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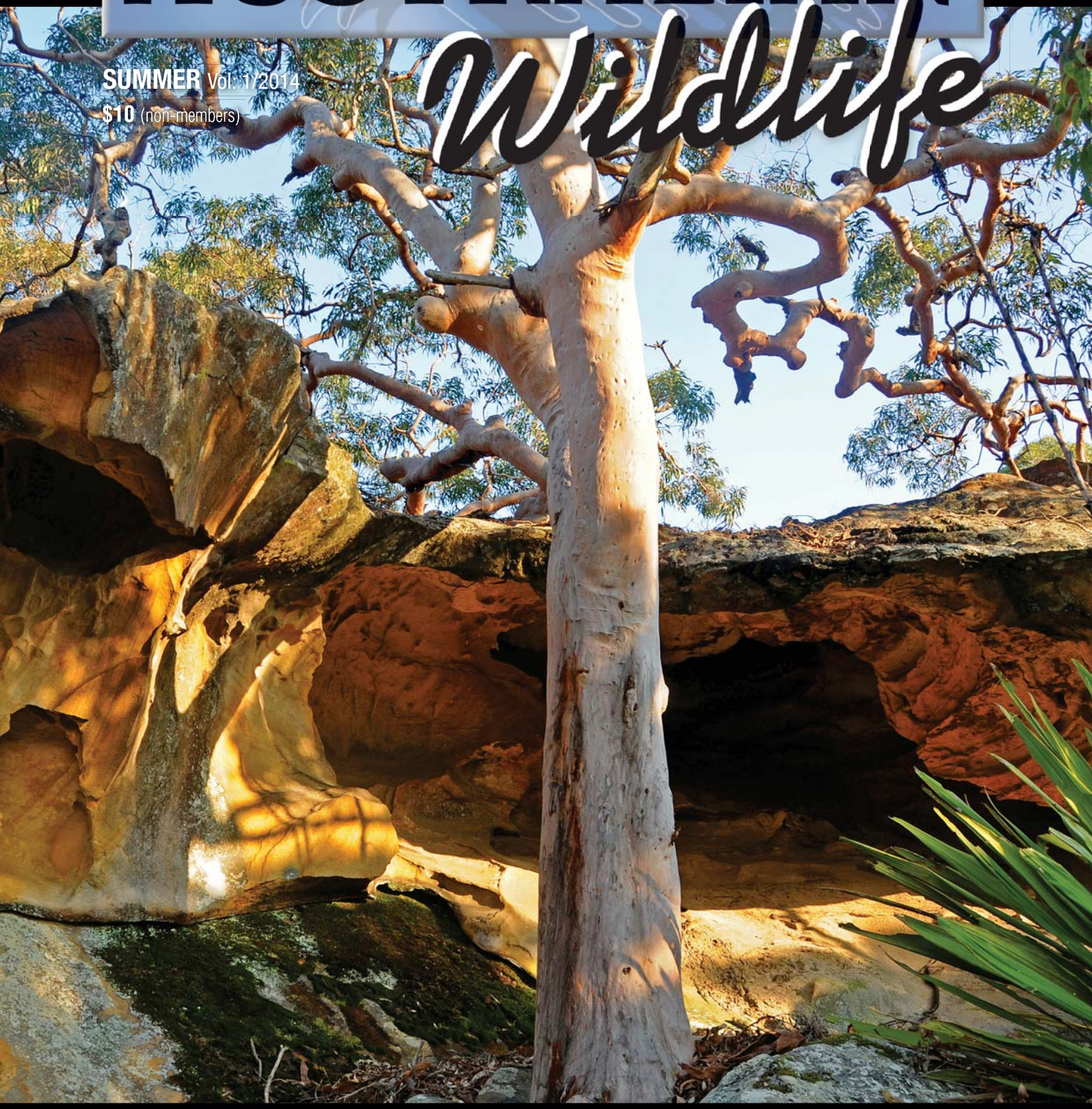

Celebrating a new century of wildlife preservation in Australia

Journal of the Wildlife Preservation Society of Australia Limited
(Founded 1909)

Royal National Park

Little Marley Beach

Scelromorphoic woodland on Robertsons Roundabout walking track

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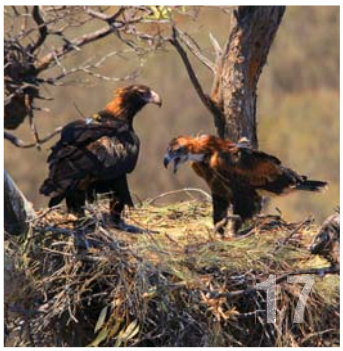

regulars

Front and back cover:

Royal National Park

Front: The Bee Cave on the edge of the Moss Gardens, Royal National Park

Back: The heathlands and woodlands of Royal National Park put on superb displays of wildflowers, especially in late winter and spring. Yellow eggs and bacon pea (*Dyllwynia retorta*) and coral heath (*Epacris microphylla*) are very common

Australian Wildlife Society
Conserving Australia's Wildlife since 1909

Australian Wildlife

is the official journal of the Australian Wildlife Society (Wildlife Preservation Society of Australia Limited).

Founded in 1909, the Society is dedicated to the conservation of our unique Australian wildlife in all its forms.

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Directors 2014

Notice to our members

The Australian Wildlife Society (Wildlife Preservation Society of Australia Limited) is managed and controlled by an elected board of ten volunteer directors. The Society is a registered company limited by guarantee with ASIC and is responsible for complying with all its regulations.

Any member who might like to consider serving as a director of the Society is invited to contact the national office for more details. The most important qualification to serving as a director is 'a commitment to and love of Australian wildlife'.

The Society holds regular monthly meetings on the first Wednesday of each month in Sydney.

The Editor would like to feature a member's profile in the fortnightly email newsletter and occasionally in our quarterly magazine. Members are invited to consider submitting a short article with a photograph for possible publication.

Our Mission

The Australian Wildlife Society (Wildlife Preservation Society of Australia Limited) is an independent, voluntary, non-profit conservation organisation, formed in 1909, and is committed to the preservation of Australia's precious flora and fauna. We act as a watchdog and provide advice to government agencies and institutions regarding environmental and conservation issues concerning all aspects of wildlife preservation. Our mission is to conserve Australia's fauna and flora through education and involvement of the community. We are dedicated to the conservation of our unique Australian wildlife in all its forms through national environmental education programs, political lobbying, advocacy and hands on conservation work.

Our Society has always known that a conservation battle is never really won until the victory is enshrined in legislation. We have always tried to convince politicians of the necessity to include the preservation of Australia's precious wildlife and its vital conservation habitat in all their planning and environmental issues and discussions.

From the President's desk

Suzanne Medway AM - President

It is hard to believe that another year has gone by and our Society is busy planning for its 105th Annual General Meeting

I have greatly enjoyed my time as President of the Society and feel that the proud tradition of this historic Society has continued under my 'watch'. But I do feel that it is time for me to step aside and let someone with fresh ideas and a new direction take over the stewardship of the Society.

One of the things I do enjoy is the editorship of this magazine, and I will continue in this role. I particularly enjoy receiving all the fascinating articles and hearing what is happening in the conservation movement, and also the chance to publish lots of stunning photographs. I am sometimes overwhelmed with the sheer volume and choice, and in this issue is featured some beautiful photographs of the Royal National Park. I originally received about 100 photographs, and it was extremely difficult whittling down the choice to the ones featured in this magazine.

Another aspect I have enjoyed in my role as President is meeting lots of interesting people and learning what is happening 'out there' in the conservation movement.

Late last year I attended the annual AWMS Conference (Australasian Wildlife Management Society) in Palmerston North, New Zealand. The papers presented were fascinating and it was great to hear from so many people working towards protecting our environment and its precious wildlife.

Some interesting ideas were put forward. I had a fascinating conversation with Brian Reilly from the Department of Nature Conservation in South Africa, who was pro-hunting and thought the answer to conservation of a species was to put a dollar value on the animal, particularly for hunting. He seemed very disappointed that he couldn't visit Australia and hunt kangaroos. He suggested that if a farmer had kangaroos on his property that he wanted to get rid of, he could charge hunters a couple of hundred dollars to stay on the property and something like $500 for every kangaroo they shot and killed! An interesting theory, particularly when the conservation movement is against the shooting of feral animals in national parks. I tried to convince him that hunting of native species would never happen in Australia – then that very day I received emails from northern Queensland with pictures of the slaughter of dugongs under the guise of traditional hunting! And then, a story of a tourist that hugged a dugong and received a massive fine. It is a crazy world we live in.

Then we have those wonderful heroes that don't want to shoot an animal, just care for it. The following is written by one of my favourite heroes:

"We often get asked - why do you do what you do? Why not! It's for the love of wombats! It's not for money, we don't get paid for our work (we use our own money). If carers didn't do what they do, we wouldn't have any wildlife, so it's about saving what we can. Yes it's 24/7 and we don't get holidays. It's all about the love of doing what we do, so next time you speak to a carer say thank you for all your hard work, not why do you do it."

From me – thank you, thank you, thank you. I know why you do it.

A released bush stone-curlew from the Lowesdale release aviary as part of the 2013 Bush Stone-curlew Captive Breeding and Release Program. More details on page 24

Honorary Life Membership awarded

Dr Al Glen, Postdoctoral Researcher at Manaaki Whenua - Landcare Research in New Zealand was awarded Honorary Life Membership for his contribution and dedication to the Student Grants Awards scheme of the Society.

