientists and Blackbirds as altricial. What that means is that precocial birds, like the Wood Ducks, are born well developed, can feed themselves and can accompany their parents from the place of birth, whereas altricial birds, like the Blackbird, are born quite undeveloped and need to be fed in the nest before they can strike out. So why the difference, why can the fluffy little ducklings waddle off, eat and swim and pretty well look after themselves as soon as they hit the ground and the blackbird chicks hatch out blind, naked and completely dependent?

It all comes down to the yolk. Precocial birds like the Wood Duck lay relatively large eggs containing about 35% yolk, representing a



Blackbird

huge investment of their mother's stored energy reserves, but giving the chicks enough protein for advanced development. The altricial birds, on the other hand, lay smaller eggs with only 20% yolk, which means the chicks don't have the energy reserves in their eggs to allow them to reach a fuller development. They rely on a good and steady supply of protein in the form of insects, after they hatch, to ensure further development and growth. By contrast to the Woodies, the Blackbird lays 3-5 small eggs and only incubates them for 13 days (against the duck's 28 days), with the babies not leaving the nest for another 14 days.

Though the Blackbird pair are a delight to watch, they are an introduced species released back in the 1850s and are not a native bird. They are easily recognized, for as the name suggests, the male is black with a very bright yellow beak, whereas the female is a dowdy brown. Though an introduced bird, I think they help keep the garden free of unwanted insects, grubs, spiders, snails, and so on, that they hunt for in the mulch. Unfortunately, though, they also have a taste for fruit and have become a pest in orchards and vineyards. In South Australia various bird repellents have been trialled, with varying success, to reduce damage to ripening grapes.

If you want to encourage Wood Ducks into your area, and you don't have old trees with good nesting cavities, you can always build some nesting boxes for them. The ideal place to put them is near marshy or wet areas close to a dam or running creek. If you can place the nesting boxes over water or close to water it increases the chances of ducklings surviving once hatched and also gives them protection from foxes and snakes whilst in the box. Woodies generally like nesting boxes to be high up and if some shade is available, all the better, for it will stop the eggs from baking. All sounds a bit complicated but nature is hard to emulate!

7. The Kookaburra and Killer Brown Snake

December 2007



Kookaburras

We've had a Kookaburra family live in the paddocks around our house for a number of years, but recently they have come closer and moved into the house garden, chuckling and laughing whilst sitting on our pergola early in the morning. One cheeky young fellow admires himself in our verandah windows pecking away at the glass until I move him on. They are such an iconic Aussie bird, we all know them, but do we know why the Kookaburra laughs? One Aboriginal dreamtime story explains their laugh as follows:

For a long time there was no sun, only a moon and stars. That was before there were people on the earth, only birds and beasts.

One day Dinewan, the Emu, and Brolga were on a large plain near the Murrumbidgee. The two of them began quarrelling, shouting and hitting each other.

Brolga, in her rage, rushed to the nest of Dinewan and seized from it one of the huge eggs, which she threw with all her force up to the sky. There it broke on a heap of firewood, which burst into flame as the yellow yolk spilled all over it, and lit up the world below to the astonishment of every creature on it. They had been accustomed to the semi-darkness and were dazzled by such brightness.

A good Spirit who lived in the sky saw how bright and beautiful the earth looked when lit up by this blaze. The Spirit thought it would be a good thing to make a fire every day, and from that time since it has been done.

All night the Spirit, in the company of other Spirits, collects wood and heaps it up. When the heap is nearly big enough the morning star is sent out to warn those on earth that the fire will soon be lit.

The Spirits, however, found this warning was not sufficient, for many were sleeping when the morning star came along, and so didn't see it. So the Spirits thought someone should make some noise at dawn to herald the coming of the sun and waken the sleepers.

But for a long time they couldn't decide who should be the one to do it. At last one evening they heard the laughter of Googoorgaga, the kookaburra, ringing through the air. "There – that is the noise we want," said the Spirits.

Then they told Googoorgaga that, as the morning star faded and the day dawned, he was every morning to laugh his loudest, so that his laughter might awaken all sleepers before sunrise. If he wouldn't agree to do this, then no more would they light the sun-fire, but let the earth be dark again for always.

But Googoorgaga saved the light for the world. He agreed to laugh his loudest at every dawn of every day, and so he has done ever since, making the air ring with his loud cackling, "Googoor gaga, googoor gaga, googoor gaga."

The Wiradjuri people, whose country was bounded by the Lachlan, Macquarie and Murrumbidgee rivers, gave the Kookaburra that name as it replicated the laughing call the bird makes. It's an onomatopoeic word, that is, the word sounds like the action it describes, other onomatopoeic words being 'drip' and 'slurp'.

As well as appearing in Aboriginal dreamtime legends, the Kookaburra features in many other stories, poems and songs. We all know this one:

*Kookaburra sits in the old gum tree,
Merry, merry king of the bush is he.
Laugh, Kookaburra, laugh, kookaburra,
Gay your life must be.*

Kookaburras (*Dacelo novaeguineae*) mate for life and raise their young with the help of the previous year's offspring who assist with the incubation, feeding and protection of the young. Young adults stay in the family group for up to four years and they live for around twenty years. I'm lucky they have taken up residence in our



Kookaburra with snake

garden as they will clean up any snails, beetles, grasshoppers and snakes that come in.

I haven't seen a kookaburra kill a snake as yet but we know there is a small Eastern Brown Snake (*Pseudonaja textilis*), sometimes referred to as the Common Brown Snake, in the garden, because we uncovered it whilst shifting some rocks in our back yard. No doubt this little fellow will grow as big as the whopper of a snake we had around the house last summer, that is, unless the Kookaburras catch him first.

Still, snake lovers say that it not a bad idea to have a couple of brown snakes around the yard as they hunt and devour mice and rats. Their slender body enables them to actively chase quick moving prey such as lizards, other snakes and baby rabbits but they are also partial to slower moving critters such as frogs and bird nestlings when available.

They have highly developed eyesight, are diurnal and heliothermic (sun-basking) but can also be seen at night especially on warm humid evenings.



Eastern Brown Snake

Though brown snakes are highly venomous and will attack people when cornered, they are highly nervous, so they usually avoid confrontation with home owners and quickly flee when seen or threatened. If they do attack, however, they will lunge repeatedly and inflict multiple bites in quick succession, so I have a healthy respect for them, keep my distance, and wear boots and trousers when outside in the garden or paddocks.

Eastern Brown Snakes mate during spring when males engage in 'ritual combat' with another male to dominate and displace the other's territory. The most dominant male will mate with females in the area, and each female will produce a clutch of 10-40 eggs in late spring or early summer.

Did you know that in Australia there are about one hundred and seventy snake species? Eighty of those are venomous. Only twelve are likely to inflict a wound that could kill you. Unfortunately the brown snake is one of them, but there is a suggestion that venomous snakes don't use their venom every time they bite. It's valuable stuff. They'd rather save it for tasty prey, as the purpose of the venom is to both immobilize the snake's prey and help start the digestion process. It's suggested that they only pump venom into prey that is intended as tucker. Still I'm not taking any chances. I'll continue to give them a wide berth and leave close encounters with snakes to the Kookaburras.

8. Blue-tongued Lizards and Red Wattlebirds

February 2008

A couple of days ago there was a great raucous and rustling on the front porch and when I looked out the window I saw two Blue-tongued Lizards in what appeared to be combat. One, a very large fat lizard, was holding down and apparently attacking a smaller one who was desperately trying to get away. Every time the smaller lizard escaped the jaws of the larger lizard it would lunge and grasp an arm, a head, the stomach, whatever he could grab to restrain his victim. After watching this for a while I decided to intervene. I went outside, but the big guy was so focused on his task that I could walk right up to them and restrain him by gently placing my foot on his back. Given the chance to escape, the smaller lizard scuttled away at a furious pace but the big boy just stayed at my feet, looked at me in the eye as if to say ‘Stay out of my business!’.



