AUSTRALIAN Wildlife

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Photo: Doug Gimesy

Celebrating a new century of wildlife preservation in Australia

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

FLORA AND FAUNA OF SYDNEY'S NORTH HEAD

More images and information on Sydney's hidden gem, go to page 23

The barking owl is a medium-sized owl with bright yellow eyes and no facial disc. Upper parts are brown or greyish-brown, and the white breast is vertically streaked with brown. The large talons are yellow.

Grass tree (*Xanthorrea spp.*). An iconic part of the Australian landscape, the grass tree is widespread across eastern New South Wales. These Australian native plants have a thick fire-blackened trunk and long spiked leaves. They are abundant in the heath habitat at North Head. The grass tree grows 1 to 5 metres in height and produces striking white-flowered spikes which grow up to 1 metre long.

Eastern Suburbs Banksia Scrub is a nationally and state-listed endangered scrub and heath vegetation community.

Smooth-barked apple (*Angophora costata*), also known as Sydney red gum or rusty gum trees. Growing to heights of 15–30 metres, the russet-coloured angophoras shed their bark in spring to reveal spectacular new salmon-coloured bark.

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Suzanne Medway AM
Editor, Australian Wildlife

Sabine Borgis
Sub-Editor, Australian Wildlife

On the cover:

Front Cover: Platypus taken at Upper Tarago River, Neerim, Victoria. Photo: Doug Gimesy

Back Cover: A platypus out feeding at dawn. Photo: Doug Gimesy

Australian Wildlife Society
Conserving Australia's Wildlife since 1909

Australian Wildlife

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

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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.

Articles and comments expressed in this magazine do not necessarily reflect the opinions of the Editor, Society or members. Articles contributed from outside sources are included for the reading enjoyment of members and to encourage discussion on different points of view.

Articles may be copied or quoted with appropriate attribution.

From the President's desk

Suzanne Medway AM - President

Seeing a wild native animal is something special – unexpected and unpredictable. It's a sign that nature is alive and well.

We all come into contact with wildlife at some time in our lives. We see and smell wildflowers, listen to birds, and at night we may be lucky enough to cross paths with a possum or a wallaby. Seeing a wild native animal is something special – unexpected and unpredictable. It's a sign that nature is alive and well. Unfortunately, we often see Australian wildlife dead on the side of our roads – the victims of roadkill. Hundreds of thousands of animals are killed each year after being hit by motor vehicles on Australian roads. For many people, their deaths are considered to be sad – but inevitable.

To experience wildlife in its natural environment brings us in touch with a different world where people are the outsiders. Wildlife lives by natural rules, not by human values. If we try to feed or pat a wild animal, this will have an impact on it, particularly as more and more people visit our natural areas. But for the majority of people, their only chance to see native Australian wildlife is in zoos or wildlife parks.

The role of zoos in wildlife conservation

Modern zoos aim to promote animal conservation, educate people, and support further wildlife research. The three are entwined to ensure the animals are housed to the highest possible standards of welfare. Staff are dedicated to providing species-specific housing, appropriate diets and husbandry to ensure that the animals' lives are as natural as possible in captivity.

Anti-zoo and animal rights groups such as CAPS, PETA or the Born Free Foundation claim that zoos are inherently cruel. They highlight animals housed in small cages for "our entertainment" and claim all should be released back into the wild.

But zoo design has moved a long way since the bad days of bare concrete cages, and indeed innovative enclosures these days can closely replicate an animal's wild habitats.

Overall, zoos provide opportunities to observe and engage with exotic animals, many of which may be threatened with extinction in the wild. Seeing them up close can spark a passion for biology, conservation and the environment.

All zoological and wildlife parks are inspected annually by government agencies and must meet rigid standards.

The Royal Zoological Society of New South Wales is concerned with the study and conservation of Australia's native fauna, and the education of its members and the general public on these subjects. Its objectives are to promote and advance the science of zoology, and to protect, preserve and conserve the indigenous animals of Australia and their associated habitats.

The World Association of Zoos and Aquariums is the voice of a global community of high standard, conservation-based zoos and aquariums. Its mission is to act as a

AGM and Annual Luncheon

The 109th AGM of the Wildlife Preservation Society of Australia trading as Australian Wildlife Society will be held on Wednesday 7 March 2018, to be followed by the Society's annual luncheon. The Agenda and luncheon details appear at the end of this magazine.

In accordance with the Society's Constitution, under Clause 10, three directors are retiring. Two directors are offering themselves for re-election – this will leave a vacancy on the board. Any suitably qualified member interested in serving on the Board should complete Schedule 3 of the Constitution (available from the national office) and return the completed form by 15 February 2018.

Ten Green Commandments for a better world

In consultation with our scientific advisory panel and driven by the ideals of our past National President, Dr Vincent Serventy AM, we adopted Ten Green Commandments for sustainable development of our Planet:

1. All people have a right to an Earth where they can live in good health and enjoy a fair quality of life.
2. No one has the right to substantially alter the natural world in a way that will damage the world's basic resources.
3. All people must conserve the present diversity of the natural world. Extinction is forever.
4. All people must plan their future, so the resources they use will be sustainable – and when they use non-sustainable materials, plan for a future when these will be exhausted.
5. All people giving aid to others must be sure the help will increase the quality of life of those they assist, not forcing them into new ways of living, destroying their culture.
6. All people must use the world's common resources carefully for all other people, both now and in the future.
7. All nations must carry out their obligations under all environmental agreements. A world court should decide on serious breaches, while other pressures such as boycotts must be used when more suitable for the occasion.
8. All nations must co-operate, not only in monitoring their environment but also in their obligations to the rest of the world.
9. All nations must develop a sustainable population policy and adhere to it.
10. All nations and all individuals must develop a new morality, not based only on particular religions but with values of respect for the rights of all humans and also those of the natural environment.

catalyst for their joint conservation action. Its role is to be a global communication platform for zoos and aquariums committed to conservation and to excellence in zoo and aquarium management.

In the end, we will conserve only what we love; we will love only what we understand, and we will understand only what we are taught. (Baba Dioum, 1968)

Our Society's 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.