In July 2002 our Society wrote to the Director-General of New South Wales National Parks and Wildlife Service (NPWS) requesting input into the process of the environmental impact assessment for aerial baiting of wild dogs in the Northern Directorate of NPWS. We were concerned that aerial baiting for wild dogs and foxes would have an impact on native species such as the tiger quoll and asked whether it was possible to demonstrate to our Society that such aerial baiting would not impact on native species. We were specifically concerned about the specificity of 1080 poison and its impact on non-target native species, including the risk of secondary poisoning. Some land managers argued that individual tiger quolls may be poisoned but there is a net benefit to the quoll population from a reduction in the numbers of introduced predators such as foxes and wild dogs.

As a result of ongoing discussions with NPWS our Society offered financial support for research related to the question of impacts of baiting on quolls and awarded a research grant to Al Glen, who was then a PhD student under Dr Chris Dickman at the University of Sydney. Al studied the interactions between foxes and spotted-tailed quolls and his project was closely linked to the objectives of the New South Wales Fox Threat Abatement Plan.

In September 2003 NPWS established the Aerial Baiting and Quolls Research Steering Committee to provide general oversight of the research and our Society's President at that time, Patrick Medway, was invited to be a representative on the committee.

Quoll research

Al Glen studied the effects of introduced predators on native quoll. There was an urgent need to learn more about the status and long-term survival of native quoll and this research work was part of a wider research program to protect the species from the impacts of foxes, feral cats and wild dogs.

President Suzanne Medway AM presented Dr Al Glen with his Honorary Life Membership Certificate at the 2013 Australasian Wildlife Management Society's annual conference at the Massey University, Palmerston, North, New Zealand. President of AWMS Dr Peter Fleming and past President Terry Korn watch on and supported the presentation to Dr Al Glen, who is also a member of AWMS and on the organising committee for the 2013 conference.

The project entailed volunteers joining scientists in a silent hunt for one of Australia's most elusive creatures – the endangered spotted-tailed quoll. Backed with our grant funds, volunteers and Sydney University scientists traced quolls in their natural habitat to research the species' ecology and to investigate the reasons for the decline of the species.

While there have been a small number of studies in the past, much is still unknown about this native marsupial carnivore, which belongs to the same family as the Tasmanian devil. It was once found across much of eastern Australia, but has declined dramatically in abundance and distribution. The destruction of habitat is likely to have caused much of the decline, however, competition from introduced species such as foxes, feral cats and wild dogs may also have contributed.

Competition with foxes

Over a period of two years the survey investigated diet, home range and habitat use of foxes and quolls living in close proximity. It also looked at the reproductive success and causes of mortality in quoll populations and finally population genetics of quolls. The study provided evidence for the belief that foxes are partly responsible for the species' dramatic decline over the past decades. Foxes and wild dogs imposed both competitive and predatory pressure on quolls as they utilise similar prey and habitat, and den in similar locations.

The future for one of Australia's most elusive creatures

Al Glen believed his research would lead to a more secure future for this unique species. A basic understanding of the quoll's ecology, and of the processes which have led to its decline, is essential to its conservation, and Al's survey was a first vital step in the right direction.

A new direction for the Society

In 2004 Al Glen put forward a proposal to establish a Student Grants Scheme. The aims of the proposed scheme were to benefit the preservation of Australian wildlife by supporting applied scientific research with a conservation focus; to further the Society's commitment to environmental education by supporting

students with a research interest in conservation; and to increase awareness of, and attract new members to, the Society.

The board enthusiastically accepted Al's proposal to provide ten annual grants of $1,000 each to honours or postgraduate students conducting research that would contribute to the conservation of Australian wildlife. Funds are provided for purchase of equipment and consumables, travel expenses related to field research, or attendance of conferences at which the student is presenting their work.

Ever since the inception of the Society's Student Grants Scheme, Al has managed the judging panel, and for this valuable contribution the board of the Society believe he is a very worthy recipient of Honorary Life Membership.

We congratulate Al on his commitment and continued involvement in wildlife conservation and to the on-going work of the Society. Well done Al and thank you.

Australasian Raptor Association Conference

Adelaide, August 2013 - Simon Cherriman

Like eagles soaring in wide circles above a hapless kangaroo after a drought, the Boeing 747s descended upon Adelaide airport from all around Australia on a Friday afternoon in early August. Excited birdwatchers known as 'raptorphiles' specialising in our birds of prey (or raptors) were gathering for the 2013 conference of the Australasian Raptor Association (ARA). Such conferences are usually held every two years, but with the last one taking place in Leeton, New South Wales in 2010, this meeting was well overdue!

While most city-goers were battling traffic leaving the city to make their way home, raptorphiles were heading in the opposite direction – to the gates of the Adelaide Zoo. Conference registrations began with a semi-formal cocktail drinks and canapés session, and soon the Wisteria Restaurant was resounding with stories of raptors and the remote, rugged and challenging fieldwork associated with their study. Such an atmosphere is just what you expect when like-minded people get together, and it is always great to hear the enthusiasm. I was unlucky enough to kick off proceedings as a guest speaker, and grabbed the opportunity to screen the film *A Wedged Tale* (2010), then show some early findings of satellite-tracking adult wedge-tailed eagles in Western Australia.

The official opening occurred early the next morning in the Fig Tree Function Centre, which saw the full turnout of nearly 150 people attend Professor Chris Daniels' welcoming speech, about raptors in a changing environment. We then heard a very interesting talk from William Riddell about nesting biology of raptors in urban Darwin, the first of the presentations under the theme of 'Urban Raptors'. Themes to follow included Coastal Raptors, Breeding Ecology of Falcons, and Conservation of Raptors in Rangelands and Agricultural Environments, spliced with lunch and tea breaks in which raptorphiles enjoyed some of the most delightful refreshments. We then all parted briefly to prepare for the evening Conference Dinner and further socialising.

The crowd was left silent after an incredibly moving, informative and motivational speech by Associate Professor David Paton, who focussed on a highly important issue regarding conservation: humans. Our land use, our growing population, the types of food we eat, what processes go into producing it and our carbon footprint were all touched on in relation to conserving birds of prey. The species talked about during the past eight or so hours were by and large fairing well, but many other creatures requiring natural Australian bush to survive (not cereal crops) are under increasing pressure. Others have already disappeared, as a result of the application of a 'European style agricultural system' to the Australian landscape. David highlighted the importance of carbon offsetting, and gave us information about how each and every one of us can adapt various aspects of our lifestyle for a more holistic conservation future.

Day two kicked off with a keynote speech from Dr Penny Olsen, the 'matriarch' of the ARA and an expert in many fields of raptor biology, especially Peregrine falcons. Penny gave us all an insight into the history of the ARA, past projects and the healthy-looking future the organisation has to look forward to. We then continued with the previous day's theme on Rangeland and Agricultural Raptors, hearing presentations on wedge-tailed eagles, brown falcons, grey goshawks and masked owls, among others. Peter Tonelli's highly entertaining talk on the industrious swamp harrier nesting in Tasmanian harvest crops provided a humorous way to finish this session, ending in a rapturous applause, before the last theme on wind farm impacts closed the conference.

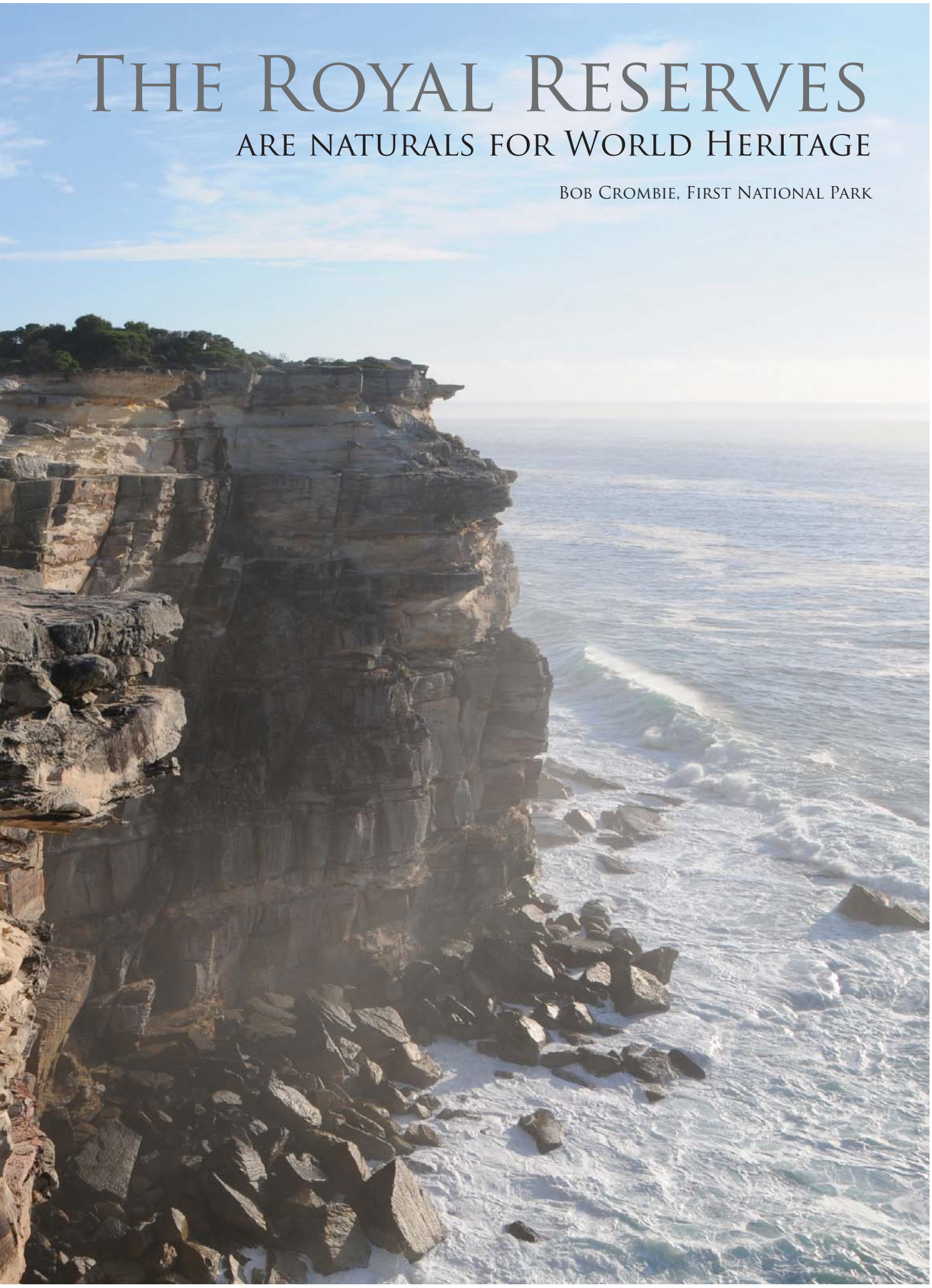
Val Taylor and Simon Cherriman at the Conference