Blue-tongued Lizard

Well, what was his business? I wasn't sure whether I had witnessed an attack or a very vigorous display of foreplay so I hopped onto the Internet and discovered that Blue-tongued Lizards' mating habits can get rather rough. I'm pretty sure my intervention only delayed his courtship proceedings for a short while, because an hour or so later I heard rustlings and carryings on again from under the front deck, so I left them to it this time.

Though we refer to them as lizards, the blue-tongue is really a skink and there are seven species of blue-tongue in Australia. They belong to the skink family, Scincidae which means shiny scaled. The Common Eastern Blue-tongued Skink (*Tiliqua scincoides*) is the one we commonly see.

Blue-tongued Lizards seem to live in just about every part of Australia: on the coastal plains; in the mountains; in rainforest; deserts; and they have learnt to live quite well in suburban backyards, consuming slugs and snails and any dog biscuits they can find. Though blue-tongues are relatively common, herpetologists are now concerned that blue-tongue numbers, in some locations, may be in decline. Dogs, cats, lawn-mowers and busy roads are finally taking their toll.

To help find out how the blue-tongues are surviving in urban habitats, Jennifer Koenig, at the University of Sydney, is studying the movements of blue-tongues by radio tracking individual lizards on a daily basis. She has found that, in one day, a blue-tongue can travel through more than 15 backyards and cross several roads in its search for a fellow lizard or to find new niches to shelter from cats and dogs.

At this time of year, out in the bush or even in your backyard, you might catch sight of this season's crop of baby blue-tongues. Pregnant mothers give birth to up to 21 live baby lizards in late January but



most will not survive. While older lizards get some protection from thick bony plates under their scales, in young lizards this armour is poorly developed. Attacks by cats take a particularly heavy toll.

Blue-tongues are cold blooded, so they're highly influenced by air temperature. Each morning the lizards must sunbathe to get their bodies up to speed. In the warm summer months they need only bask for very short periods. By day they forage for the day's food of snails, insects and plant material, seeking shelter at sundown.

As the weather gets cooler, the lizards slow down. By the time winter fully arrives the blue-tongues have found a spot to hibernate. That shelter might be a deep crevice, a hollow log, a drainage pipe or a big pile of debris.

Blue-tongues will only bite under extreme provocation. Their cobalt blue-tongue set against a bright pink mouth might look poisonous but their bite is non-venomous and mostly non-piercing. Blue-tongues teeth are like pegs and even though their strong jaws can grip hard, they rarely break the skin. It's more a bruise than a cut; mind you that's what I've read, not experienced.

We've also had a whole host of honeyeaters now that the bottle brushes and grevilleas are out in the garden. One most noticeable, or should I say audible, visitor is the Red Wattlebird (*Anthochaera carunculata*). We've had a mum and her youngsters in the bottle brush bushes next to the house busily brushing nectar off the blossoms.

The Red Wattlebird is a large, noisy honeyeater. The common name refers to the fleshy reddish wattle on the side of the neck of adult birds, which is quite obvious. The babies are dull brown in comparison and need time to develop the red wattles. As the Red Wattlebird is among the largest of the Australian honeyeaters, they are hard to miss, especially when a family fly in. The Red Wattlebird is not an uncommon visitor and can be found in woodlands and forests from south east Australia to south west Australia, basically all along the southern end of the country.



Red Wattlebird

Red Wattlebirds raise one or two broods in a season which extends from July to December. Both sexes have been recorded to share the incubation duties, but often the female will do this alone. Both parents feed the two or three young, which leave the nest 15 days after hatching. The nest they build is a bulky shallow cup of twigs, grass and bark fragments lined with soft material, placed in a tree several metres from the ground.

The Red Wattlebird has a harsh call and no matter whether it is an alarm call, a distress call or a begging call, it still sounds harsh to my ears.

Though I was delighted to see the Red Wattlebird family they are not residents of the garden. Most of their food is seasonal, unreliable and unpredictable, so they need to shift constantly, often over hundreds of kilometres, between available food resources that are often short lived. Most of our blossoms don't last too long. They came to our garden as we had grevilleas and callistemons in flower, so the more native nectar producing bushes and eucalypts you have the more wattlebirds and honeyeaters come into your garden.

As they need to focus on flying between short-lived food sources, they spend little time in fighting each other or being aggressive to other birds. Finding food is more important than squabbling. However, that's not to say they won't dive bomb you and snap their beaks if you get too close to their nests.

My reaction to seeing these lovely garden visitors was to plant more nectar-producing natives in the garden with the hope that they will help these beautiful birds remain plentiful in our area.

9. Singing Cicadas

April 2008

Cicadas have been singing at our place this summer and what a glorious summer sound it is. Hearing their song also means that our neighbourhood is now wooded enough, after years of people diligently planting trees, to support a large and vocal cicada population. Cicadas are great singers, but why do they produce this deafening sound?

Well, it's the males who are singing and they are doing it to attract the females. They can get very loud and the species that sings the loudest in Australia is the Double Drummer (*Thopha saccata*) who can produce a sound intensity in excess of 120 decibels at close range, which is approaching the pain threshold of the human ear. I can vouch for that for one year, on returning home through the Araluen Valley, I had to block my ears because the sound of the cicadas singing was so loud that it was hurting my ears.

Cicadas don't actually 'sing' but produce their loud sound by contracting and releasing a certain part of their body, the tymbals, a pair of ribbed membranes at the base of their stomach which, when contracted and relaxed, produce a pulse of sound and the singing we hear. In order to intensify the sound, the males of a species congregate in one area and so collaboratively increase the volume of their 'singing'. Some entomologists think this is done to deter the birds that predate on cicadas but no-one really knows for sure why cicadas form such tight groups and sing so loudly and so intensely. But the thing they do know, because they have measured it, is that each of the 220 species of cicadas in Australia, in the family Cicadidae, has its own distinctive call and only attracts females of its own species with that call, even though similar species may

co-exist and sing in the same area. It is said that the calls of the different cicada species are distinctive enough from each other for the human ear to be able to readily pick out the different species living in an area. Well maybe a cicada specialist can, but my ear is not attuned enough to cicada songs to be able to tell any difference between the songs sung at our place. The cicadas in our area could possibly be one, or any, of the following three species; unfortunately I haven't caught any for positive identification, but the options are the Hairy Cicada (*Tettigarcta crinata*), the Greengrocer Cicada (*Cyclochila australasiae*) or the Redeye Cicada (*Psaltoda moerens*).



Once the cicadas have attracted and mated with the females the serious business of producing the next generation begins, and the female cicada cuts a slit into the bark of a tree and lays between 400 to 600 eggs. About 10 weeks later the little hatchlings drop to the ground, dig their way deep into the soil and stay underground for 5 to 17 years. Yes, cicadas have a very long life cycle, most of it spent underground as nymphs sucking the sap out of tree and grass roots. When they are ready to emerge they dig tunnels up to the surface and go through a moult on a nearby tree branch, where they shed their nymph castings and emerge as an adult cicada. What triggers them to come up after all those years underground is still unknown, but it is believed that their life cycle is somehow attuned to rain. Few cicadas emerge in drought years. The amazing thing is that when the time comes for the cicadas to emerge they all emerge at the

same time. Once emerged, they have to wait for a day or so for their new bodies and wings to harden and then they're off. I've found quite a number of cicada shells this summer, much to my grandson's delight. Five days or so after emerging, the males start singing and congregating, and about ten days after that they mate and the whole cycle starts again. Luckily though, the adult cicadas get a chance to hang around for another four weeks or so after mating before their time is up.

Adult cicadas live on the sap of trees and they feed by piercing the surface of plants with their mouth stylets and then sucking up the plant sap. Unless there are a huge number of cicadas healthy adult trees can usually cope with cicadas siphoning off their sap.

Though cicadas are sap sucking beasties, they become a tasty morsel for a range of animals, though their prime predator is birds. But they are also carried off by wasps as food for their young. Cicada-killer Wasps hunt for cicadas in trees and when found, the wasp quickly stings and paralyses the cicada. The heavy burden is then flown or dragged to the wasp's underground nest where an egg is laid on it. Having provided its unhatched larva with fresh food, the wasp then seals the nest. Sometimes the Cicada-killer Wasp returns to the exact spot where it captured its prey to feed on the sap that now leaks from the hole made in the tree by the cicada.