You cannot begin to preserve any species of animal until you preserve the habitat in which it dwells. (*Two in the Bush* by Gerald Durrell, 1962, p. 349)

I would add my own top three 'wishes' for a better world: all people have the right to clean air, clean water and clean soil. And we could add animals to that wish to have the same right.

The whiptail wallaby (*Macropus parryi*), also known as the pretty-faced wallaby, is a species of wallaby found in eastern Australia. It is locally common from Cooktown in Queensland to near Grafton in New South Wales.

Footprints in water

in search of the elusive platypus

Story and photos by Doug Gimesy

A cold morning

It's 5 a.m. on a crisp autumn morning, and the sky is clear. Stars sparkle brightly in the night sky and dawn is still over an hour away.

As we leave the warmth of our four-wheel drive and start walking, our headlamps illuminate the ground in front of us through the mist of our breath. It's quiet, really quiet, and all we hear is the rustle of our waders, the sound of our footsteps and the burble of running water in the distance. We arrive at the river's edge to inspect the two fyke nets and with excited anticipation I ask Josh Griffiths – one of Australia's platypus experts and Senior Wildlife Ecologist at CESAR (an independent environmental research consultancy, and the team behind platypusSPOT) – "What do you think?" "Hmm, not sure. There's movement in one net, but it could be a fish, rakali or just the flow of the river."

As Josh wades into the water to lift up the end of the downstream net, he turns to me with a grin and asks, "Is your camera turned on?" I jump into the cold water, camera in one hand, low light LED in the other and take a few quick shots as he reaches into the net and carefully removes a large male platypus by the tail, careful to avoid the poisonous spurs. After putting him securely in a cotton bag, we make our way back to the car, where he is gently placed on a pad on the van's rear tray. Jessica Pulvirenti, a student volunteer for this trip, brings out the field kit to help measure his weight, body length and bill length, and help take a small skin sample from the webbing on his feet. This will be used back in the lab to analyse the DNA of the platypus and help to better understand local and national genetic diversity and his familial relationships with other animals captured in this area. Josh also passes a microchip scanner over the neck to see whether the platypus captured today has ever been caught before. A beep goes off revealing the presence of a microchip, so we learn that this boy was first captured as a juvenile about a year ago in this creek.

This field trip was part of a Melbourne Water project that has been running for over 20 years, to determine how platypus populations are faring throughout the city and its fringes. Data from this study then helps the water authority to manage the waterways for platypus conservation, through efforts such as environmental flows, revegetation and weed management.

It's not that easy

To determine whether just this one platypus was in this one stream has not been easy. We left Melbourne two hours earlier to arrive at about 1 p.m. and set up ten nets at five locations stretching over 10 kilometres of the waterway. That took about five hours. Once set up, the nets need to be checked every three hours until they are taken down at dawn the next morning, and then the trip back starts. By the time we arrive home, it's been about 24 hours, with very little sleep.

Chatting to Josh as he packs up the nets, I ask, "Is it always this hard to capture one?" He tells me it varies. "There are some spots we can pretty much guarantee a capture, other places it can take one, two, three or four trips. And then, of course, there are some places where we have never caught anything. That doesn't necessarily mean they aren't there; it just means we didn't catch any – that's the challenge".

Looking for similarities and differences. Student volunteer Jessica Pulvirenti measures the bill dimensions of a captured platypus as Josh Griffths helps holds this monotreme still. Such data is used to help compare morphological differences that may exist between populations.

Why so hard? How many are there? Numbers and prevalence

Speaking with Dr Tom Grant, a man who has spent the last 45 years studying platypus, he tells me, "These semi-aquatic egg-laying mammals are so elusive, so widely distributed but so difficult to study in the wild, that even after all this time, we still don't have a solid grasp of their abundance or distribution.

"As far as I am aware, there are no regional, state or national estimates of platypus numbers, and that's a problem. There are documented declines in numbers in some local areas and streams – leading to the prudent downgrading of the species to 'near threatened' – and the impact of predicted changes wrought by climate change are of concern, but we just don't know," he says. "If we want to ensure effective management and conservation plans are in place to protect this iconic species, we need to do what we can to not only understand the threats that face them, but how many there are and where they are."

Tahneal Hawke from the University of NSW, as part of her PhD, is looking at historical records of the platypus to better understand Australia's changing attitudes towards them as well as their changing distribution. She says: "Looking at newspaper articles can certainly give us some idea of where platypus used to be in some places. However, the accuracy of this approach is limited, as it relies on chance encounters and the sighting being newsworthy."

"For example, a newspaper report in the *Kerang New Times* dated August 1908 noted that 22 platypuses were caught in the Yarra River near Melbourne's Princess Bridge. However, I'm not sure that any have been seen in that part of the river for a very long time."

Setting up to capture. As part of Melbourne Water's monitoring program, researchers set up fyke nets in the afternoon to try to capture the elusive platypus. These are checked every three to four hours.

Similarly, during a flood in January 1933, *The Biz* reported that "A shoal of platypus – numbering 15 – were seen in the suburb of Casula (New South Wales)." However, Dr Tom Grant says that they are now very uncommon in the Georges River and no longer reported in this outer suburb of Sydney.

So what else can be done to help us get a better idea of platypus distribution and numbers? This is where the growth of citizen science and the development of new technology such as eDNA can help.

New technology to help citizen science

"Local knowledge is an invaluable source of information, and potentially important observations are often made by local residents and outdoor recreationists which can be overlooked in ecological studies. This is where smart phone apps like **platypusSPOT** can help," says Josh. "It offers wildlife enthusiasts an opportunity to contribute to a community-driven database on platypus distribution. While some have argued that the quality of data from citizen researchers can be unreliable, photographic evidence of observations entered on **platypusSPOT** helps minimise this issue as well as repeat sightings by different people creates self-verifying data. More importantly, this application allows data to be collected from a much larger pool of observers, over a wider geographic range and across longer time spans. It just isn't feasible for research scientists alone to collect data on this scale, especially for a species as elusive as the platypus."