I would like to thank the Australian Wildlife Society for sponsoring me with $500 to cover flight and accommodation costs to attend the conference. This event was brilliantly organised and special mention must be made of the steering committee, without whom it could not have gone ahead. Duncan MacKenzie did a fantastic job as MC and all speakers presented a diverse range of interesting and informative talks. A definite highlight was the number of conference attendees, particularly the proportion of the crowd who were 'young folk', which bodes well for the ARA's future. The next conference is scheduled for Perth in 2015 and I'm sure this will be another popular event for ARA members and the broader community.

The sea cliffs at Wattamolla

The Royal Reserves
are naturals for World Heritage

Bob Crombie, First National Park



Young brushtail possum eating the flowers and foliage of a crimson bottle brush (*Callistemon citrinus*). Small mammals such as this, and pygmy possums and bush rats, pollinate many species of plants in the Royal Reserves.

Sydney sits on a hotspot! That's right. Sydney sits on a true hotspot of biodiversity and geodiversity. Royal National Park, Heathcote National Park and Garawarra State Conservation Area – the Royal Reserves – are all part of the southern edge of Sydney and constitute a major centre of plant species richness, having one of the richest concentrations of plant species in temperate Australia with more than 1,300 species – 1,131 species in Royal alone. The wide array of species includes beautiful heaths (*Ericaceae*), richly fragrant peas (*Fabaceae*) floraliferous wattles (*Mimosaceae*), specialised orchids (*Orchidaceae*), honey-rich grevilleas and banksias (*Proteaceae*), towering eucalypts and lilly pillies (*Myrtaceae*), and numerous rushes and sedges. They contain an important sample of rainforest families and species.

Here are 231 bird species, with more than one third of the Australian total recorded for Royal alone. The perching birds (Passeriformes) are especially abundant. The once rare lyrebird is now common in the rain forested areas and the honeyeaters (*Meliphagidae*), eg the little wattlebird, delight visitors with their garrulous calls. It is significant to note that there are more species of birds in the Sutherland Shire, which includes most of Royal and Heathcote National Parks, than there are in the world famous Kakadu National Park, an internationally acclaimed area for bird diversity. Garawarra SCA is particularly noted for the diversity and abundance of its rainforest birds.

Frogs especially like the rainforest margins, swamps and creeks. Tiger snakes, black snakes and diamond pythons, which feed on the rich supply of frogs, small reptiles and possums at Wattamolla and Curracurrang, are some of the 40 species of reptiles. There is more herpetofauna here than any other studied section of the New South Wales coastline.

Horseshoe bats, one of 16 bat species, breed in Toonoum Cave and the tunnels of the Waterboard Pipeline from Woronora Dam to Sutherland. A distinct subspecies of greater glider possum has long made it home along Bola Creek in Royal, along with sugar glider, squirrel glider, feathertail glider, mountain brushtail, and common brushtail possums. The coats of the ring-tail possums at Curracurrang are a unique, beautiful, rich, golden honey-brown. They are a favourite food of the diamond python and the powerful owl.

For many years after the great fires of 1992 and 1994, few glider possums were recorded in Royal and they are just beginning to extend their range again with some species being seen using the southern Wildlife Movement Corridors between the Illawarra Escarpment and the Royal Reserves, which are essential for their integrity.

Being a centre of plant species richness, it is just as likely to be a centre for fungi and invertebrate species richness, and many discoveries wait in this regard. Most study has been done along Bola Creek, where rainforest fungi walks in autumn are just as impressive as the renowned heathland flower walks on the plateau top in spring. The strange, parasitic caterpillar fungi and many luminous species are haunting, and the colourful corals and gigantic boletes are common. However, the fungi and invertebrate fauna are poorly known. The total number of invertebrate

species could be reasonably expected on extrapolation from elsewhere in Australia, to be ten times the number of vascular plants – a high figure for temperate latitudes. Royal National Park has one of the richest native insect faunas of any studied are in New South Wales and is the type locality for hundreds of species. It also has a very diverse fauna of terrestrial molluscs, fauna and butterflies.

The area displays outstanding continuing ecological and biological processes of adaptation associated with the Sydney Basin Bioregion, Cataract Sub-region ecosystems – on Quaternary alluviums, and Wianamatta Series, Hawkesbury Sandstone, and Narrabeen Series rock outcrops and soils derived thereon significant in the evolution of the highly diverse ecosystems and communities of plants and animals. These are of outstanding value to science including a very diverse array of structural adaptations of the Australian vegetation to a range of conditions, eg a range of soil nutritional statuses, especially poor soil nutrition; soil drainage, soil depth, and soil structure; water stress; fire (*scleromorphy*/*xeromorphy*); unique plant reproductive strategies (fire and disturbance recovery, pollination by wind, birds, insects and mammals, dispersal by birds, ants and bats); patterns of endemism and rare species; and adaptive radiation.

White Pointer rock formation, Wattamolla

Many unique examples of co-evolutionary processes extend the range of such phenomena for the Sydney Basin. These include a range of ant-dispersed plants (peas and wattles): interesting and unique pollination processes, eg those displayed by the many orchids in the area (*Chiloglottis* orchids and their wasp pollinators); bird (very large number of Meliphage honeyeater species associated with pollination) and species pollinated by mammals (possums, bush rats and flying foxes); flowers pollinated by flies, moths, wasps, butterflies, mosquitoes, gnats and other species; highly significant beetle pollination interactions (eg jewel beetles); trigger plants; plant defence mechanisms, eg glands on wattles attracting ants and forming part of a defence strategy for many wattle species; a great range of plant species forming mycorrhizal associations; bat-dispersed species; *Pisonia* with sticky seeds dispersed by birds; and carnivorous plants. As more becomes known, the significance of jewel beetles and moths for pollination will surely become very important.

The Sydney Basin has a large proportion of scleromorphic species and a very diverse range of scleromorphic features that

Royal National Park supports 16 species of bat such as these horseshoe bats in Toonoum Cave

The reserves are world-renowned for their array of scleromorphous species and features they display notably small, hard, pointed and often incurved leaves and concerted flowering. The grey spider flower (*Grevillea buxifolia* ssp *sphacelate*) is a coastal heathland shrub species.

Puff ball mycorrhyzal fungus

they display that are uniquely and distinctively Australian and therefore of great scientific interest equal to that of parts of South Africa with a Mediterranean climate (eg The Cape Floral Region and Namakwaland), and the south west of Western Australia, also with a Mediterranean climate. The three regions have few species in common and all are therefore of high scientific value. Of the three, the area centred on the Sydney Basin provides the best example of the juxtaposition of scleromorph diversity with species of the original Gondwanan vegetation from which the explosion of scleromorphs emerged. The area is also the only one of the three regions largely dominated by trees and without a Mediterranean climate. The Royal Reserves conserve a coastal, low altitude, southeastern and eastern sample of this vegetation. Many of its species are not common to the Greater Blue Mountains, eg the rare eucalypt yellow-top Mallee ash *(Eucalyptus leuhmanniana)*. This produces enormous lignotubers that may extend over great areas. These can often fragment over time into a number of separate individuals to give the appearance of a 'grove' of trees the size of the lignotubers on some trees, and of 'groves' suggests a very old age for many of them. There are stands of bloodwood (*Corymbia gummifera*) at Bundeena and Jibbon that have truly enormous lignotubers.

The Royal Reserves contain a great diversity of ecosystems (communities and habitats) – heathlands, mallee heaths, sclerophyll woodlands, sclerophyll forests, rainforests, swamps (notably significant upland swamps), marshes, mangroves, littoral zones, estuaries and adjacent seabed. This stems from its geographic location and a very diverse range of physiographic, geologic, edaphic, climatic, fire, ecotonal and boundary transitions, and human influences. It is on the boundary between southern and northern bioregions and includes many species with either their northern-most or southern-most extension of their range here. This has resulted in a diversity of biota, which is amongst the world's richest, especially for a temperate area. It has an unusual and significant collection of species usually found only at higher altitudes and more inland in the Blue Mountains extending the range of

these species to the present-day coast. These may be relicts from not so long ago when the coastline was much further (about 14 kilometres) to the east when these species would have been inland. The three Royal Reserves continue the exemplification and reservation of the Gondwanan biota as made in the Greater Blue Mountains to the coast including new species and processes.

The group ***First National Park*** believes that the Sydney Basin Sandstone ecosystems constitute a bioregion of World Heritage value equal to the south west of Western Australia, and the Cape Floral Region and Namakwaland of South Africa. The three reserves – Royal and Heathcote National Parks and Garawarra State Conservation Area – provide an excellent reserved representative sample of these ecosystems adding to those already recognised and listed for the Greater Blue Mountains World Heritage Area (GBMWHA). It extends the exemplification of outstanding eucalypt-dominated vegetation reserved and recognised in this area, and the already great diversity of ecosystems, to lower altitudes, the east and south east, and to the coast.