As cicadas are harmless to humans and do not bite, kids in the past caught cicadas and kept them as pets in shoeboxes so as to hear them sing close at hand. However that's a bit cruel and not recommended, as cicadas need their daily feed of fresh plant sap and without it die within two days. Best, if one does catch a cicada, to only keep it for a day and then release it. But it's not only Aussie kids that have kept cicadas as 'pets'. The ancient Greeks and Chinese kept cicadas in cages as songbirds. They must have supplied them with a steady source of juicy sap in order to keep them alive.

I'm happy enough to just hear them sing in our trees on a hot summer's day, appreciative of the fact that the neighbourhood is now wooded enough to support these operatic fellows. I hope I'm around in 17 years time when this year's batches of nymphs emerge to sing their little hearts out.

Though the summer brings delights such as cicada songs, it also brings casualties. Every now and then birds bombard themselves against our front windows; some die from the impact, some survive - ruffle their feathers and fly off again. This time though a young Crimson Rosella did neither but lay there squawking. He obviously needed attention and the Hall vet clinic kindly checked him over, but he had broken his spine and unfortunately could not be helped. Events like that sadden me. We have Crimson Rosellas flying through our garden every day. They come to the parrot feeder we have hanging near where we breakfast on our front deck, so we hear their lovely chirping as they join us for breakfast in the garden. I do wish though the youngsters would learn not to fly into our windows.



Crimson Rosella

10. Wonga Pigeons and Willy Wagtails

May 2008

I have a very assertive Wonga Pigeon (*Leucosarcia melanoleuca*), also called a Topknot Pigeon, who comes every morning to pick at the offerings scattered to the ground from the parrot feeder. He'll even assert his dominance over a group of seven magpies and defend the bread titbits thrown out for the birds. That takes courage! He'll fan out his tail and wings, bob up and down, and make a dash at any magpie coming too close.

He has a mate, who sat diligently on a nest of eggs in our mulberry tree, and although I was very wary not to pick mulberries on her side of the tree so as not to disturb her, her eggs did not hatch. Maybe in the rainy spell we had the nest got wet or the eggs got cold. Such a pity as a clutch of Wonga Pigeon babies would have been a welcome



Wonga Pigeon

addition to the garden. As an aside I had a great crop of mulberries this year due to the rain we had and made eight jars of mulberry, which didn't set that well, but is still yummy on toast or banana bread.

Another garden resident I'm particularly fond of is the Willy Wagtail (*Rhipidura leucophrys*) family. Their evocative night call always brings up memories of past hot summers, sitting outside at night under a full moon waiting for the evening to cool, listening to the Willy Wagtail warble. I just love it. Luckily for me the wagtail family seem to reside in an area of the garden close to our bedroom, so I hear his night call quite clearly and often have to restrain myself from going outside to sit under the stars, take in the full moon and the softness of the hot summer night and listen to the lovely warble of the Willy Wagtail.

Small and mostly black, Willy Wagtails have a white belly and eyebrow. They wag their fan-like tail as they hop about feeding on



Willy Wagtail

insects. Wagtails are a common sight in parks, gardens and farms around Australia. A close relative of the Willy Wagtail is the Restless Flycatcher (*Myiagra inquieta*), another tireless member of the insect-control patrol.

Wagtails can be aggressive, especially when they feel their territory is under threat. Excitable little birds, they will defend their patch from much larger animals, even cows!

Most of us have seen Willy Wagtails hopping about in the daytime, wagging their tail from side to side. But did you know these chirpy birds will also serenade the moon? Listen on moonlit nights for a bird singing ‘sweet pretty creature’. This is the wagtail’s call.

11. All is Quiet

June 2008

The garden is quiet. The serene silence of winter has descended on it, and in recognition of the passing of the seasons no new visitors have come to the garden this month. The snakes and lizards have gone into hibernation. The honeyeaters have flown north, the flies have died, and the bees have gone to other pastures. The kookaburra family has moved away from the house yard and the frogs have hidden themselves again as no rain has come our way.

Only the magpie families still visit regularly for their daily tidbit. Their babies are now young adults, fat and fluffy and well prepared for their first cold winter.

My roses have faded, the ivy and ornamental grapes have dropped their leaves and all are getting ready for a deep winter sleep. And so it's time for the garden to rest, to re-coup before the bursting of new life and new growth in spring. But there's not the same level of rest for the gardeners, as early winter is the time to prune the fruit and mulberry trees, lop out dead branches from the hazelnut and almond trees, prune the roses and gather all the autumn leaves for the compost pile. Then there's mulch to spread throughout the garden beds, winter prunings to burn off and the veggie plot to be prepared for next summer.

Though the gardeners may not be able to rest to the same extent as their gardens do, they nevertheless are influenced by the winter quietness that pervades, so they don't work with the frantic energy that's needed in spring, but go about their winter tasks with a more mindful and quiet purpose. After all, winter is with us for a good four months. Plenty of time to get everything done. But it's not only the luxury of more time that allows a more sedate approach to

work, it's also the innate knowledge that winter is not only a time of rest for gardens, but also a time for humans to slow down, to rest and to revitalise their energies. It's time to breathe in deeply the crisp winter air that hangs around our bare trees; sleep long and soundly at night whilst the frost descends and sit in the weak morning sunshine as it filters through the winter garden and find peace in that.



12. Tawny Frogmouths and Cheeky Choughs

August 2008

I was delighted to find that I have two Tawny Frogmouths living in the garden. On two nights, whilst coming home late, I saw them in my car headlights sitting on the edge of the house pergola. They weren't too perturbed but sat there staring back at me as I stopped the car to have a good look at them.



Tawny Frogmouth

They are nocturnal hunters that eat insects and pretty well anything that creeps and crawls at night, including small mice. Their large frog-like mouth is fringed with whisker-like feathers which they use to capture insects. Unlike other birds that fly at night catching insects, Tawny Frogmouths (*Podargus strigoides*) often remain

very still, sitting on a tree branch or stump waiting for prey to pass beneath them. They are classed as ‘ground feeders’ for once they spy a quarry on the ground they flutter down onto it. They then catch their prey with their beaks rather than with their talons, quite different from owls who also hunt at night.

By eating cockroaches, spiders, beetles, mice, lizards, centipedes, scorpions, snails and slugs they help keep my garden free of pests which means I have no need for pesticides, snail bait or any other artificial ‘pest’ controls. The birds do it all for me.

During the day Tawny Frogmouths sleep perched lengthwise on a branch with their heads up and their eyes closed. Their lovely marbled grey plumage, patterned with streaks and barring, ensures that they blend in with the tree trunk or branch they are sitting on, thus making it very difficult to see them during the day.

Tawny Frogmouths are highly territorial and don’t welcome stray new Frogmouths into their area. In fact the irises of the males’ eyes turn from yellow to red before they attack any male or female that enters their territory. They are monogamous and mate for life.

Frogmouths always nest in trees, usually in the fork of horizontal branches. A nest of twigs is built, padded with feathers and the female lays 1 or 2 eggs which both parents incubate. The young are covered with down at hatching and remain in the nest until they can fly. Incubation time is around 30 days and the young fledge at 25 days, well before they can fly. The parents are very protective of their brood and all roost closely together once the young leave the nest. However many young die in their first winter even though they have great community support from the extended Frogmouth family. The young Tawny Frogmouth becomes mature at four years of age and can live up to ten years.



Young Tawny Frogmouth

Frogmouths like to live in forest and scrubland with a special preference for open woodland. A great book outlining all you want to know about them is ‘Tawny Frogmouth’ by Gisela Kaplan, CSIRO Publishing 2007.

In contrast to the silent elusive Tawny Frogmouth we’ve had a family of White-winged Choughs come into the garden foraging amongst the mulch and fallen leaves and keeping contact with each other through a series of loud and constant chirps and wheezes. They’ve come right up to the veranda poking their beaks amongst the pot plants I have there, looking for a worm or some other morsel. They mainly eat insects and given the number of insect eating birds we have in the garden, that is, the choughs, the frogmouths, the magpies and so on, I’m surprised there’s an insect left to find.