Dr Gilad Bino at the Centre for Ecosystem Science at UNSW, who is part of the Platypus Conservation Initiative and is leading an analysis of numbers and distribution across Australia, added: "We need as much information on their distribution as we can get, and it is especially important if we can find out where platypuses no longer exist anymore as a result of human impacts."

eDNA

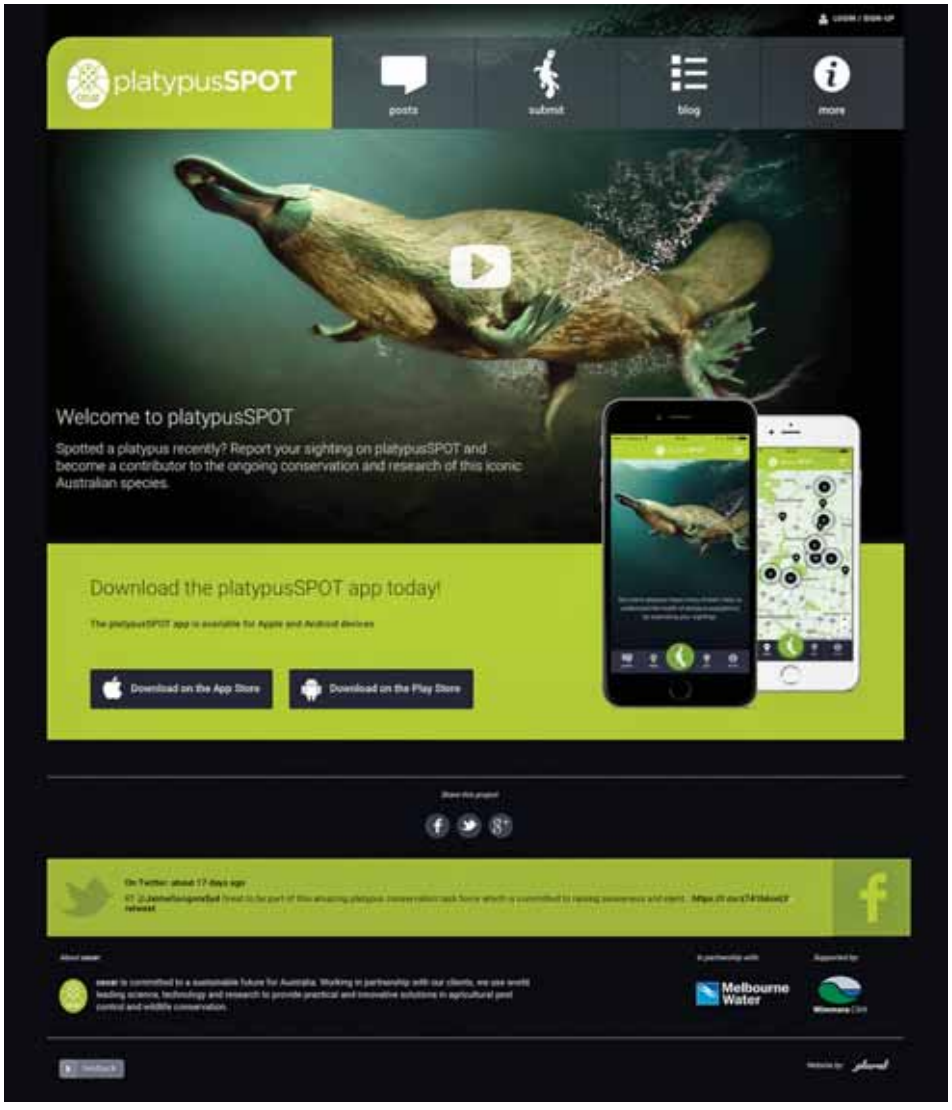
One of the most exciting new research tools is environmental DNA (eDNA). Anthony van Rooyen, a scientist at EnviroDNA, explains: "Animals are sloughing off DNA all the time, and even small fragments of DNA allow us to determine whether a particular species is in that sample. In terrestrial environments, however, the challenge is that you need to have taken the sample from where the animal has been standing, or at least very close. But the great thing about platypus is that their DNA gets washed downstream, so you can get an idea whether one has recently been upstream simply by taking a water sample. It's like CSI but in a river."

Skin sample collection for genetic testing. A small sample of skin between the toes is taken to look at population genetic health, to understand genetic diversity, population viability and familial relationships.

I ask Anthony how accurate it is, and he goes on to add, "Our studies show that it's much more sensitive than current netting methods, with about a 95 percent accuracy of determining the presence of platypus at a site. Of course it's much easier, quicker and cheaper than netting. You simply go to a spot in the river, take a water sample, send it to the lab, and that's it. No long nights out with nets, checking every few hours."

Sampling the waters for eDNA testing. The first part of looking for environmental DNA is collecting a water sample. Here, Lisa Kirkland, a member of the research team for EnviroDNA, draws up a sample of water in a syringe. This water is extracted, then filtered through a 0.22 micron filter on site, then sent to the lab for DNA extraction and analysis. This sample will then be refrigerated and transported to the laboratory for analysis.

Testing for platypus DNA. DNA from a river water sample is extracted in the laboratory so it can be analysed to look for any platypus DNA that may have been washed downstream.



Citizen science helps fill the gaps. As the platypus is generally so elusive, local sightings and recordings can be an invaluable source of information to help scientists better determine their national distribution. The evolution of smartphone apps like platypusSPOT allows for easy collection of data from many people.

Dr Tiana Preston from Melbourne Water is currently rolling out a plan to use citizen science and eDNA technology to more effectively monitor vulnerable platypus populations and assist with strategic education and infrastructure decision-making.

"The wonderful thing about combining citizen science and this technology is that by engaging residents in collecting the water samples, we empower the community to participate in waterway management, as well as raising awareness of platypus and the threats they face," She says. "It's also fast and affordable, multiple sites can be covered quickly, and it's about a tenth of the cost of live trapping. We are using the data collected by citizen scientists to guide waterway management works that will enhance platypus habitat."

Of course netting surveys will always be important. They enable the identification of individual platypuses, their sex, age and health, and the collection of genetic samples.

But now with eDNA, with such a large continent and national distribution still not being well understood, it's an exciting new tool that can better help us understand where platypuses still exist.