These lands are becoming increasingly integrated into the great cities of Sydney and Wollongong and form a leading opportunity to incorporate reserves and integrate wildlife into urban areas. The surrounding and enclosed suburbs are becoming an increasing part of the range of a growing number of species now foraging across both the reserved lands and the suburbs, eg many birds such as black cockatoos; flying foxes; microbats; swamp and redneck wallabies; echidnas; antechinuses; many species of possum; koalas; bush rats; frogs; lizards; snakes; and invertebrates. There is a growing awareness of this new direction in conservation and developing pride in the 'suburban' native wildlife such that many people are beginning to *bewilder* their gardens and suburbs and encourage this process. The Sutherland Shire Council and the South Metropolitan District of the NSW National Parks and Wildlife Service support the largest number of bush regeneration volunteers in Australia, actively encouraging

Coastal Walking Track, The Waterrun

The common sundew (*Drosera spathulata*) is carnivorous feeding on small insects that it traps with its specially modified leaves. It lives in wet places.

Bloodwoods at Bundeena with gigantic lignotubers, Royal National Park

The Sydney red gums (*Angophora costata*) are stunningly beautiful, especially during and after their bark changing which occurs in early summer when the old grey bark peels off to be replaced by new pink and orange bark

Javan Rusa deer

and participating in *bewildering* – the protection, enhancement, construction and maintenance of habitat, and the integration and incorporation of wildlife into urban and industrial areas. The reserves have the capacity to lead the world movement to *bewilder* – integrate wildlife with urban, industrial and rural areas.

Now, if you think that all this is good, read on for it is only the supporting act for these universally outstanding reserves. In 2013, the Federal Government of Australia and the NSW State Government announced that they have agreed to work together on a potential World Heritage nomination for Sydney's Royal National Park as a stand-alone World Heritage nomination based on selection criterion (vi) – be tangibly associated with events or living traditions with ideas or beliefs, with artistic and literary works of outstanding universal significance and be included as a 'cultural landscape'.

Royal National Park is the premier national park in Australia and attracts more than four million visitors each year.

"There is tremendous public support for this World Heritage listing and the local members of parliament and community members from groups such as the First National Park Committee have brought a convincing argument to the government," said The Hon. Robyn Parker MP, Minister for Environment, Minister for Heritage.

"Any nomination would require a substantial effort over several years and an extensive assessment would be required including thorough consultation with local government, indigenous and interested groups," Ms Parker said.

Fortunately, most of this work has been already done by First National Park, who have published their report in the book *The First National Park: A Natural for World Heritage* written by the eminent conservationist Dr Geoff Mosley (2012).

Royal was dedicated in 1879 as the first national park in Australia, making it one of the oldest national parks in the world. It is a 'pioneer' national

park along with Yosemite (1864), Yellowstone (1872) and Mackinac (1875) in the USA, and of these reserves, it was the first to be dedicated "for the purpose of a national park". For many, this makes it the first actual national park in the world.

It is representative of the birthing and evolution of the worldwide recreation-based conservation movement of the last few decades of the Nineteenth Century. An outstanding feature is the clear manner in which it illustrates how national parks developed from urban parks set aside as 'lungs' of growing cities and how, once set aside, they evolved from a focus on intensive recreation in natural surroundings towards priority given to nature conservation. The Royal Reserves are representative of the many developments in the world's national park systems and continue to play a pioneer role.

It was also a place that helped the European colonists in New South Wales adjust to their new environment. Over a period of 90 years, the Royal Reserves were an important 'sorting out' place for a variety of actual and potential land uses including several types of recreation, acclimatisation, military activities, logging, mining, science and education, as well as nature conservation. This process is still going on, especially with the integration of these reserves into the great cities of Sydney and Wollongong.

The effect of this process was manifest not only on the landscapes of these reserves but by their influences further afield. The legacy of this includes the expansion of the parks system, larger parks, the wilderness area system, and the recognition of the importance of regional wildlife conservation in and out of parks and reserves.

The reserves have a rich Aboriginal history of the Dharawal-speaking People.

The reserves provide outstanding opportunities for environmental education and contain outstanding and diverse scenery. They are part of the great cities of Sydney and Wollongong and have the capacity to lead the world movement to integrate wildlife with urban, industrial and

Fuchsia Heath (*Epacris lingo flora*)

Coastal Walking Track, Marley Head

Heath monitor

Pygmy possum

rural areas. The reserves meet the integrity criteria.

National parks are the world's best known and most important conservation measure, but of all the 962 places on the World Heritage List not one has been selected to commemorate and celebrate its European origins and early development in the Nineteenth Century.

This gap would be filled if Royal and Heathcote National Parks and Garawarra State Recreation Area were nominated for the World Heritage List and accepted for their internationally significant cultural and natural heritage values.

Inclusion of the Royal Reserves on the World Heritage List would not be the end of the matter. People from around the world would have a share in looking after these areas, which Australians have held in trust for so long. The enormous potential of these areas to teach and to inspire would have been recognised and would be more fully realised.

Royal National Park is the premier national park in Australia and the first reserve in the world 'dedicated for the purpose of a national park'.

Hawkesbury sandstone at The Waterrun on the Coastal Walking Track

Desert trackers

Simon Cherriman

Australia was one of the only developed countries in the world in which the largest bird of prey had not been tracked by satellite. That was until June 2013, when I was thrilled to capture two adult wedge-tailed eagles in arid Western Australia and fit them with GPS transmitters.

Have you ever dreamed about something you'd like to do when you grow up? Something that sounds adventurous, interesting and nearly impossible? As a young boy before the age of ten I can remember watching wedge-tailed eagles soaring high above rugged valleys of the Perth hills. They circled so high and eventually disappeared out of sight. I imagined having some way of following where they go, to track their movements and see what they did. At such a young age I'd never even heard of a GPS, let alone a satellite transmitter. But I knew that somehow, one day, I had to pursue my dream. And in early 2013, some 20 years later, that dream came true.

Satellite telemetry (tracking) has been used as an increasingly popular way of studying the movements of animals, especially birds, during the last decade. This is in part due to advances in technology which have allowed tracking devices to become lighter, have increased battery life and the capacity to achieve highly accurate location data. In the field of bird of prey (raptor) research, Platform Transmitter Terminals (PTTs) have been used widely across the globe, particularly to follow movements of migratory species like golden and bald eagles in America.

Five years ago, favouring an adventure to New Zealand to learn professional wildlife filmmaking, I turned down an opportunity to conduct satellite tracking research on Australian wedge-tails as part of a PhD proposal. Last year I was ready to pick up where I left off. I just needed somewhere to carry it out.

In the middle of Western Australia lies a vast landscape known by the indigenous Martu people as 'Matuwa'. In the 1930s, a portion of this land was settled by European pastoralists, named 'Lorna Glen' (after a permanent spring and important Martu cultural site) and grazed by sheep and cattle for 70 years. In an effort to increase their water supply, the pastoralists deepened the spring and today it runs no more. Introduced animals like cattle, sheep, foxes, cats and camels changed the environment dramatically, opening up the vegetation and contributing to the loss of a suite of native mammals.

Above: Kuyurnpa gives a loud begging call as her mother Gidjee lands on her nest with a freshly-killed rabbit

A very happy Simon prepares to return Kuyurnpa, a nine week-old eagle chick, to her nest after attaching a PTT

In an effort to restore this part of the rangelands, this 250,000 hectare property was acquired by the WA Government in 2000 and a new journey began with traditional culture and conservation the goals. Co-managed by the traditional owners and WA Department of Parks and Wildlife (DPaW), the land now sees traditional fire management supporting the reintroductions of a range of unique mammals. DPaW has successfully reintroduced five species, including the iconic bilby, whose conical diggings can now be found below acacia shrubs throughout the landscape. The Martu people practice traditional culture and their expert tracking skills help conservation managers locate and control feral cats, one of the key threats to the native mammals' return. Cats were responsible for the failure of some predator-naive species, like the rufous hare-wallaby (mala) and burrowing bettong (boodie), to establish. To help address this problem, an 1,100 hectare cat-and-dog-proof, fenced enclosure was built, and this safe haven is now allowing these mammals to increase in number. However, one native predator was found to kill some of the mammals too: the wedge-tailed eagle. The question was, how many eagles were involved, and were they having a significant impact?

To investigate the role that wedge-tailed eagles played in preying on some of these reintroduced threatened species, I began a research project in late 2011. This involved finding nests, collecting data on breeding biology and diet, and ultimately gathering as much information as possible about Lorna Glen wedge-tails on a landscape scale. I also saw it as an opportunity to fulfil my satellite tracking dream, and realised that obtaining detailed data on eagles would compliment the study perfectly. Such information would help determine how many eagles were using the enclosure as a food larder, and how often they ate threatened mammals. But then came the big question. How do you catch an eagle?

I learned from Michael Ridpath and Michael Brooker, who had researched eagles with CSIRO in the 1970s (and with whom I had been friends for several years), that eagles need to be able to run along the ground some distance to take off. I also knew from years of studying eagles that they readily land to feed on carrion (dead animals), especially kangaroos. So in March 2013 I used the same trapping tricks and made some large 'crow traps' out of tall posts and wire mesh, which measured about two metres square and two metres tall, with an open roof. Just like a big chook pen. I learned from my friends that an eagle needs a tall tree above the trap with a horizontal branch on which it can land, then drop in to feed on the carrion. Sweltering in 40 degree sun while building traps sent my mind into a hazy imagination about what it would have been like trapping eagles 40 years ago, and whether it would really be possible again now.