White-winged Choughs (*Corcorax melanorhamphos*) are highly social, cooperative birds that also like open woodlands. They are



White-winged Choughs

unusual in that a group of less than four are incapable of breeding successfully and only groups of seven or more succeed in raising more than one young per year. This dependence on group units also applies when a family group gets too big. No one bird ever disperses from the family unit. Rather, a smaller group of four or six breaks away if dispersal is needed. Their survival appears to be dependent on being a member of a reasonably sized group.

White-winged Choughs, like their cousin the Apostlebird, build large bowl-shaped mud nests. They start breeding in July and August and every member of the group contributes to all aspects of nest building and parental care. Nest building may take quite some time as each layer of mud must harden before fresh layers are added. Nest building skills appear to be learned since young birds often accompany and watch adults whilst building.

Though they are good flyers you often see them hopping and scuttling along the ground rather than flying about. I guess this suits their foraging habits as they check out mulch and leaf litter on the



White-winged Chough nest

ground. As with many birds, habitat loss and forest fragmentation are amongst the most serious environmental threats facing Choughs. In Australia, loss and fragmentation of woodland habitats has resulted in widespread decline of many bird species and so I do my bit for them and keep planting trees.



White-winged Chough

13. Rabbits Galore

October 2008

Some garden visitors are welcome, others are not. They're certainly not welcome when they eat my carpet roses and take up residence in my front garden. Yes, I'm talking about bunnies, the wild type, the European rabbit (*Oryctolagus cuniculus*). Have they taken up residence on your farm as well? On ours they have re-opened old collapsed warrens along the creek, which I believe they prefer doing to digging new ones, and they have taken up residence in our house yard woodpile.

Did you know that rabbits originated in the Iberian Peninsular (Spain/Portugal) and then spread throughout most of Europe? In good times rabbits spread and breed quickly and since their release in Victoria in 1859 they increased to an estimated 200 million by 1994 causing enormous environmental and habitat damage, loss of pasture and according to the CSIRO costing the economy \$600 million annually. To combat this the CSIRO and State bodies have over the last 30 years put enormous effort into eradicating the rabbit or at least reducing their numbers through pest management programs, and to a great extent they have been very successful.



The release of myxomatosis in 1950 by the CSIRO had a huge impact on bunny numbers giving an unbelievable 99% mortality rate at first. Professor Frank Fenner was the man credited worldwide for his role in not only eradicating small pox but for controlling rabbit plagues by the introduction of myxomatosis. He allayed fears that the myxy virus could harm humans by injecting himself with the virus! Some scientist! But because the myxy virus is spread by mosquitoes, this form of rabbit control didn't work too well in arid areas or dry times. The CSIRO next turned to calicivirus, or rabbit haemorrhagic disease, which was officially introduced in Australia in 1996 but first recognized in China back in 1984, and which in Australia has also caused good rabbit mortality rates.

But it appears that recently the rabbit has made a comeback and not only at our place. A check on the internet showed reports of rabbit increases around Australia in the last year. Residents in Natimuk, west of Horsham, Victoria, reported in May 2006 that recent rain had fuelled a rabbit plague (ABC Online). Also, in Dec 2006 ABC Online reported that rabbit numbers had risen in the Riverland and Mallee area because of the drought. It was suggested that dry conditions had limited the spread of calicivirus, which is used to help control the pest. The Daily Telegraph reported that a rabbit plague hit Sydney's Western suburbs, destroying home gardens, pastures and nurseries as rabbit numbers reached their highest in more than a decade. It stated that in September 2006 the Rural Lands Protection Board had distributed 3 tonnes of bait poison alone and 1.2 tonnes in October! To illustrate the effect rabbits can have on native fauna, it was reported on the WWF website (an environmental site) in November 2006 that the Grey-headed Albatross on Macquarie Island is facing extinction due to rabbits damaging the tussock grasses and coastal slopes that provide shelter and materials for nesting birds. Rabbit numbers on Macquarie Island are reported to be 100,000 at present. The University of Canberra Invasive Animals Cooperative

Research Centre project manager, Dr Brian Cooke, said data showed that rabbits were on the rise in South Australia, western NSW and parts of Victoria (Canberra Sunday Times, 28 May 2006).

One has to ask why has the bunny had a resurgence and to what extent have numbers built up? To find out I contacted the CSIRO Division of Sustainable Ecology, but they haven't done rabbit control research for about seven years so I had to look elsewhere.

There are suggestions that calicivirus is no longer working as well, causing rabbit numbers to go up. The Biodiversity Conservation Department, South Australia, feel that the virus has either mutated or rabbits have become more genetically resistant to it. Also, they suggest that, due to rabbit numbers having been brought down by calicivirus and myxomatosis in the past, landowners may not be as vigilant in implementing rabbit control measures on their own land as they were previously.

Dr Cooke feels that though the calicivirus helped reduce rabbit numbers, it needs to be monitored closely, and that one needs to keep up pest management practices and not just rely on calicivirus or myxomatosis to keep rabbit numbers down. But before looking at what landowners can do I wanted to know more a bit more about calicivirus.

I found my answers in a great Phd Thesis by Jorg Henning entitled "*Factors influencing the epidemiology of rabbit haemorrhagic disease virus in New Zealand*" submitted to the Massey University, Palmerston North, New Zealand in 2003. It stated that RHD is a virulent virus (that is a nasty one) whose genetic structure has now been unravelled and which showed that it is pretty resistant and can survive tough conditions and a wide temperature range. Scientific field observations suggest that the virus can survive for several months. Nevertheless, scientists found that RHD, though being

hardy, was more effective in drier areas of inland Australia than in cooler, wetter areas of eastern Australia. Extensive trials were done in Australia prior to releasing RHD to make sure it didn't affect our native and domestic animals (the CSIRO tested 28 different domestic, native and feral animal groups but no sign of viral infection was found. This included serological testing of foxes, dogs and humans, 259 of them!).

Next I wanted to know how RHD is transmitted and found out that it is passed on by rabbits eating contaminated food, by biting, coughing and sneezing and by flies and biting things. The calicivirus is commonly present in all secretions and excretions of a diseased rabbit. Yuk! So maybe there is a role for all of those pesky bush and blowflies we've had this summer. One study found that blowflies and bushflies retain the virus for up to nine days after feeding on an infected rabbit, and that the virus is further spread by fly poo. Similarly rabbit fleas and mosquitoes also transmit the virus. Other ways of passing the virus around is through rabbits mutual grooming, licking lacerations, and so on, and by birds who have eaten dead infected rabbits and then can carry the virus on their feet, feathers and faeces. Scientists report that rabbit faeces is another main way of transferring the virus. (Did you know that rabbits eat their own poo? It's called coprophagy and they do it to get maximum value out of their high fibre diet by re-ingesting faeces. A bit like cows ruminating. However it also means that they infect themselves with calicivirus). There is general agreement though that having a good dose of RHD deep in a rabbit warren is the best bet for transmission of the virus, as it leads to recurring virus outbreaks and once infected, a rabbit generally dies within 4 - 6 days from multiple organ failure.

However, calicivirus doesn't guarantee a 100% kill; often more around 65%. Some rabbits recover, or avoid the disease, or some young rabbits have a level of immunity to it. Myxomatosis and calicivirus are therefore not the total solution to rabbit eradication

and other forms of pest management are needed in the war against the bunny, particularly as a doe can produce a litter (4 – 6 kittens) every four weeks under ideal conditions and in a typical breeding season of six months one doe can produce 4 – 5 litters (no wonder rabbit numbers go up!). That's why the CSIRO used to say "Get them down and keep them down – it's the cheapest option in the long run".

So what can we do on our land? Well, generally we can do a lot ourselves mainly by ripping warrens; fumigating and keeping a good eye on the rabbit numbers to make sure things don't get out of control. Farmers are constantly encouraged to do this and our local Yass Rural Lands Protection Board is always available for good advice and assistance. We have fumigated and dug in all the warrens along the creek at our place, not only once but have had to re-do the work twice more as not all bunnies died the first time. We found that a few burrows were re-opened which needed collapsing again but I think that at the moment we have succeeded and my roses can re-grow.