"My dream is that at some stage soon we can get funding to support the roll out of a national citizen science campaign, where thousands of people from all around Australia can sample their local waterways allowing eDNA technology to give us a better idea of their distribution," said Josh Griffith.

Will it give a definitive answer to where all the platypus may be found? No, but it will certainly give us a much better idea of distribution than we currently have, and that's important.

Note: A version of this article was originally published in *Australian Geographic.*

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22 Platypus....Princes Bridge

Biz (Fairfield, NSW : 1928 - 1972), Friday 27 January 1933, page 4

A novel sight ...shoal of platypus...

PLATYPUS 'DEATH TRAPS'

Geoff Williams, Australian Platypus Conservancy

The discovery last May of five platypuses drowned in two opera house yabby traps set in Labertouche Creek near Melbourne quite rightly horrified most people. Depressingly, this incident was just the latest in a long list of known by-catch mortalities in enclosed yabby traps involving the platypus and also other air-breathing species such as rakali (the Australian water-rat) and freshwater turtles.

Recreational fishing regulations have traditionally attempted to address the problem by prohibiting the use of enclosed traps in waters where the platypus is known to occur. In Victoria, Australian Capital Territory and most parts of New South Wales and Queensland this essentially means that traps can only be legally deployed in private farm dams. Unfortunately, opera house traps – the most popular type of enclosed trap – are sold in their thousands, often at the cost of just a few dollars each. Point-of-sale information regarding restrictions on trap use is often woefully inadequate; retailers are not obliged to inform customers about restrictions on usage or provide informative labelling on traps. Effective law enforcement is virtually impossible, opera house traps are relatively small and inconspicuous and often deployed in the evening or overnight. As a result, illegal deployment is widespread. The resulting death of wildlife in traps is a significant animal welfare issue. In cases where this causes a sizeable proportion of an already small population to be wiped out – as was true along Labertouche Creek – it also has genuine conservation implications.

There is little reason to believe that increased community education and law enforcement will be sufficient to solve this issue. Also, rakali and turtles remain at risk in many places where enclosed traps can be set legally, particularly in South Australia where trap deployment in all waters is allowed.

The Australian Platypus Conservancy (APC) has been working for several years to address the issue of trap-related mortality, particularly by carrying out studies to identify safer yabby trap designs. The platypus's streamlined shape and ability to squeeze through small openings make it difficult to design a trap that will exclude the species while still allowing large yabbies to enter.

Accordingly, recent field trials conducted by the APC and Dr Tom Grant of the University of NSW have concentrated on testing whether adding an 'escape hatch' to a trap's roof would allow platypus to escape before drowning. However, while the majority of platypuses exited successfully, after this extensive research, it has now been concluded that the objective of a 100 percent platypus-safe enclosed yabby trap is unlikely ever to be achieved.

The APC, therefore, believes that mandating a total ban on the use of opera house traps and other enclosed yabby traps will now be the only realistic way to minimise the risk that wildlife is harmed as a consequence of recreational yabbying. Such a ban will require fishing regulations to be amended in all states and territories (apart from Western Australia and Tasmania, where prohibitions are already in place).

Above: Adult male platypus found dead in enclosed cray trap in Yarra River. Photo: Mike Sverns. Image provided by DEWLP (Department of Environment, Land, Water and Planning)

Two of the five platypuses found dead in opera house traps in Labertouche Creek. Photo: Mike Sverns

A healthy platypus. Photo: Geoff Williams

Yabbies can be captured safely and effectively in hoop or lift nets. Photo: Geoff Williams

Interestingly, both VRFish (the peak representative body for recreational anglers in Victoria) and the Recreational Fishing New South Wales Advisory Council (RFNSW) have now called for such a ban, and it is believed that steps are now being taken in New South Wales to consider regulatory action in response to RFNSW's position.

It is acknowledged that there are many highly responsible users of enclosed yabby traps, including landholders who have been yabbying for generations in farm dams without causing any harm to non-target species. However, it should also be recognised that alternative recreational yabbying methods – such as hoop/lift nets – exist that are both productive and safe for air-breathing wildlife.

The platypus is an iconic species, and the vast majority of Australians would not accept any of them being killed for the sake of a few recreational yabbies.

IT'S TIME TO BAN THE USE OF ENCLOSED YABBY TRAPS

Editor's note: Geoff Williams has been Director of the Australian Platypus Conservancy since its foundation in 1994. Before that, he was Director of Healesville Sanctuary in Victoria (1988–1993) and Assistant Director of Sydney's Taronga Zoo (1985–1988).

Two opera house traps containing five drowned platypuses, discovered in Labertouche Creek. Photo: Mike Sverns

IS IT TOO LATE FOR THE KOALA?

Linda Dennis

We all know that the koala is in terrible trouble. We know of the major threats – apart from us, which is *the* biggie. There is disease, habitat loss, urban development, logging, climate change, bushfire, domestic predator attack and roadkill and injury.

In early June I attended the 2017 National Koala Conference – 'Their Future is in our Hands' – in Port Macquarie, New South Wales, hosted by the Port Macquarie Koala Hospital. Around 200 of the very best koala minds (and also, me!) came together to talk the koala talk. There were scientists, veterinarians, university students and professors, environmentalists, zookeepers, conservation campaigners, ecologists and wildlife carers. The list of speakers was incredibly impressive and the range of topics just as much so.

It was a little – OK, a lot – depressing to hear that chlamydia is now found in every single koala in Queensland. It doesn't help the species when domestic livestock are carriers for *Chlamydia percorum* with 30 to 40 percent of Australian sheep infected with the disease and as a result, koalas are now being found with this strain of chlamydia.

There are multiple strains of chlamydia in our environment affecting a range of different hosts, 12 strains to be exact. *Chlamydia pneumoniae* is the strain that affects the koala (and also humans!) with *Chlamydia percorum* now also being found.

Victorian koalas fare better when it comes to chlamydia with fewer animals being tested for the disease. One speaker noted that it might be the chlamydia-free southern koalas that save the species from extinction.