In June we set out on a mission to bait our traps and catch some eagles. We packed the car and drove back to Lorna Glen. When we arrived we set to work baiting our traps with road-killed kangaroo collected on the way up. After the traps were set, we focussed on setting up a large spring-loaded mist nest at an alternative trapping site. I firmly believed that adult eagles would be too savvy to be lured into a giant cage trap. We worked on preparing a flat launch area for our mist for a few hours when a call on the radio sent my heart racing. "We've just driven past your trap and there's a large, black (adult) eagle perched above it!" Allowing about an hour for the eagle to have time to 'take the bait', we nervously drove the several kilometres along the dirt road to our trap site. It was quiet on approach but, as I brought the vehicle to a halt, I noticed two adult eagles, one on the floor outside the trap and one sitting right on the kangaroo bait inside the trap! The bird was remarkably calm as we pinned it with cloth bags and removed it from the trap, and even more so after blinding it with a falconry hood. Finally we had one – an adult male wedge-tail!

After removing the eagle from the trap, we placed a hood over the bird's head so it couldn't see, which helped keep it calm. Then I fitted a satellite transmitter (called a PTT) to its back using a specially designed harness. It was an amazing feeling to release the male eagle, watch it run down the road and launch into the air like a Boeing

747 taking off at the airport, knowing I would be able to 'see' what it does from now on.

The next day we caught a second bird, this one an adult female from another area, and also fitted her with a PTT. I chose names for each eagle which were meaningful in the context of the study area: 'Wallu' for the male, which comes from the local Aboriginal word for eagle 'Wallu-wurru'; and 'Gidjee', an alternative spelling of the Gidgee tree, the most common species in which eagle nests are found in the region. Four months later I found myself clinging to the side of an eagle nest, face to face with Gidjee's beautiful, healthy nine-week-old chick. I removed 'Kuyurnpa' (Kuyu for short), which means 'little girl' in Martu language, from the nest, fitted the third PTT, and then placed her back on the nest. She was almost ready to fledge – only a week or so longer. Then, after all that flapping practice on the nest, it would be time to use those massive, feathered appendages for the first time. And take me, via a virtual satellite connection, along for the ride.

We can now follow the movements of both eagles using satellite technology. The PTTs are designed to stay on the eagles and track their movements using a tiny GPS, keeping charged with solar-panels, and transmitting the information recorded to my laptop via a satellite network. Every three days I check a website and look at a map of their movements. If you would like to read more about this eagle tracking project, and read the latest news about what the eagles are up to, visit www.wedge-tailedeagletracking.blogspot.com.au.

Author's Note:
I would like to thank the many people who have been involved in this project: my partner Gill Basnett, my Mum and Dad, the Department of Parks and Wildlife (especially Keith Morris from Science and Conservation Division at Woodvale and the Community Grants branch for providing funds), and those who helped with fieldwork, often in very hot conditions: Daniel Hunter, Mike Griffiths, Jeff Turpin and Michael McDonnell. The project has been conducted and approved by the Parks and Wildlife Animal Ethics Committee, who oversaw the PTT attachment methods used for each eagle in captive trials prior to approving the wild bird study.

At Lorna Glen, wedge-tailed eagles build nests with a commanding view over the Mulga woodland

Although two eaglets hatch, only one usually survives to fledge, provided food supply is ample. In arid Australia it is not uncommon for breeding to fail altogether.

Old adult wedge-tailed eagles, like this male, have almost entirely black plumage

Backyard birds

Steven Saphore

Rainbow lorikeets

Residents of south-east Brisbane have the great privilege of living next door to one of the most diverse bird populations in the world. With parrots, songbirds, sparrows and birds of prey, one does not require recent rain to recognise a rainbow here… nor venture farther than their backyard.

Lured by the sheer diversity of calls emanating from a single tree, I pulled my bike off the path and sat on a hill behind some houses. Through my lens, the midmorning sun scorched the curling bark of a colossal eucalyptus tree teeming with life. My polarisers suppressed the near-blinding reflections of the tree's waxy, crescent shaped green leaves and left a deep, almost navy-blue sky to backdrop the pastel shades of brown branches. As I followed the serpentine patterns of the bark up the trunk and onto the branches like capillaries, my attention was captured by a young green-faced honeyeater. Full of energy, it leaped from branch to twig and shot from shoot to sprig. Swift in pitch, it flauntingly demonstrated its mastery of flight dynamics while snatching a winged insect out of the air during an inverted roll, all while the mirror of my SLR was snapping back. Shifting my vantage point continuously, I zeroed in on a pair of rainbow lorikeets, snacking from one of the many pollen-filled clusters of eucalyptus flowers. As quickly as I could focus, like a synchronised aerobatic team, they launched from the branch into a dive, pulling out just in time to gracefully glide over the top surface of a house fence.

In the distance, shrieks of cockatoos and laughs of kookaburras echo from the forest to the suburbs. A peewee makes sure the sky is clear before it surreptitiously glides to the next tree. Butcher birds lead aerial dogfight assaults on unassuming mistletoe birds while galahs and magpies vie for territory. An electric-blue accented fairy wren calls for a mate with bubbling chirptitude from a nearby shrub. The skies can be rough, but there is a highly organised air traffic system along this length of Bulimba Creek. The sheer palette of colours presented to me by these birds, supposed descendants of the dinosaurs, rival the million-plus pigments and shades a graphic designer could ever manipulate on any 32-bit monitor. Fluorescent fluff and iridescent feathers make these subjects stand out as perfectly angled light rays draped them in luminance. This setting is exclusive to Australia

– the emblematic flora and fauna. Postcards are representing this; outback safaris are complimenting this; urban development is reorienting this.

What the rainbow lorikeets possess in colour, they certainly rival in noise. The definitive aerial ambassador of south-east Brisbane, this parrot can be easily identified by its rainbow palette of feathering and high-pitched, monkey-like scream. Like a flight aerobatic team with military accuracy, these parrots fly in low and extremely fast, dipping into backyards and clearing fences and gaps in trees by mere centimetres.

Many a time, the lorikeets have chosen me as the unwary volunteer to demonstrate this spectacle at first hand. As I am watching them through the viewfinder of my camera, often while they are ravaging a nectareous grevillea, the flock will suddenly dispatch without warning. The aerial squad will simultaneously launch from their perch into the air, assuming free-fall at first, but then swiftly deploying their wings into flight position to catch the fluid breeze. With the precision of a sniper and thrust of a missile, they achieve lock-on and proceed to soar in an undeviating course with no layover, directly to my head. At the last possible moment, expertly executed split-second alterations of pitch, yaw and roll enable the brigade to form an inverted 'U' shape, allowing the unit narrow passage around my body.

I am appreciative of the raw complexity of this manoeuvre when described in slow motion; it's nothing short of a full-fledged race between the electrical signal my brain sends to my index finger for clicking the shutter and the avian bullet – Steven's neurons vs the rainbow lorikeets. As soon as the starting gun is heard (in this case, a far-off call from other lorikeets down the road), the dash is initiated. At over 150 metres per second, the neurons are off to a good start. Down the spinal cord, then onto the peripheral nervous system highway – through my shoulder, down the forearm, through the hand holding the camera and lastly to my finger muscles – which are patiently waiting for the command to squeeze. Like a relay runner passing a baton, the shutter button is pressed. This is where the second leg begins: closely followed by the lorikeet, an electric signal races from the push-button of my camera to the shutter mechanism, flipping up the mirror to reveal the light sensor, catching the colourful photons of the zooming lorikeets for no less than a 500th of a second. The winner? It's a photo finish and the camera never lies...

I am left to process the sensation of a slight gust of wind and the flutter of rapidly beating wings barely a second after I realise take-off has even initiated. The crowd patiently waits for the finish-line picture to appear on screen... a blur of colour that is barely in focus – the lorikeets win again. Words of the Roman philosopher Seneca echo in my head: 'Luck is what happens when preparation meets opportunity'. In these windows of a moment, only an innate ability to anticipate the actions of the bird and lightning-speed reflexes will birth a winner. Focus and composition must be absolutely instinctive. Compose and Click.

Moulamein released bush stone-curlews

2013 Bush Stone-curlew Captive Breeding and

Jan Lubke, Secretary, Nature Conservation Working Group

The Nature Conservation Working Group (NCWG) are proud to report that 2013 saw the biggest bush stone-curlew release program ever undertaken to date in Australia.

In October and November the NCWG undertook three separate curlew releases across three different sites and in two states. We have recently developed a new release site at Lowesdale, north-east of Corowa in the Murray Catchment of New South Wales, and in September 2013 we released 11 captive-bred curlews into the wild at this site. The released birds were each fitted with a tail-mounted radio transmitter and are currently being radio-tracked three times a week to monitor their adaption to their new environment.

In 2013 the NCWG also conducted two joint pilot bush stone-curlew release programs with the Australian Wildlife Conservancy (AWC), one at their "Scotia" Sanctuary in western NSW (total 20 birds) and the second at their "Yookamurra" Sanctuary in south-eastern South Australia (total 12 birds). Both of these AWC sanctuaries have in place an excellent predator-proof fencing system and also undertaken extensive predator control programs, both of which will help ensure the survival of the released curlews. We have been able to contribute 16 young captive-bred curlews to this exciting joint project and look forward to working further with the AWC in the future.

The number of bush stone-curlews that NCWG has been able to include in 2013's release program was boosted by valuable contributions of young captive-bred curlews from several zoos and fauna parks and we really appreciate these organisations donating their young captive-bred curlews to the release program. Data from our previous releases has shown that the bush stone-curlews have a far better chance of survival in the wild if they have a reasonable release group to flock with. It was tremendous to have such a large number of curlews

Release Program

to release during 2013 and we will keep you posted as to their progress.

In the bush stone-curlew captive breeding pens nesting is underway at present and we are hoping for another successful year so that we can produce plenty more young bush stone-curlews for release in 2014.