So why have rabbit numbers gone up? Not too sure but I do know that the numbers are going down at our place.



14. Parenting Styles

December 2008

The garden is full of baby birds at present and the different parenting styles adopted by the many birds are always a source of wonderment to me. Two of our garden visitors have quite dramatically different parenting styles. This spring, when a strong North Westerly forecast the chance of a possible thunderstorm, about a hundred Dusky Woodswallows (*Artamus cyanopterus*) came over the house. I was alerted to their arrival by their loud, collective chirping. They swooped and swerved, propelled by the wind currents, and finally came to roost in the big dead gum tree near the house, adorning its dead branches like Christmas decorations - though not as colourful, as the Dusky Woodswallows are a rather dull deep grey with shades of smoky brown, and dark brown eye patches. By morning they were gone. They feed on insects taken on the wing, and that's probably what they were up to when I saw them swirling above the house. They generally migrate up to the North in



Dusky Woodswallow

autumn so maybe the Spring wind was helping their passage back to our Southern regions.

Dusky Woodswallows nest in ‘neighbourhoods’, building nests very close to each other made up of loose twigs and grass. They nest collectively as a way of protecting themselves against predators. I guess that it’s ‘safety in numbers’. Each pair builds the nest, incubates the eggs and feeds the young. A most cooperative and responsible parenting style. Most unlike the other garden visitors we have had, a pair of Pallid Cuckoos (*Cuculus pallidus*). The Pallid Cuckoo is a pretty, medium sized bird, pale grey in colour with dark grey overtones and distinctive barred stripes on the underside of the tail. The male Cuckoo’s call is quite distinctive and melodious, and is what attracted me to their presence in the garden.

Whereas most other birds, like the Dusky Woodswallow, raise their own young, the Pallid Cuckoo has ‘outsourced’ its parenting. Cuckoos are well known for their habit of laying eggs in other birds’ nests and then relying on the ‘foster parents’ to raise the young



Pallid Cuckoo

Cuckoo. The Pallid Cuckoos use a number of ‘foster parent hosts’ to raise their young, including Robins, Whistlers, Woodswallows and Willy Wagtails, but Honeyeaters are their favourite host around here. The female Cuckoo will lay one egg in the Honeyeater nest, evicting one of the Honeyeater eggs before laying hers so that the extra egg will not be noticed. She waits for the Honeyeater to be off feeding, and times the laying of her egg to coincide with the onset of the Honeyeater’s incubation period. Crafty!

One of the most effective defences that host birds have to stop parasitism by cuckoos is to reject any eggs that appear different to their own and toss them out of the nest. So, to overcome this, the Pallid Cuckoo has developed the art of egg mimicry. The Cuckoo may not be able to exactly match the look and size of the eggs of all of its different hosts, but its egg mimicry skills are good enough to fool most of the host birds most of the time – pretty crafty!

Not only are the neglectful parents crafty, but so is their youngster. On hatching, the young Cuckoo evicts all of the young Honeyeater fledglings so that only the Cuckoo remains in the nest. The ‘foster parents’ don’t seem to be unnerved by this and raise the Cuckoo as their own. As the Cuckoo grows up to be several times larger than a young Honeyeater chick would have, it’s probably an excellent survival technique, as it takes both Honeyeater parents all their energies and time to raise just this one Cuckoo baby.

I think our two resident Magpie families have learnt a trick or two from the Pallid Cuckoo, as both families bring their squawking babies to our front deck on the dot of 6.00am demanding their morning titbit, and I, like a dutiful ‘foster parent’, get up and go out to feed them. Like our busy Honeyeaters raising a Cuckoo baby, I have been tricked into taking on a parenting role that’s not really mine. Pretty clever some of these birds!

15. Ernie the Echidna

February 2009

I've been thinking of getting a dog this last 12 months, prompted by seeing a big Red-bellied Black Snake both near our back door and at our front verandah, and because we still have rabbits decimating my carpet roses. My thinking is that a dog would keep such unwanted beasts at bay by barking and generally patrolling the place. However, fate hasn't as yet brought the right dog my way, but what has come my way instead and taken up residence is a big fat Echidna.

We first discovered Ernie (the name we gave him but he has many names including 'short-beaked echidna' and 'spiny anteater') a month or so ago in the garden, and though delighted, we wondered how he had managed to get into our supposedly rabbit proofed house yard. We attempted to take him out of our yard enclosure to ensure



Echidna

he had the freedom to roam uninterrupted but true to Echidna form, on approaching him he turned into a prickly rolled up ball and buried himself deep into the earth making it impossible to shift him. I donned leather gloves and tried to gently shift him but gave up pretty quickly for fear of either damaging him or myself. An Echidna's spiny coat provides an excellent defence when it is threatened, so I was not about to tangle with him further.

Our next tactic was to leave the yard gate open in the vain hope that he would wander out but we gave up on that after a couple of nights, as Ernie did not leave, while the surrounding rabbits and kangaroos took up the offer of entry and once again my poor roses suffered.

With time, Ernie and the household have become accustomed to each other. He now patrols the edge of the house looking for goodies, termites I suppose, so at least I can be thankful I have an on-site termite inspector. He hops onto our front deck of an evening looking for goodness knows what – maybe I should leave out some milk for him?

But my biggest worry is that, unlike a dog, he's not car trained or familiar with the patterns of humans. We find him curled up behind one of our car wheels, which means that now whenever I want to drive the car out of the carport I firstly have to unceremoniously inspect the underside of the car to see if Ernie is sleeping there or not.

My other worry is whether the poor fellow is hungry, being confined to our house yard. Granted we have loads of ants but do we have the other beasties that Echidnas eat? A quick check on the internet revealed that Ernie's actual name, being a short-beaked echidna, is *Tachyglossus aculeatus*, and it gave me the following information. His spines are actually modified hairs. He has, luckily for him, fur in-between the spines for insulation. An Echidna's home range can

be as big as 50 acres and they spend most of their life there. And they are very vulnerable to heat. But more importantly, I found out that Ernie, though eating mainly ants and termites, will also eat grubs, larvae and worms.

I have a lovely worm farm but don't as yet feel like sacrificing my lovely compost creators to Ernie; maybe a bit of mince on the deck next to the milk will do the trick.

I don't think Ernie has a mate, since Echidnas are generally solitary animals. In the breeding season, July to August, a female may mate with several males and two weeks later a single soft-shelled egg is laid directly into the female's pouch, with the baby Echidna hatching ten days later. The young sucks up milk secreted by its mother's mammary glands. Echidnas do not have teats, but secrete milk through several pores in the belly. Baby Echidnas are evicted from the pouch when they are around two to three months old, and then are hidden in shallow burrows that the mother has dug whilst she goes out foraging, returning only to suckle them. Juvenile Echidnas tend to be first seen when they are about one year old and by then they weigh one to two kilograms.

Since Ernie has taken up residence I'm loath to get a new dog as I'm sure even a puppy would harass him. My only hope is that Ernie frightens off the red belly black and rabbits in his amblings around the house. I may be lucky.

16. Collared Sparrowhawks and Redback Spiders

April 2009

The other day I was startled by a loud noise of a bird crashing into our lounge room windows, but rather than the expected winded Crimson Rosella, the bird that wobbled off in slow flight was bigger and darker, and I immediately recognised it as belonging to the hawk family. The poor fellow made it to one of our nearby trees and sat there for quite some time, in full view, allowing me to whip out my binoculars and identify him as a Collared Sparrowhawk (*Accipiter cirrocephalus*). A new visitor to the garden.

As they hunt mainly small birds, he was probably after one of the many small birds resident amongst our bushes. Sparrowhawks hunt Honeyeaters, Flycatchers, Goldfinches, Sparrows, the Common Starling and, I hope, Indian Mynahs. The Sparrowhawk conceals himself amongst the foliage of a tree and then swoops onto a small bird flying by, or gives chase at incredible speed if the first pounce isn't successful. I think our visitor must have been at a flat out sprint when he crashed into our windows, given the loud thud his impact made. They don't prey only on small birds, but will also



Collared Sparrowhawk

eat insects, small reptiles and mammals.