However, oxalate nephrosis (kidney disease) is rife in southern koalas. Unlike chlamydia, this disease is non-treatable and only those animals brought into care and on a continual medical regime can be saved. So maybe the koala is not so safe after all!

How will climate change affect koalas? Sadly, in several ways, one issue being that some koala food eucalyptus trees are highly sensitive to salt. With climate change comes the risk of rising sea levels and if the salt doesn't cause complete dieback of trees, then it will cause stunted growth and poor nutrient levels leaving little food for koalas on the coast. It has been determined that 23 percent of koala habitat in swamp forests will be affected by sealevel rise in 100 years. Perhaps this is not as great as other immediate threats; however, unless we start making some major changes, we are looking at the severe decline of good koala habitat within five years. One of these changes could be simply collecting eucalypt seed from saline areas for planting on the coast.

In most states, financial growth is considered more important than maintaining good quality habitat for our wildlife. Logging has increased tenfold in many areas and, sadly, the

Above: Westhaven Barry, a koala that had scoliosis. He was in permanent care at Port Macquarie Koala Hospital before his death a couple of years ago. Photo: Linda Dennis

Josey Sharrad from IFAW and Bear, the koala detection dog. Photo: IFAW


Koala being treated at Australia Zoo after being hit by a car. Photo: Linda Dennis

dollar outweighs Australian native flora and fauna every time.

Tracey Wilson from Mosswood Wildlife Rescue and Rehabilitation in Victoria made the most heart-wrenching impact at the conference. Tracey first spoke to us at the 2013 conference about the terrible logging issues in her region of Portland by the Australian blue gum logging industry. Today, things are no better. Fair to say, probably worse.

After the last conference, the ABC's *7.30 Report* broke the news of inhumane practices due to lack of koala management within the logging industry to a national audience. Koalas were found dead, burnt, impaled or with limbs severed. We were all shocked and appalled. These practices continue today.

Thanks to Tracey's public outcries, a detailed Koala Management Plan was implemented by the Victorian government with instructions such as that a permit must be applied for by the industry whenever there are impacts to koalas. However, we have been told that most standards are not followed.

Portland in the south-west of Victoria (south-east Australia) is the largest port for hardwood chips in the world. The species of eucalypt planted within the industry are blue gums, and in all fairness, this is a species that is not thought to be high on the koala diet. When there is little else to be eaten by the koalas, it becomes rather tantalising to their palates – and subsequently, they are seen as pests within the logging industry. The area now has over 80,000 hectares of blue gum plantation in once good koala habitat, and there are around eight koalas found within one hectare of a plantation. Important habitat trees, such as manna gum, are left within the logging zone for koala use; however, if a koala vacates one of those trees for any length of time, the tree is cut down.

The Portland region is looking at mass koala starvation and continued death and injury. Translocation is not an option as there is nowhere for the animals to go and the cost of a translocation would be met – by whom? Neither the logging industry nor the government has shown interest in koalas within logging zones so it's safe to say the cost would not be met by them. An alternative idea of hormone injections to sterilise koalas is also very expensive – so again, who will pay?

There is also the issue of koalas moving out of the logging zones (after harvesting) and into neighbouring private land and as a result, stands of manna gum are being stripped bare by displaced and very, very hungry koalas. So not only is there an issue with the lack of koala management with the logging industry but there is also an issue with many landowners illegally shooting koalas to protect environmentally important trees. It's a double-edged sword.

I told you, the news is pretty depressing. But there is some good stuff happening out there!

We heard of two separate projects using trained dogs to assist in koala management. In the Port Macquarie region Steve Austin, a well-known Sydney-based dog trainer, is assisting the council in running training sessions that teach dogs living in koala habitat *not* to interact with (or kill) koalas. In the trial period of this project, 30 dog owners and their dogs were involved, and we were told the results so far have been very positive. Data dissemination and reassessment of the project was conducted in September 2017.

In a parallel project, Steve Austin is also training dogs to seek and find koalas by searching for koala scats. During the conference dinner, Steve gave us a rather impressive presentation using one of his highly trained dogs, Taz, to sniff out koala poo, which Steve had placed at a random spot among the audience. Finding a small amount of poo would not be an easy feat in a room of eager, noisy, celebratory conference delegates! But find the poo Taz did – in a matter of seconds – and was rewarded with a game of fetch-the-ball afterwards, which for Taz is what it's all about.

A partnership – or as they like to call it, 'koalaborative' work – between the University of the Sunshine Coast, International Fund for Animal Welfare (IFAW) and the Queensland Koala Crusaders have another koala dog project underway. The dogs, all rescued shelter dogs like the internet sensation 'Bear', are put through stringent training by the University of the Sunshine Coast (USC). USC specifically looks for dogs with specific qualities: obsession with balls, high energy, and generally very demanding – qualities that sadly mean these dogs are often not considered suitable as pets. But they are perfect as detection dogs once given proper training. Bear is highly focused and brilliant at focusing on one thing – which makes him perfectly suited for the job. He also has zero prey drive, which is essential for wildlife detection dogs as they need to focus purely

L to R: Award winners Damien Higgins, Lorraine Vass, Faye Wedrowicz, Adam Polkinghorne and Tracey Wilson.

Happy snap of a koala! Photo: Linda Dennis

Steve Austin's koala detection dog, just after she found the koala scat. Photo: Linda Dennis

Koala being treated at Port Macquarie Koala Hospital. Photo: Linda Dennis

on the scent and not the animal, ultimately ignoring the animal when they follow the scent to its destination. Like Taz, Bear is driven by the ball and is rewarded with play time after a successful koala find.

The Port Macquarie Koala Hospital, led by Clinical Director Cheyne Flanagan, is a supportive bunch of koala conservationists and carers who see the importance of lifting up others with a similar dream in their endeavour to save koalas. This year's conference, organised and implemented by the hospital, saw the Inaugural Golden Leaf Awards of Excellence, giving recognition to those in the koala conservation community who have shone brightly in their fields. The awards, beautifully designed and handmade by Scott Castle (Assistant Clinical Director), were awarded to:

Research Institution Award
Associate Professor Adam Polkinghorne
University Sunshine Coast, QLD

Young Upcoming Researcher Award
Faye Wedrowicz
Federation University, VIC

Individual Award
Tracey Wilson
Mosswood Koala and Wildlife Shelter
Koroit, VIC

Spirit in Science – Community Outreach Award
Associate Professor Damien Higgins
Koala Health Hub
University Sydney, NSW

Wildlife Rehabilitation Facility Award
President Lorraine Vass
Friends of the Koala
Northern Rivers, NSW

At the 2013 National Koala Conference Meghan Halverson, founder of the Queensland Koala Crusaders said:

"While we are talking, they are dying."