Thank you again for your interest and past assistance with the bush stone-curlew captive breeding and release program. We hope that we will be able to continue working with you in the future to further enhance the conservation and preservation of the endangered bush stone-curlew within south-eastern Australia.

Radio tracking at Lowesdale

Scotia release aviary

Lowesdale release aviary

The elusive platypus

Peter Ward

It was shortly after lunch and I was sitting with my wife on the bank of a river in central Queensland watching the antics of a turtle who was determined to get a place in the sun to dry off, even if this meant pushing the current occupants back into the water. We had seen a platypus in the area some ten years previously and I was secretly hoping against hope that the experience could be repeated but realistically not expecting anything as they are usually seen either early mornings or late afternoon and more likely towards dusk. The conditions were quite idyllic with dappled light streaming through the branches of trees whose branches met overhead, forming a tunnel along this particular stretch of the river. However, this didn't make for ideal photographic conditions with patchy areas ranging from quite dark to only fair illumination. The turtle was well lit and I'd taken half a dozen shots when, to my surprise, a platypus suddenly surfaced close to the sunbathing turtle. My immediate reaction was to grab my wife's arm and point, not the best idea as the platypus immediately sensed the movement and dived. Remembering the last time I'd tried to photograph one, I recalled that even the noise of the camera shutter would trigger a dive, thereby giving me only a single exposure at a time for this elusive animal.

Whispering, we scanned the water's surface looking for the telltale bubbles which would indicate where the platypus was feeding and to try to predict roughly where it may emerge next. When shooting wildlife I generally have my camera set to aperture with an ISO speed setting of 100 to 320 or so depending on the light and set to spot focus. Because of the extreme conditions here I hurriedly set the ISO to auto, mentally crossing my fingers and hoping the platypus would again surface in a well-lit area. It did, and I got a few shots with my lens at its maximum of 400 mm (600 mm as 35 mm equivalent). I was using a Sony A77 SLT (mirror less) camera and it immediately became apparent that this almost silent new technology had great benefits in not 'spooking' the subject and I would get half a dozen shots or so in a burst. Anyone who has watched a platypus will know they don't stay on the surface for long and that characteristic arching of the back is the immediate precursor to the next dive. I think there's a limit to the number of shots you want as they all look pretty similar, so having taken a dozen or so we kept watching it for a short time and then continued our walk along the river bank looking for other subjects to photograph.

After about a half hour's walk we were just about back to the car when I told my wife I thought I might go back to where we'd seen the platypus, mainly out of curiosity to see if it was still there and, secondly, hoping that if it was it may be even closer and that I'd get more detailed shots. I knew that she was in the middle of a Diana Gabaldon novel and probably wouldn't even notice how long I'd be gone!! Quietly creeping back to where we'd sat previously, I was rewarded with some further shots of this delightful little creature when suddenly I saw a cormorant flying towards me up along the 'tunnel' of trees. Hoping it would fly right past and not interrupt my vigil, I was dismayed when it literally touched down right in front of me. I took a couple of shots, more out of habit than interest, and watched it dive a couple of times. I was actually in the process of putting my camera bag onto my shoulder, sure that my platypus would now be long gone with the intrusion of this unwelcome

visitor, when it surfaced right alongside the bird!!! I couldn't believe my eyes. Could I get my camera out again and quickly take a shot before it or they disappeared?? After all, it hasn't happened if there isn't a photograph to prove it!! I think I must have been shaking, as when I looked at the shots later the first couple were definitely not the best!! Anyway I needn't have worried, they had obviously met and done this before and it was a privilege to just sit and watch their antics. It appeared that the cormorant was definitely the boss. He gave the platypus a couple of nips very early in the encounter which caused it to dive and each time I waited with bated breath hoping that it would return. It did and they very quickly settled down to what was almost a playful routine. When the platypus dived the cormorant would immediately follow and vice versa. I can't really say if one appeared to dive first in a majority of times, but what I certainly can say is that on several occasions they literally dived in unison. It was truly amazing and could only be described as telepathic, that's the only word I can think of, and their synchronised dive was so instantaneous.

Photographically it was hit and miss as to where they would appear next, light or shade, and their sometimes very short stays on the surface meant shots were grabbed rather than taken more carefully. And don't forget I was still shaking with excitement at even seeing this in the first place. Anyway, as you can see, I managed to get some passable shots to prove that I was in fact a witness to this amazing behaviour, ergo, it really did happen!!!

I returned to the car maybe twenty minutes later eager to have a quick peek at my shots and literally bursting with anticipation. You can never be sure, as any photographer will tell you, had some basic camera setting been overlooked in all the excitement rendering them all useless. Fortunately that wasn't the case.

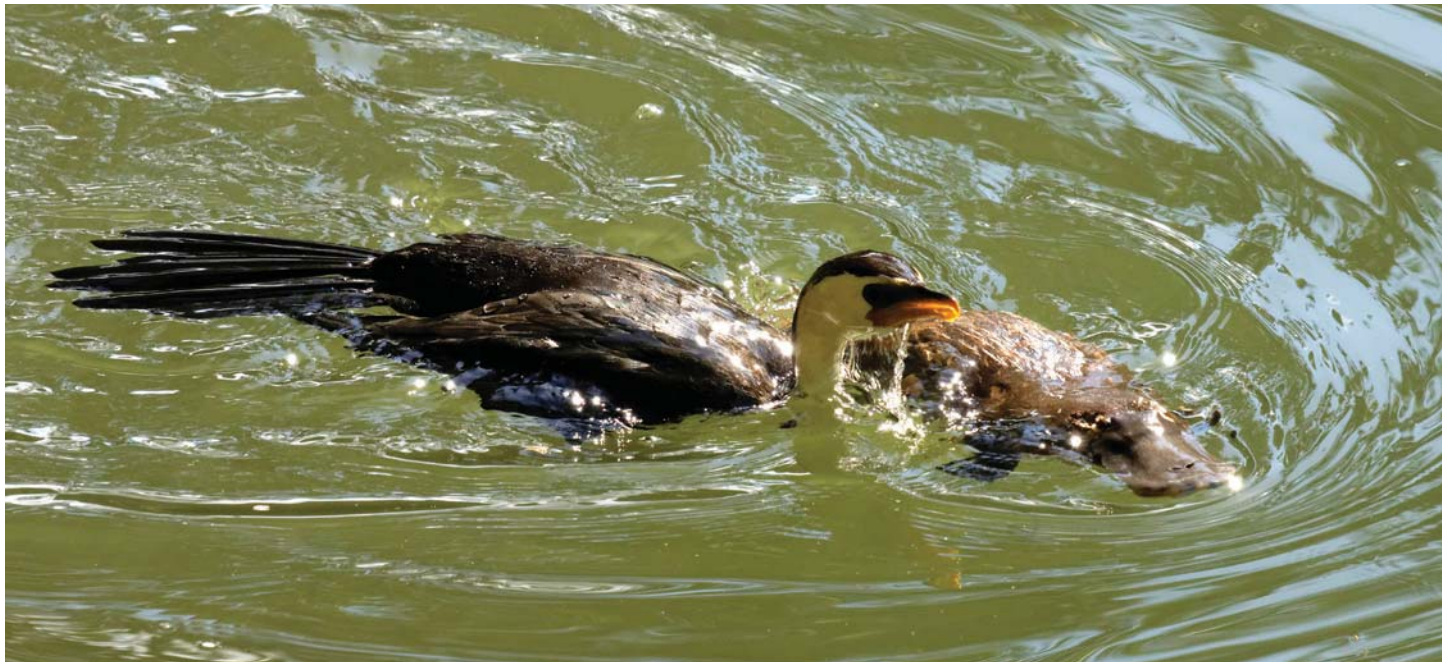
Oh, and my wife. Not a happy camper to say the least. I'm sure she'll never forget that Diana Gabaldon book though...

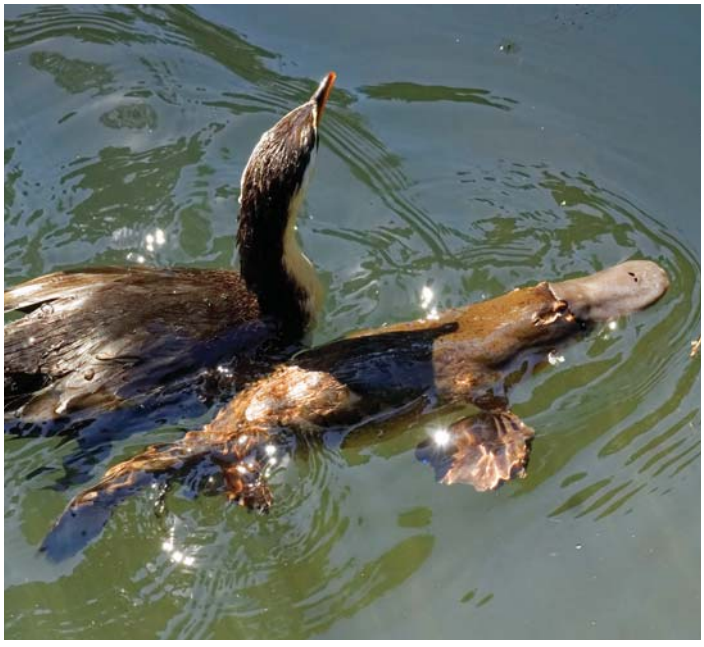
Footnote: Looking at the EXIF data the ISO readings varied between 500 and 3,200; shutter speeds varied between 1/250 sec 1/500 sec mostly with f10 to give a reasonable depth of field.

Freshwater tortoises sunning themselves

Little pied cormorant arrives

Platypus and cormorant swimming together





2013 University Student Grants Scheme

The Australian Wildlife Society University Research Grants are scholarships offered to honours or postgraduate students at Australian universities. Each year, ten $1,000 grants are awarded.