I hope that his presence means I may have a pair of Sparrowhawks in the vicinity, as I should love to follow their family life next spring. Sparrowhawks build a nest of twigs, preferably in the fork of a tree, and then line it with fresh leaves. The female will then lay a clutch of 3 to 4 eggs and be the main incubator whilst the male supplies food. Incubation takes around 35 days and the chicks fledge around 24 – 33 days after hatching. Both parents bring food to the young while in the nest. If not a resident, I hope at least that he becomes a regular visitor to the garden, although the little small birds living in the garden may not welcome him as warmly as I do.



Collared Sparrowhawk

Another current garden visitor is one that I think you are all familiar with - the Redback Spider (*Latrodectus hasseltii*). I was opening the lid of my work farm to give the worms their daily treats when my hand just missed grabbing a huge female Redback! I rapidly retracted my hand and encouraged her to live elsewhere.

As we all know, the Redback we see with a red stripe on its back is a female, and she's dangerous. Her male counterpart is smaller, without the red trademark, and though he bites as well, his bite is not as poisonous. It's best to avoid them both and if you are unfortunate

enough to be bitten by a Redback it's sensible to seek medical advice straight away. However, not all bites result in a drama and few result in death. I'm told that quite a number of people in Australia get bitten by Redbacks annually, but only 20% of such bites require medical treatment. However, I'm being careful. As Redbacks like to spin their webs in dark protected places, like my outdoor boots and gardening gear, I'm extra careful when I put them on and always wear gloves when working outside. Just as well, for when I was helping my husband pull up some of our deck planks so that we could destroy several burrows being dug under our house slab by those pesky rabbits, I put my hand on another Redback! At the moment we seem to be constantly battling rabbits, Redbacks and Red-bellied Black Snakes.



Redback Spider

Still, there's something quite unusual about the female Redback spider - she eats the male while mating with him. In the process of mating, the much smaller male somersaults to place his abdomen over the female's mouthparts. In about 2 out of 3 cases, the female consumes the male while mating continues.

The belief is that by sacrificing himself, the male gets two advantages over other males who are not eaten. The first is that males who were eaten were able to copulate for a longer period and thus fertilise more eggs. The second is that females who have eaten a male are more likely to reject subsequent males. Someone must have pulled a 'swifty' over the male, I think, to even consider approaching such a female!

Once the female has mated, she can store sperm and use it over a period of up to two years to lay several batches of eggs. A female spider may lay eggs every 25 to 30 days. A single female normally lays between 40 and 300 eggs in each sac, but can lay up to 5,000 eggs. The eggs hatch 13 to 15 days after being laid. Young Redback Spiders leave the maternal web by being carried on the wind. They extend their abdomen high in the air and produce a droplet of silk. The liquid silk is drawn out into a long thread that, when long enough, carries the spiders away. Eventually the silken thread will adhere to an object where the young spider will establish its own web.

If males survive the mating game they can live for up to 6 or 7 months while females may live for between 2 and 3 years. The male spiders mature in around 90 days whilst the females take about 4 months to reach maturity.

The Redback Spider has a neurotoxin which is toxic to humans, with bites causing severe pain, local swelling and redness. There is an antivenom for Redback bites which is commercially available. The larger female spider is responsible for almost all cases of Redback spider bites in humans. However, male spider bites have occurred. The rarity of male bites is probably due to its smaller size and proportionally smaller fangs rather than the male being incapable of biting or of lacking venom of similar potency to the female. Cases have shown that the male bite usually only produces short-lived, mild pain.

The female Redback is slow moving and rarely leaves its web; therefore, bites generally occur as a result of a person placing a hand or other body part too close to the web, such as reaching into dark holes or wall cavities. Pets are also susceptible to Redback spider bites so watch out that your cats, dogs and guinea pigs don't snuggle into unduly dark places and crevices.

Redbacks spiders will always be with us, and we shouldn't want to eliminate them just because they can be dangerous. Spiders play an important role in the food chain, eating lots of insects in the garden; we just don't want them at our back door or in the home. So some judicious spider control is needed. Usually I sweep away all cobwebs that are spun on the inside and outside of the house, don't store or stack too many things next to the back door, and generally keep spider-friendly harbours around the house to a minimum.

An interesting Redback story is that in April last year the hospital in Baralba, Central Queensland, was temporarily closed, and patients evacuated overnight, so as to deal with an invasion of Redback Spiders. The Pest people were called in and they found an abundance of mature and young Redbacks in the hospital ceiling and other parts of the building. Luckily Redbacks haven't infested our place to that extent, but I am taking care at present!



17. Hunters of the Night and the Day: Bats and Nankeen Kestrels

June 2009

Usually I find frogs in the folds of the umbrella we have on our front deck, but when I last opened our umbrella, on a sunny May afternoon, out dropped a bat! I guess it had settled itself in there for the winter hibernation and I had accidentally disturbed it. We had a good look at him and then relocated him under one of the house eaves. He was only a small fellow, smaller than my palm and though I tried to identify him, I was unsuccessful. He would be classed as a microbat though. I was delighted to find that we had bats in the garden as they are one of nature's most fascinating creatures.

At present our local bats are hibernating. Their metabolism slows down and they live off body fat accumulated during summer. They are mammals like us, but amazingly different in that their forelimbs have developed as wings making them the only mammal in the world capable of real flight. In fact the wings of a bat are actually a thin membrane of skin that stretches between their elongated fingers and extends to the hind legs. When a bat rests, it folds its wings alongside its body to protect the delicate finger bones and wing membranes.

Bats also have an unusual approach to procreation. Male bats only produce sperm in the summer, which makes breeding complicated as there is not enough time left in the summer for them to then breed and raise their young. So male bats mate with several females just before they all go into hibernation and the females store the sperm until the next spring when ovulation occurs and the embryo develops. That ensures that the young get a head start and can mature that summer. Bats usually only have one young, called a pup. When they are born they are pink, furless and blind and are nursed by their mothers until

they are about six weeks old. The pups cling to their mother's fur and drink milk directly from the mother's nipples which are located beneath each armpit. The mother bat generally leaves her young in a bat 'creche', along with other pups, whilst she goes out to hunt for food each night. The pups grow quickly, are fully furred and are able to forage for themselves by mid-summer.

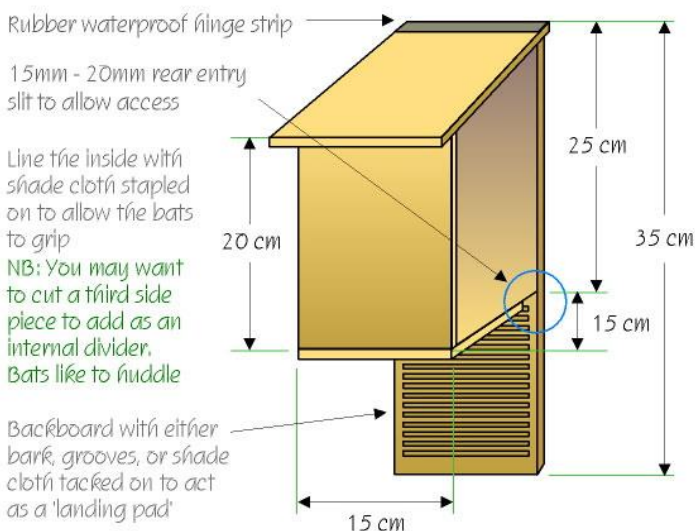
I was pleased to see a bat in our garden because they are great insect eaters, eating up to their body weight in insects every night. When you see one bat, there are sure to be others, so any moths, beetles, crickets and mosquitoes that fly around at night are swooped on by bats. Bats do their hunting at night and then sleep during the day.

Another amazing feature about bats is that, although they have good eyesight, they also rely heavily on echo location to find food and to navigate around. Bats send out high pitched cries which bounce back to them off the insects or objects in their path, and by listening to the bounced back sonar waves, bats can judge distance, movement and size of all objects in their path – remarkable. The sounds used by bats in echo location are too high a pitch for human ears, but bats use echo location so sensitively that thousands of bats can fly out of a cave at dusk without any of them bumping into each other or anything else.