They are words to haunt your dreams. At this conference, her message was not much cheerier:

"We are still talking, and they are still dying."

It is clear that all those striving to save the koala are working harder and smarter and together to ensure the survival of the species. But is it too late?

How are you going to ensure that the koala is not pushed over the edge to extinction?

Footnote: some of the conference presentations are now available to download at: http://www.koalahospital.org.au/national-koala-conference-presentations

Extinction is not an option

Introducing Aussie Ark: Giving hope to an entire ecosystem

Aussie Ark is an innovative conservation initiative committed to delivering results for some of Australia's most imperilled mammals, including the Tasmanian devil and the eastern quoll.

This incredible project aims to establish insurance populations of six of Australia's most threatened mammal species in a semi-wild, predator-free zone in the Barrington Tops of New South Wales.

Building upon the innovative and world-recognised Devil Ark model, the next stage of Aussie Ark involves the construction of a 375-hectare feral-free fenced area; allowing for the initial holding of eastern quolls, eastern bettongs, Tasmanian devils, southern brown bandicoots, long-nosed potoroos and Parma wallabies.

On completion of this phase of the project, Aussie Ark will seek to expand into further stages of additional species. The project will also provide a sanctuary for a diversity of threatened plants and animals that currently exist in the region, including numerous species of orchids, the yellow-bellied glider and the Hastings River mouse.

Aussie Ark along with sister facility Devil Ark is set in the beautiful heritage-listed Barrington Tops in New South Wales, eastern Australia. Set on 500 hectares and 1,350 metres above sea level, Aussie Ark provides the ideal location for the establishment of large-scale holdings of eight mammals.

The vision

With a vision of returning various marsupial species to the eastern highlands of Australia, Aussie Ark will provide on-the-ground conservation on a scale never before attempted. By focussing on the protection of key species in feral-proof fenced reserves, additional future release to large protected areas is feasible.

The Aussie Ark project is a continuation of the innovative and highly successful Devil Ark which has demonstrated what can be achieved.

The quoll, in its four Australian species forms, plays an important role in Australia's ecosystems. This

Above: Tasmanian devil

Eastern quoll

role includes keeping it clean through scavenging on carrion on the forest floor. It is also a natural predator which maintains the balance in the bush. Extinction of the eastern quoll from the mainland of Australia occurred in 1963 due to red foxes and cats. A small population currently thrives in Tasmania. Aussie Ark intends to establish a robust insurance population, harvestable and suitable for semi-wild release leading to eventual reintroduction to the wild.

The Tasmanian devil is critical to the wilderness of Tasmania; it plays an important role in the ecosystem as the top order predator, protecting many smaller mammal species from the invasion and threat of foxes and cats. They help keep the balance right! Over 90 percent of the species is already gone due to the devil facial tumour disease (DFTD), which has traversed almost the entire state of Tasmania. A vaccine was first trialled in 2015; and some devils are also showing resistance to DFTD. An international study involving multiple institutions over six years has shown that immunotherapy can cure Tasmanian devils of the deadly devil facial tumour disease.

Bandicoot

The research was led by the University of Tasmania's Menzies Institute for Medical Research with input from the School of Medicine. It also involved the Walter and Eliza Hall Institute of Medical Research, and the Universities of Sydney, Southampton, Southern Denmark and Cambridge. Building a good understanding of the devil's immune system, which goes hand in hand with the development of a vaccine, involves years of painstaking laboratory work.

The Parma wallaby is currently listed as near threatened and vulnerable in New South Wales. In recent decades their population has crashed and is now confined to thinning populations along the coast and central and northern ranges in New South Wales. The main threats to the wallaby are habitat destruction and fragmentation, especially of the forest understorey, and the predation by introduced predators such as the cat and fox that have a high presence in the wallaby's habitat.

The bandicoot in New South Wales is now considered endangered and rare. Populations are isolated and contracting due to threats of fire regimes, habitat destruction, habitat degradation and predation by cats and foxes. Most local extinctions have been within the last decade. This species in an ecological engineer. It helps aerate soil and leaf litter assisting in natural litter breakdown, penetration of seedlings, organic mixing and thus improving nutrient availability for plants. These animals also help spread mycorrhizal fungi through the ecosystem, which assist plants in nutrient absorption.

The potoroo was once widespread along the east coast of Australia, but this marsupial's range has decreased and its population is now considered unstable. Populations are now scattered and insecure with local extinctions taking place. Isolation of populations makes it difficult for breeding. Two close relatives of this rat-kangaroo species are already extinct and with so many present-day threats to the potoroo, its future is uncertain. This species is important in improving the health of the bush in which it lives by dispersing a host of beneficial fungal spores as they forage and move around.

Website: http://www.aussieark.org.au/

Bettong

Parma wallaby

Long nose potoroo. Photo: Sharon Wormleaton

Black Mountain
Forbidding place or refuge?

Sabine Borgis

Anyone who has ever travelled on the Mulligan Highway (the inland road) in Far North Queensland would be familiar with Black Mountain, 25 kilometres south of Cooktown. You simply cannot miss it, unless you are driving in the dark. After driving through miles of savannah woodland, interrupted only by the townships of Mount Carbine and Lakeland, suddenly there it is, like piles of black boulders imposed on the landscape like charred remains. Black Mountain (Kalkajaka) National Park, part of the Black Trevethan Range, covers an area totalling only approximately 600 hectares, at the northern end of the Wet Tropics World Heritage Area.