These grants are available for research projects of direct relevance to the conservation of Australian wildlife - plant or animal. Grants may be used for the purchase of equipment and consumables, travel expenses related to field research, or attendance at conferences at which the students are presenting their work.

Investigating factors influencing occupancy of artificial nest boxes by tree-roosting bats

Stephen Griffiths,
Department of Zoology,
La Trobe University

In Australia, over 300 endemic vertebrate species rely on tree hollows as sites for roosting and breeding. Across much of south-eastern Australia, both forestry practices and the removal of senescent trees in urban areas (due to public liability concerns) have resulted in a significant reduction in numbers of these large old trees. Land clearing for urban expansion or agricultural intensification along with impaired regeneration is also contributing to the problem. When eucalypts are cleared, it takes planted trees around 100 years to form cavities, so revegetation efforts alone will not offset the loss of hollows. One method of compensating for the loss of roosting sites is to install nest boxes as substitutes for natural hollows. While nest boxes are increasingly being used in Australia to provide supplementary roosting sites for a range of hollow-dependant fauna, systematic monitoring post installation to assess whether they are being used by target species rarely occurs.

Bats (*Chiroptera*) form a large component of the native mammalian fauna and the majority of species are insectivorous, so they provide an invaluable ecosystem service in the form of pest control for both agricultural production and human health. Availability of day roosts is considered one of the most influential factors affecting the survival, growth and reproduction of tree-roosting bats, yet very little is known about how roost sites are chosen. My PhD aims to investigate how variation in bat-box design, placement and orientation (and hence internal microclimate) influences temporal patterns of selection and occupancy by tree-roosting bats.

White-striped free-tailed bats (*Tadarida australis*) – an example of a bat that occupies the bat-boxes at the four Melbourne field sites

Chalinologus gouldii twins

My PhD project builds on long-term monitoring of bat-boxes at four field sites in greater Melbourne: La Trobe University Wildlife Sanctuary, Gresswell Reserve, Wilson Reserve and Organ Pipes National Park. To date, seven species of insectivorous bats, comprising several thousand individual animals, have been recorded using the bat-boxes, these include:

- Gould's wattled bat (*Chalinolobus gouldii*),
- chocolate wattled bat (*Chalinolobus morio*),
- white-striped free-tailed bat (*Tadarida australis*),
- large forest bat (*Vespadelus darlingtoni*),
- southern forest bat (*Vespadelus regulus*),
- little forest bat (*Vespadelus vulturnus*), and
- eastern broad-nosed bat (*Scotorepens orion*).

A key objective of my project is to investigate factors contributing to tree-roosting bats regularly switching between multiple roost sites. A leading theory to explain this behaviour proposes that bats require specific microclimatic conditions within roosts that suit their energetic requirements during critical times of the year, for example during spring/summer breeding season versus winter hibernation. Yet, few studies worldwide have tested this theory, particularly in relation to the use of bat-boxes, and my PhD research will be the first experimental test of this theory in Australia.

An example of different bat-box designs at Gresswell Reserve, Melbourne. Bat-specific nest boxes have a 10–20mm slit-shaped entrance located at the bottom of the box.

Bat-boxes are checked manually using a 6m extension ladder. All bat-boxes have a hinged lid and bats are either removed one-by-one from the top of the box, or are captured in a specially designed bag (the bat-sock) as they exit the bottom of the box.

The bats pictured in the 'bat-sock' are Gould's wattled bats (*Chalinolobus gouldii*)

The role of fire in the decline of small mammals in northern Australia

Hugh Davies,
University of Melbourne

Recent studies have demonstrated severe, ongoing declines of a range of plant and animal species across northern Australia. The most notable of these declines has been the decimation of northern Australia's small mammal populations. For example in Kakadu, small mammal species richness and abundance at a large number of monitoring sites have declined by 54 and 75 percent respectively since the 1990s. Many studies implicate the loss of traditional burning practices as a major factor in these declines.

The arrival of Europeans in northern Australia disrupted many millennia of Aboriginal landscape burning. The breakdown of traditional burning practices in many parts of northern Australia has resulted in a shift from intentional, targeted, low-intensity burning, to a lack of active fire management leading to excessive fuel loads, resulting in a higher frequency of extensive and destructive fires occurring late in the dry season. Consequently, the fine-scale mosaics and habitat heterogeneity created by traditional burning practices have been replaced by more structurally homogeneous habitats. As such, the survival of species that require heterogeneous habitats such as the northern brown bandicoot (*Isoodon macrourus*) is greatly reduced. The temporal variability of fires is also vital, and has been implicated in the widespread decline of the native cypress pine (*Callitris intratropica*), a fire-sensitive species that requires extended fire-free intervals to reproduce.

Given the negative effects associated with a temporally and spatially homogeneous fire regime, it is no surprise that the widely accepted 'pyrodiversity begets biodiversity' paradigm underpins the patch mosaic burning (PMB) practices of northern Australian management agencies. PMB is conducted in the early dry season with the objective of creating a fine-grained mosaic of burnt and unburnt areas, thus creating habitat heterogeneity across the landscape while decreasing the risk and extent of destructive late dry season wildfire. Another way of interpreting the fire management approach in northern Australia is an attempt to return the environment, by way of PMB, to the state it is believed to have been in prior to European arrival.

While the pyrodiversity paradigm is intuitively appealing, it has yet to be firmly established and is based largely on circumstantial evidence such as the coexistence of species requiring different fire intervals. The ongoing decline of biodiversity in areas under active fire management highlights our remarkably limited understanding of how fire regimes and biodiversity interact, and consequently, our inability to identify, let alone implement and evaluate, appropriate fire regimes.

This project aims to fill this important knowledge gap by determining what fire regimes can maintain biodiversity in northern Australia, and how we might implement them. To address this aim, this project comprises four main components that seek to determine how mammals respond to fire via changes in vegetation, gauge the impact of feral animals on the recovery of small mammals after fire, determine whether we have the capacity to manipulate fire in such a way as to preserve small mammals, and investigate the hypothetical 'optimal' fire regime for biodiversity and gauge its applicability.

Prescribed burn (Mitchell Plateau, June 2013)

Book Reviews

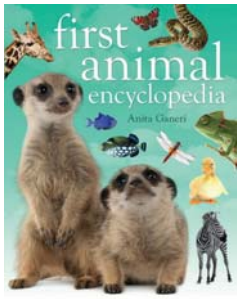
Beautiful Owls: Portraits of arresting species by Marianne Taylor, photographed by Andrew Perris

Owls have always had a captivating magical quality. Rarely seen but often heard.

Andrew Perris has produced stunning photographs of the commoner owl species backed up by the expertise of owl expert Marianne Taylor. Their habits, habitats are revealed. Described as 'shy birds' they are lethal predators.

This owl project must have been challenging, yet the results are full of detailed descriptive information supplemented by the wonderful photography. A production that any bird lover will find irresistible. For lovers of owls and avian photography this is a winner.

Publisher: Allen & Unwin | RRP: $19.99



First Animal Encyclopedia by Anita Ganeri

Every child loves animals. Find out more about them with the brilliant First Animal Encyclopedia. From giant giraffes to tiny tiger cubs, find out all about some of the world's most amazing animals with this informative first guide and reference book. Packed with brilliant photography, fun facts and top animal tips, learn, explore and be amazed by animals big and small.

Publisher: Bloomsbury | RRP: $19.99

Cosmopolitan Conservationists: Greening Modern Sydney by Peggy James

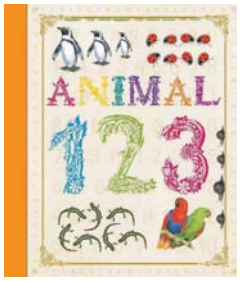
This book describes the often unusual yet influential, driven personalities in the conservation movement who crossed paths in their work for the common goal of preserving the beauty of the Sydney region.

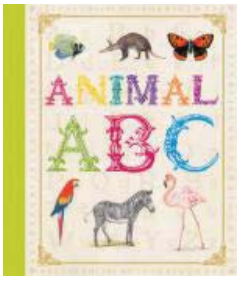
Biographies of Marie Byles, David Stead, Walter Burley Griffin, Thistle Harris, Charles Bean Norman Weekes, Myles Dunphy and Annie Wyatt often reveal the impact of their commitment to conservation issues on their lives.

The network of numerous associations, leagues, societies, foundations and clubs working cooperatively to preserve natural landscapes, buildings, playgrounds, fauna and flora are linked by this group of key conservationists.

This engaging book is well illustrated and researched and reveals a lot of interesting links between the key figures.

Publisher: Australian Scholarly Publishing | RRP: $39.95





Animal 123 | *Animal ABC*

These lovely hardcover children's book feature gorgeously detailed, vintage-style illustrations of a menagerie of animals. These are books to pore over; and a gift to treasure. Animal 123 features numbers small and large, animal ABC features an alphabet of animals both exotic and commonplace.

Publisher: Allen & Unwin | RRP: $14.99 each

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Wildlife Preservation Society
BSB: 062 000
Account No: 1043 2583
Confirm details via email at info@wpsa.org.au

Wildlife Preservation Society of Australia Limited

(ACN 134 808 790)

Formed in 1909 and dedicated to the conservation of Australia's wildlife
Patron: Her Excellency Ms Quentin Bryce AC
Governor-General of the Commonwealth of Australia

Celebrating a new century of wildlife preservation in Australia

The President and Directors cordially invite all members to attend the Annual General Meeting of the Society

A luncheon will be held at the conclusion of the meeting

105th ANNUAL GENERAL MEETING
AGENDA

Wednesday 2 April 2014
Commencing at 11.00am
Adam Room, 4th Floor, NSW Masonic Club (Castlereagh Inn)
169 Castlereagh Street, Sydney, NSW

1. Welcome and recording of those present
2. To receive apologies
3. Minutes of the 104th Annual General Meeting held on Wednesday 18 March 2013
4. President's Report for 2013
5. Treasurer's Report for 2013. Receive and adopt the Balance Sheet and Income and Expenditure of the Society for the year ending 31 December 2013 in accordance with our Constitution.
6. To elect three Directors
   a) A) Patrick Medway retires in accordance with the Constitution (10.3) and being eligible, offers himself for re-election
   b) Dick Mason retires in accordance with the Constitution (10.3) and being eligible, offers himself for re-election
   c) Clive Williams retires in accordance with the Constitution (10.3) and being eligible, offers himself for re-election
7. To appoint the Auditors for 2014
8. Closure.