Because they are such great devourers of insects, many people encourage bats to take up residence in their garden by putting out bat boxes. Bats like to roost in sheltered places during the day and they need safe crèches for their pups. Our local bats generally try to roost under bark or in the hollows of trees, so a bat box is very appealing to them. There are a number of sites on the Internet that give details on how to build a bat box, but I have included one of the designs below. If there is an enterprising local carpenter who feels inclined to build bat boxes and sell them at the Hall Markets, I, for one, would be a willing buyer.

Below is a plan for the construction of a roosting box suitable for most Australian microbats. Materials used, and notes are below the plan. Please note that all sizes marked are for external dimensions. You can use any old timber for making bat boxes, the rougher the surface the better as it gives the bats something to cling to whilst roosting. The general recommendation is that the box is best screwed and glued, rather than nailed together, that it has a waterproof top and that it is best left unpainted.

Microbat Roostbox



Roostbox pieces cut from a single plank

20 cm		25 cm				15 cm
SIDE	SIDE	BACKBOARD	FRONT	TOP	BASE	
25 cm	20 cm	35 cm	20 cm	20 cm	14 cm	

NB: Base is approximately 14 cm. Depending on the thickness of the wood used, you need to cut this piece to leave an entry slit of between 15 mm - 20 mm.

Another most welcome recent visitor was a Nankeen Kestrel (*Falco cenchroides*). I spotted him hovering directly over our front garden. He was there, suspended in the air, not flapping his wings for a few minutes as he was eyeing off some prey below. To me the Kestrel always appears so light and delicate, with their pale beige to rufous colouring offset by flecks of brown on the face and black on the tips of the wings. He was giving off a high trilling call, which I hope meant his mate was not too far away.

The Nankeen Kestrel's diet is varied. It mainly feeds on small mammals, reptiles, small birds and a variety of insects. Prey is located from a perch or by hovering a short distance above the ground on rapid wing-beats, using its fan-shaped tail as a rudder and keeping the head and body still. Once prey is spotted, the bird drops nearer to the ground until it is close enough to pounce. Some insects and birds may be caught in mid-air or snatched from tree branches.

The Nankeen Kestrel nests in a wide variety of sites, including tree hollows, caves, ledges on the outside of buildings, and occasionally



Nankeen Kestrel

on the ground. The nest consists of anything from a simple scrape in the dirt of a ledge or tree hollow, to a nest of sticks or mud that has been abandoned by another species of bird. Pairs of Nankeen Kestrels usually stay together over successive breeding seasons, and will often use the same nest site or territory year after year. Usually only one brood of young is raised in a year. Three to seven eggs are laid and the female does the bulk of the incubation.

Hatching takes place after 26 to 28 days, and the male brings food while the female continues to incubate until the young are close to fledging, at which time the female leaves the nest to hunt for them too. Multiple broods are raised in good seasons. The Kestrel is quite territorial, often fighting to retain territory, especially during the breeding season.

I have a soft spot for Nankeen Kestrels and hope that I see more of them, though I don't know if there will be any insects left for them to hunt if the bats have had first picking at them during the night.

18. Wedge-tailed Eagle

August 2009

I was delighted the other day to see a pair of adult Wedge-tailed Eagles (*Aquila audax*) soaring high above our garden. It was a special thrill for me as I hadn't seen wedge-tails in our area for quite a number of years. Yet there they were back again. The pair was flying lazy circles in the sky, their magnificent broad wings extended to their full 2 metres and their diamond shaped tails clearly visible. The wedge-tail can soar to enormous heights of 2,000 metres when searching for food.

This pair was circling up high enough not to be pestered by the usual cohort of magpies, ravens or lesser hawks that annoy them when they glide closer to earth. In the past I've seen eagles roll and present those mighty talons to their attackers, but not today.



Wedge-tailed Eagle

Adult wedgies are territorial so our property must be within their home range. This hopefully means that I will see them more frequently from now on.

The Wedge-tailed Eagle is one of the largest eagles in the world, standing up to 1 metre tall. Adult males can be almost black, with juveniles and females being of a lighter colour. Scientists have found that the favourite food of wedgies is rabbit, though they will also prey on young kangaroos, possums, ravens, wood ducks, young pigs, foxes and even cats. Quite a varied selection of protein! They also feed on carrion and road kill and that's where we are most likely to see them at close hand. I got a close up view of two magnificent adult wedgies a few years back when I came upon them feasting on a dead kangaroo on the side of the road when driving to Adaminaby. Researchers gain results of what wedgies eat by studying the regurgitated pellets that are found below their roosts. Wedgies periodically bring up pellets of non-digestible bone and fur, from which one can identify what they have been eating.

The Wedge-tailed Eagle is regarded as Australia's top predator because nothing preys on it - other than humans of course! Wedgies have been shot at and poisoned in the past but they have been a protected species for quite some time now as their important role in maintaining a stable predator-prey relationship in the environment has become recognised. And also who cannot admire this magnificent bird and not want to ensure its ongoing survival in Australia. Their hunting prowess is due to their keen eyesight, which is about nine times better than ours. Wedgies can plummet down from great heights and use their weight and talons to pin down their prey. They may hunt singly, in pairs, or larger groups. If hunting together they can attack and kill adult kangaroos.

Wedgies are monogamous and only take on a new mate if one of the pair dies. Wedge-tails build their nest of dead sticks in a prominent



Wedge-tailed Eagle nest

location with a good view of the surrounding countryside. The nest can be quite large, reaching up to 1.9 m across, 3 m deep and weighing about 400 kg. It may be built in either live or dead trees, usually the tallest ones in their territory. The female lays around 3 eggs, with intervals of two to four days between each laying. Incubation starts as soon as each egg is laid and, because of the interval between each laying, the eggs do not hatch simultaneously.

The first chick also hatches larger than the second, which in turn is larger than the third. The survival rate of the chicks depends on the relative abundance of food. If food is scarce it's the first born, being the biggest, which generally survives. If food is really scarce, the first born has been known to kill and eat its smaller nest mates. Both parents share in the duties of nest building, incubation and feeding of the young. Wedge-tailed Eagles are wary of humans and rarely attack them, but they are very protective of their area in the breeding season, so may dive at people who come too close to their nest at that time.

The chicks hatch covered in white down and are dependent on their parents for food until they fledge and leave the nest at around 13 weeks of age. They then stay with their parents for another 11 weeks, after which they are likely to disperse, moving to wherever conditions are suitable. The juveniles are likely to return to their natal home territory once they gain adult breeding status at around 5 to 6 years of age.

Humans have long respected the mighty eagle and have incorporated images of the eagle into ‘Coats of Arms’, national flags and national symbols to depict power, beauty and independence. The eagle was the symbol of the Roman Empire and the mythological Greek god Zeus. For a number of cultures, such as that of the Native American, the eagle is regarded as a sacred bird. The Aboriginal people have also had a close spiritual association with the Wedge-tailed Eagle and their down and feathers have been used in many ceremonies. The wedge-tail has also featured in dreamtime stories. One story tells of how Bunjil, the spiritual creator of all living things, takes on the form of a Wedge-tailed Eagle. Tradition says that in the dreaming, Bunjil the creator, made the land, the waters, the plants and the animals. He also made the people who have walked this land ever since the dreamtime began and will continue to do so until the dreamtime ends. The wedge-tail is the living embodiment of that dreamtime story.

I like so many others admire and respect these magnificent birds and hope to see more of them soaring above our garden.

Just to let you know I have also spotted the following new visitors at our place, I may write a bit more about them another time:

- Brown Quail
- Black-faced Cuckooshrike
- Golden Whistler
- Hundreds of Bogong Moths.

19. Masked Lapwing and Eastern Bearded Dragon

October 2009

We have a pair of Masked Lapwings (*Vanellus miles*), more commonly but incorrectly known as Plovers, living near our front gate and this spring the female decided to nest right on the edge of our dirt road. She laid two beautiful speckled olive green eggs but her brooding of them was constantly interrupted by cars, horses and people passing by. At first she would fly off the nest at every interruption but eventually she tolerated all passers by, which gave us a close up view of proceedings.