Source of mystery and legend

The indigenous Eastern Kuku Yalanji custodians call Black Mountain Kalkajaka, which means 'place of spear', and they have several Dreaming stories and special cultural sites within the area. If you google 'Black Mountain', you will find not only sites describing its natural history but also those making reference to its mysterious phenomena. The many passages and chambers beneath Black Mountain are said to give rise to strange noises made by the wind and water, and pockets of foul air. Above the surface, there have been reports of exploding rocks and even aircraft turbulence. These are all quite plausible, though I cannot confirm any of these phenomena as it was neither windy, nor did we venture below the surface, merely boulder-hopping a little until the heat and smoke from a fire somewhere drove us back to the air-conditioned car. There have been other tales – or rumours – of the disappearance of people, horses and cattle, or their re-emerging from this 'underworld' terrified. The myths even stretch so far as UFOs, aliens and other strange creatures, which are clearly outside my expertise…

Geomorphological origins

Despite its dark appearance, the Black Mountain formation actually consists of light-grey granite, formed approximately 260 million years ago during the Permian period, when a body of magma cooled slowly. As the overlying sediments eroded to expose the granite, chemical and physical weathering began the process of breaking up the rock along a network of fractures. This process is continuing today, leaving boulders scattered on the surface as evidenced by some surfaces showing lighter coloured rock. It is a landform not unlike the many boulder fields found on Tasmania's dolerite peaks, but on Black Mountain the process responsible for its continuing disintegration is not frostshattering but heat-shattering. The black colouring of the Black Mountain rocks is attributed to a film of microscopic filamentous cyanobacteria. Some have suggested it is lichen; although I did see several species of lichen also, these were not black and occurred in much smaller patches. A look through a magnifying lens confirmed the presence of a filamentous mat. This dark coating has a physical effect: much more solar radiation is

Above: Black Mountain boulderfrog (*Cophixalus saxatilis*), female (foreground) and male (background). Photo: © 2010 Eric Vanderduys

absorbed by the boulders, causing them to heat up considerably. When much colder rain drops strike the surface, this can cause the rock to shatter explosively, thus accelerating the process of breaking up. Luckily it did not rain while we were there.

A lithorefugium for endemic species

As inhospitable as Black Mountain may appear to people, it is of ecological significance as a so-called lithorefugium – a geological formation that provides suitable environmental conditions for some species that have become extinct in the surrounding area. The many caves and passages provide shelter from the heat and bushfires. Tropical rainforest would have once covered this area but as the climate became more arid, it retreated to the coast. Studies comparing the DNA of the endemic species of Black Mountain to related ones living in nearby rainforest have confirmed this evolutionary connection (Queensland Museum, 2011).

Vegetation is very sparse amongst the Black Mountain boulders because of a lack of soil. Native fig trees are able to extend their long roots to reach water and dissolved nutrients under the boulders. Some of the hardier rainforest species such as stinging trees, umbrella trees, ferns and vines have established at the foot of the mountain.

Black Mountain is home to three endemic animal species, listed as vulnerable: the Black Mountain rainbow-skink (*Liburnascincus scirtetis*), the Black Mountain boulderfrog (*Cophixalus saxatilis*) and the Black Mountain gecko (*Nactus galgajuga*).

The Black Mountain rainbow-skink is distinguished by its dark colour, long legs and 'duck's bill' snout. In sunlight it glistens green with yellow specks on its limbs and a golden stripe running along its back. It is active during the day, hunting on the boulders or basking in sunlight, but retreating to shelter from the fiercest heat.

The Black Mountain boulderfrog belongs to the family Microhylidae, normally found only in rainforest leaf litter. It is walnut-sized, the bright yellow female being slightly larger than the mottled-brown male. The female boulderfrog does not lay its eggs in water. Its young do not go through a tadpole stage; froglets develop directy from the eggs. The frogs emerge at night

Black Mountain gecko (*Nactus galgajuga*). Photo: © 2011 Stephen Zozaya

Boulders in Black Mountain National Park. Photo: Sabine Borgis

Stinging tree growing amongst boulders. Photo: Sabine Borgis

View of Black Mountain from the lookout. Photo: Sabine Borgis

Black Mountain rainbow-skink (*Liburnascincus scirtetis*), basking in the afternoon sun. Photo: Sabine Borgis

Black Mountain National Park from the air. Photo: © 2017 CNES/Airbus/Google Earth

to forage for insects on the boulders and amongst the figs and fringing monsoon forest. The male's call is described as a 'sharp tapping' sound.

The Black Mountain gecko is also nocturnal and very agile. It is of mottled purplish-brown colour, beautifully camouflaged against the granite boulders, and on average five centimetres long. The gecko takes its species name from a spelling variant of the Aboriginal name for Black Mountain.

Unfortunately, we could not stay on into the night to try to spot the frog and the gecko, but the skink proved very easy to find as it is active during the day; we saw at least two skinks basking in the afternoon sun on the boulders.

Black Mountain is home to many other animal species, including other geckos and skinks; several python species, death adder and brown tree snake; black kite and Australian swiftlet; several native rodent species; the endangered northern quoll; Godman's rock-wallaby; three species of flying-fox and numerous insectivorous bats species, as well as the vulnerable carnivorous ghost bat, which feeds on the abundant smaller bats, lizards and frogs.

It just goes to show that size isn't always everything when it comes to reserves. Even such a small and seemingly inhospitable area can be of great ecological significance and deserves our protection. I for one look forward to revisiting this intriguing place one day.

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Sydney's Hidden Gem

Suzanne Medway

Right in the Sydney suburb of Manly is North Head Sanctuary - Sydney's secret getaway

Recently my husband and I and a group of friends spent two days exploring this fascinating wildlife wonderland and marvelled at such a treasure right on the doorstep of such a busy metropolitan city as Sydney.

There are over 10 kilometres of easy walking tracks to explore. You can walk through virtually untouched bushland with superb harbour views and marvel at the diverse range of fauna and flora.

Walking through North Head's peaceful and pristine heathland, it can be easy to forget that you're only 11 kilometres from the CBD. As you explore, you'll encounter diverse wildlife and flora, military remains, and stunning views of the city and harbour.

A remarkable setting, North Head Sanctuary is home to delicate and diverse flora and fauna complete with hanging swamps. Its wild, island-like nature has made North Head Sanctuary a place for isolation, observation and contemplation.