Issued by authority of Council of the Wildlife Preservation Society of Australia Limited.

Patrick W Medway AM
Executive Director/Secretary

National Office: PO Box 42, Brighton Le Sands NSW 2216

Tel: 02 9556 1537 **Fax:** 02 9599 0000 **Mob:** 0402 435 049

Email: info@wpsa.org.au
Website: www.wpsa.org.au

Be a part of the Australian Wildlife Society's conservation future






To commit to being a part of our future, please complete this form. You may cancel your donation subscription at any time by notifying the national office.

Australian Wildlife Society
PO Box 42
Brighton Le Sands NSW 2216
Tel: (02) 9556 1537
Fax: (02) 9599 0000
Email: info@wpsa.org.au

You may also commit by visiting www.wpsa.org.au and registering online

All donations of $2 or more are tax deductible.

Australian Wildlife Society
Conserving Australia's Wildlife since 1909

Your Details

Name: Dr / Mr / Ms / Mrs / Miss

Address:

State: Postcode:

Phone: Home Work

Email:

☐ I want to join the Friends of WPSA and give by automatic deduction each month to help protect our unique native wildlife and its important habitat

I will give via: Credit Card (please complete authority form below)

Credit Card Payments

I am paying by: Visa ☒ MasterCard ☐ Card Security Code (CSC) __ __ __ __

Card No. __/__/__/__/ __/__/__/__/ __/__/__/__/ __/__/__/__/ Expiry date ___ /___

Name on card Signature

I will give:

☐ $10 per month ☐ $15 per month ☐ $25 per month ☐ $50 per month

☐ My choice of $ per month

Signature Date

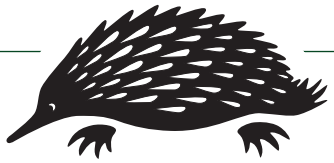
This authorisation is to remain in force until cancelled by the donor and in accordance with the terms described in the Agreement below.

Deduction will be made on 15th of each month.

CREDIT CARD AUTHORITY

1. The Donor will be advised 14 days in advance of any changes to the Credit Card Authority arrangements. 2. For all arrangements relating to the Credit Card Authority arrangements, the Donor will need to call AWS on (02) 9556 1537 or write to PO Box 42, Brighton Le Sands NSW 2216 or email info@wpsa.org.au. 3. Account details should be checked against a recent statement from your Financial Institution. 4. It is the donor's responsibility to ensure sufficient funds are available when the payments are due to be drawn. 5. If the due date for payment falls on a non-working day or public holiday, the payment will be processed on the next working day. 6. For returned unpaid transactions, the following procedure will apply: AWS will advise the Donor of the unpaid transaction and request alternative arrangements to be made for payment if possible. 7. All Donor records and account details will be kept private and confidential to be disclosed only at the request of the donor or Financial Institution in connection with a claim made to an alleged incorrect or wrongful debit. 8. This authorisation is to remain in force until cancelled by the Donor.

Membership Form



AUSTRALIAN WILDLIFE SOCIETY

PO Box 42 Brighton Le Sands NSW 2216

Membership

Become a member of the Australian Wildlife Society
Simply fill out this form.

Name:.....

Address:.....

City/Suburb:..... Postcode: .....

Telephone:..... Fax: .....

Email: .....

Membership category (please tick)

- ☐ Individual: $55
- ☐ Family: $70
- ☐ Concession (pensioner/student/child): $50
- ☐ E-mag (emailed as PDF, no hardcopy will be sent): $30
- ☐ Associate (library, school, conservation groups): $85
- ☐ Corporate: $125
- ☐ Life: $1,000

(Includes postage within Australia. Add $40 for overseas postage)

Three year membership (please tick)

- ☐ Individual: $150
- ☐ Family: $190
- ☐ Concession (pensioner/student/child): $135
- ☐ E-mag (emailed as PDF, no hardcopy will be sent): $81
- ☐ Associate (library, school, conservation groups): $230
- ☐ Corporate: $340

(Includes postage within Australia. Add $60 for overseas postage)

Payment details (please tick)

☐ Cheque ☐ Money Order ☐ Mastercard ☐ Visa Card Security Code (CSC) __ __ __ __

Card Number: |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|

Name on Card: .....Expiry:.....

Signature:.....

Amount $.....

Donation $.....

Total $.....

Mail to the:

Australian Wildlife Society
PO Box 42, Brighton Le Sands NSW 2216.
Email: info@wpsa.org.au Website: www.wpsa.org.au

Consider - A Bequest

Another way which you can support the work of the Wildlife Preservation Society of Australia (Australian Wildlife Society) is to remember us in your will.

If you would like to make a bequest, add the following codicil to your Will:

> I bequeath the sum of $..... to the Wildlife Preservation Society of Australia for its general purposes and declare that the receipt of the Treasurer for the time being of the Society shall be complete discharge to my Executors in respect of any sum paid to the Wildlife Preservation Society of Australia Limited.

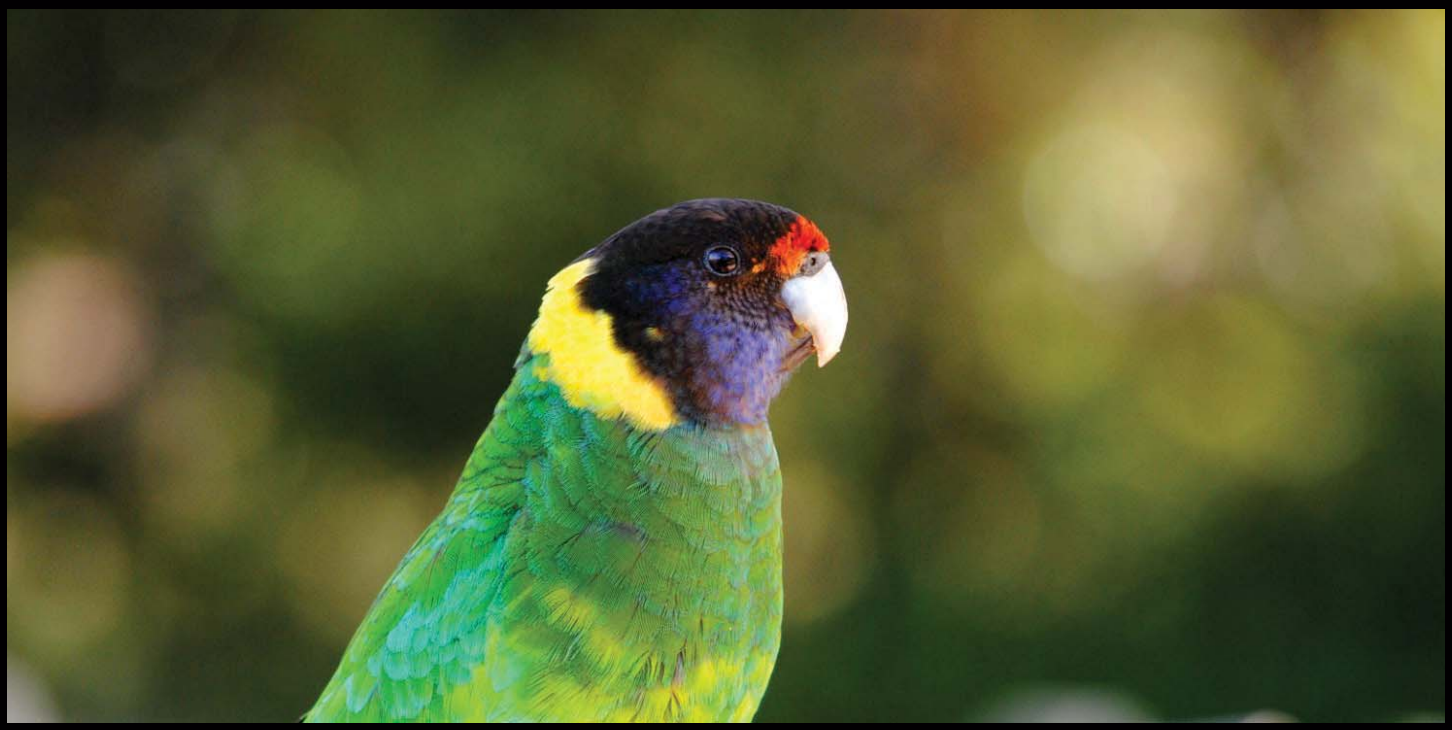
"The challenge to the present adult generation is to reduce the increasing pressures on the Earth and its resources - and to provide youth with an education that will prepare them emotionally and intellectually for the task ahead.

SUZANNE MEDWAY AM
President

Ashley Leonard-Jones is a 24 year old aspiring bird photographer. In her spare time she loves to paint and travel.

A fearless young fledgling magpie being taught to scavenge by his mother in the Len Howard Conservation Park Western Australia

A pelican emerging from the water after attempting to catch a fish in the Peel Inlet



Australian ringneck parrot basking in the afternoon sun (Marina Quay Western Australia)

A young seagull frolicking on the sand on Penguin Island Western Australia under the watchful eye of his mother

Australasian darter drying his wings in a peaceful spot away from predators on the edge of the Peel Inlet Western Australia