Masked Lapwings have a fearsome reputation for swooping on people in the nesting period, but luckily for us this pair did not swoop on us once. Eventually, after about 28 days, two fluffy little babes hatched out and we became even more worried that they may be run over as the



Masked Lapwing

mother continued brooding them right on the edge of the road. It was with some relief that eventually the parents took their young into the paddock to feed, and I didn't have to worry about their survival anymore.

Masked Lapwings feed mainly on seeds, molluscs, worms and insects that they find in the paddocks. The youngsters, once hatched, follow their parents but have to forage for their own food, whilst both parents guard and protect them.

The birds pair for life but the sexes look alike so it was hard to know which one was Mum and which was Dad once the incubation period was over. Lapwings tend to re-use their nesting sites so we will probably see them nest on the side of the road again next spring. The young are independent at about 8-10 months and many families stay together even after the young can fly, so we may have four Lapwings living in our area from now on.

And just as I was stopping to stress about possibly running over lapwing chicks, a new garden visitor appeared that gave me equal consternation.

We almost drove over an Eastern Bearded Dragon (*Pogona barbata*) who was warming himself up, sun-baking on our driveway. At first I was delighted to stop, have a good look at him and then shoo him off the road. After all a new visitor is a real treat. However he now seems to be on the driveway every time we drive out, and I'm terrified of running over him, so I stop and shoo him off the road before driving on. This can become a bit of a pain. His behaviour is quite understandable though, as reptiles seek out warm spots like a dirt road in early summer. The Dragon's survival technique when approached is to freeze, stay still, and rely on their camouflage to hide them and that is what he is doing when we come along in our car. However, sun-baking on a driveway is not a good idea, and I hope

that as the summer gets hotter he will be happier up a tree and we can have our driveway back.

When I encourage him to move off the road he puffs himself up, opens his mouth wide and unfurls his beard or frill. This is why the Eastern Bearded Dragon is sometime incorrectly called the Frilled-



Eastern Bearded Dragon

neck Lizard. They both have beards but the Frilled-neck Lizard has a frill around the entire head whereas the Bearded Dragon's frill only extends around the throat region, more like a beard. Though the Eastern Dragon has a smaller frill it still serves its purpose. It makes the Dragon look bigger and fiercer and when accompanied with hissing and an open mouth most predators and humans give them a wide berth.

An adult Bearded Dragon's diet can be up to 80 - 90% vegetable matter - leaves, fruits, berries and flowers, but they will also chase insects and eat them. Juvenile Dragons are mostly insectivorous and need a higher proportion of insects in their diet to get the protein needed for growth.

I don't think this fellow has a mate. However around this time of year the males are on the lookout for one or more partners and try to attract them with lots of head bobbing and arm waving. I haven't noticed such displays yet. He is too busy trying to warm up!

Should he be lucky and find a lady or two, the female will find a sunny spot and lay 10 – 20 oval, soft shelled eggs in a shallow earth nest which she then covers and generally leaves. A female can lay



Eastern Bearded Dragon

several such clutches of eggs in a season. The young will then hatch after about 2 month's incubation, with actual incubation time varying depending on the summer temperature. Reptile eggs, unlike bird eggs, must remain in the same position throughout the incubation period. Any movement of the eggs will kill the embryo inside. When the young Dragons hatch they are completely independent and need to feed and look after themselves. No Mum or Dad around to help them.

Eastern Bearded Dragons are sometimes kept as pets, but they may not be taken from the wild in the ACT without a licence, as all reptiles are protected. It is also illegal to collect their eggs, and pet shops are not permitted to deal with reptiles. The ACT Reptile Policy is a good guide as to what is and is not permissible, and the ACT Herpetological Association is a good contact if you are interested in knowing more about these fascinating reptiles.

20. Southern Boobook Owl and Little Corella

June 2010

The other night we had a Southern Boobook Owl mournfully hoot all night, ‘mo-poke’, ‘mo-poke’, hence also being referred to as the Mopoke Owl. The Boobook Owl (*Ninox boobook*) is the smallest of the owls in our area but a lovely one with huge yellow eyes, dark chocolate feathers on top and rufous-brown feathers on its chest which are heavily streaked and spotted with white. They like to live in wooded habitats but are generally found right throughout the Canberra region.

They, like so many of the hunters in our garden, prey on mice, lizards, geckos, frogs, insects and just about anything that is small and moves. I often wonder how everyone that lives around our



Southern Boobook Owl

garden gets fed. Boobooks are great little night hunters and pounce or swoop on their unsuspecting prey. Their soft, leading edge, feathers effectively eliminate any noise they make when flying, allowing them to silently swoop around at night. They are also agile and swift flyers, allowing them to manoeuvre rapidly when pursuing insects or other flying prey and their strong talons grip and securely hold their prey once caught.

The Boobook Owl, like all owls, not only has excellent night vision but also very acute hearing which allows them to hunt in complete darkness. Their ears are set at different levels, to maximise hearing. Because their left and right ears are placed at different levels on their heads there is a slight difference in the time taken for a particular sound to reach each ear. This time-lag enables the owl to pinpoint the source of the sound more accurately. The owl can also change the shape of its ear opening to allow it to focus its hearing further. Pretty amazing! In addition to excellent hearing, owls also have great night vision. Their eyes have rod cells which are sensitive to low light levels and their large pupils mean that an image is about two and a half times brighter to an owl than to a human.

Once they catch their prey they generally tear it up before eating it but even so they end up eating large amounts of fur, feathers, bones and so on, and they regurgitate this indigestible material as tightly packed pellets. It's these pellets, found at the base of their nests, which gives scientists an indication of what Boobooks eat.

I haven't seen courting Boobooks but I'm told courtship involves the owls setting up a nesting territory and sitting side by side on a branch, chirping, purring, nibbling and preening each other. After courtship they set up a nest in the hollow of a dead tree; line it with leaves, small twigs and then the female lays between 2 to 3 eggs which she incubates for around 26 - 33 days. Her mate brings food to her whilst she is sitting but once the babies hatch both owls take

on parenting duties. The baby birds stay in the nest until they are five or six weeks old, but even when they fledge they stay with and are fed by their parents for another 2 – 3 months.

An amazing fact I uncovered about birds is that they have to keep their brains as small as possible in order to stay aerodynamically streamlined. But at the same time they need a complex brain in order to survive and do the things that birds do. To overcome this dilemma birds evolved a special way of making new nerve cells in the brain as and when they are needed, an ability unique to birds. Birds can generate new nerve cells in adulthood and this means they can increase the number of nerve cells in the brain when they are needed and decrease them when not needed. Song birds that sing only in the breeding season have larger and more nerve cells than during winter. They shrink in size when not needed. Quite amazing!

We also had a flock of Little Corellas (*Cacatua sanguinea*) come to feed near our front gate. It's the first time I've seen them in the district but they turned out to be fleeting visitors and didn't stay long. Little Corellas are quite distinct from the more common Sulphur-crested Cockatoo, who is a persistent, noisy and generally unwelcome garden resident.

Little Corellas are mostly white, with a fleshy blue eye-ring and a pale rose-pink patch between the eye and bill. In flight, a bright sulphur-yellow wash can be seen on the underwing and under tail. The sexes are similar in plumage, and young birds look like the adults, but are slightly smaller.

Little Corellas generally feed on the ground in large flocks but I only saw about 20 birds on the day they were with us. Little Corellas can live up to 20 years, are thought to pair for life and will start breeding at the start of a long period of rain. The nest is in a tree hollow lined with shavings of wood or small twigs. This nest is used for

several years in a row. Both parents incubate the eggs and care for the young chicks who are naked when hatched and totally dependent on their parents.

Corellas, like the Sulphur-crested Cockatoo, can be quite destructive, chewing and ripping and gnawing at anything that takes their fancy including fences, gates, overhanging wires, TV antennae and so on, so I guess it's just as well that the little flock of Corellas passed on and didn't stay around.



Little Corella

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Visitors to an Australian Garden

Dagmar Parer

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