Rich in history and a special place for the Aboriginal people, the dramatic cliffs of North Head form a memorable entry to Sydney Harbour with superb views of the harbour from the cliff tops.

The bushland at North Head Sanctuary provides habitat for a wide range of native species. As we walked, we kept an eye out for birds like New Holland honeyeaters, white browned scrub-wrens, rainbow lorikeets, and little wattlebirds.

During our brief visit we were lucky to see a possum, an echidna, kookaburras and many species of birds but to our disappointment we did not spot any bandicoots.

Fauna of North Head

Due to its geography and history, North Head is relatively isolated despite its proximity to Sydney. This and active wildlife management has allowed a number of species to persist in the area, with North Head Sanctuary home to a diverse array of flora and fauna.

Notable species include an endangered population of the long-nosed bandicoot (*Perameles nasuta*), as well as threatened species such as the eastern bent-wing bat (*Miniopterus schreibersii oceanensis*), grey-headed flying-fox (*Pteropus poliocephalus*), powerful owl (*Ninox strenua*) and barking owl (*Ninox connivens*).

Long-nosed bandicoot

North Head Sanctuary is home to the long-nosed bandicoot. The population at North Head is in danger of extinction and has been listed as an endangered population. Once this bandicoot was widely distributed along the east coast of Australia. It was once widespread and common in Sydney, but its range has been greatly reduced and it is now locally extinct in many parts of its former range.

This species is omnivorous, with an opportunistic diet primarily consisting of invertebrates and hypogeal fungi, and leaves characteristic cone-shaped diggings. Long-nosed bandicoots rely on mosaic vegetation, using open areas for foraging at night and dense undergrowth for nesting during the day. They nest in shallow depressions on the ground amongst thick vegetation.

White-browed scrub wrens are mostly dark olive-brown. Males and females are similar, but the females are slightly duller, particularly on the face.

The powerful owl is the largest owl in Australasia. It is a typical hawk-owl, with large yellow eyes and no facial disc. The call of this species may be heard at any time of the year, but it is more vocal during the autumn breeding season. It has a slow, deep and resonant double hoot, with the female's being higher pitched and expressing an upward inflection on the second note.

The short-beaked echidna (*Tachyglossus aculeatus*) is one of four living species of echidna and the only member of the genus Tachyglossus. It is covered in fur and spines and has a distinctive snout and a specialised tongue, which it uses to catch its insect prey at a great speed. Like the other extant monotremes, the short-beaked echidna lays eggs; the monotremes are the only group of mammals to do so.

This species breeds continuously although it has a peak in reproductive activity in late spring and early summer. A female can produce up to four litters per year, each with two to three young.

Major threats to this species include habitat loss through land clearance and urbanisation, introduced predators (fox, cat, and dog) and vehicle strikes (roadkill). The isolated North Head population is particularly susceptible to a loss of genetic variation affecting population viability.

Short-beaked echidna

As our group was moving about the North Head site, we were very excited to spot an echidna. We didn't want to get too close and disturb the animal as it was foraging, but as it has no weapons or fighting ability it curled into a ball and spread out its spines to repel us.

The short-beaked echidna has extremely strong front limbs and claws, which allow it to burrow quickly with great power. As it needs to be able to survive underground, it has a significant tolerance to high levels of carbon dioxide and low levels of oxygen. It lacks the ability to sweat and cannot deal with heat well, so it tends to avoid daytime activity in hot weather. It can swim if needed.

Female echidnas lay one egg a year and the mating period is the only time the otherwise solitary animals meet one another; the male has no further contact with the female or his offspring after mating. A young echidna is the size of a grape but grows rapidly on its mother's milk, which is very rich in nutrients. Baby echidnas eventually grow too large and spiky to stay in the pouch and, around seven weeks after hatching, are expelled from the pouch into the mother's burrow. At around six months of age, they leave the burrow and have no more contact with their mothers.

Flora of North Head

The dominant habitat of North Head Sanctuary is the endangered ecological community Eastern Suburbs Banksia Scrub. Eastern Suburbs Banksia Scrub (ESBS) now covers less than 3 percent of its original distribution. North Head is home to half of all the remaining ESBS, with 49 hectares within the North Head Sanctuary and 28 hectares on surrounding Sydney Harbour National Park. This ecological community contains a wide composition of flora species including coastal

banksia (*Banksia* spp., *Leptospermum laevigatum*), grass tree (*Xanthorrhoea resinifera*) and small native forbs, grasses and shrubs. However, sections of the ESBS are highly aged, with tea tree (*L. laevigatum*) dominating and excluding the regeneration of other plants.

There is a network of hanging swamp wetlands in North Head, with pockets of heath, ferns, shrubland and forest. Several rare and endangered flora species also persist here including Camfield's stringybark (*Eucalyptus camfieldii*), the sunshine wattle subspecies (*Acacia terminalis* spp. *terminalis*) and hairy geebung (*Persoonia hirsuta*).

Australian Wildlife Society and North Head

In 2002 Patrick Medway, then President of the Society, represented the conservation movement at a conference to determine the future of North Head. In his presentation titled 'A Wildlife Sanctuary for North Head' he emphasised that to save Australian wildlife, we must save the habitat and recommended establishing a new sanctuary for wildlife at North Head.

He explained that creating a sanctuary at North Head would present a unique opportunity to preserve the existing flora and fauna and create a safe habitat for all threatened species such as the long-nosed bandicoot and a local colony of little penguins.

Little penguins were known to nest on the Sydney Harbour foreshores within the Quarantine Station grounds and north amongst houses towards Manly but nowhere else on the mainland of Australia.

The Manly colony was, and still is, under constant threat from human activities and domestic and feral animals. The National Parks and Wildlife Service is now protecting this rare colony and trying to keep its location relatively secret.

Patrick discussed four possible options for the future of North Head:

- create a natural sanctuary for wildlife;
- create a commercially sustainable wildlife sanctuary;
- create a combined tourist venture incorporating a wildlife sanctuary; or
- do nothing.

The little wattlebird is a medium to large honeyeater, but is the smallest of the wattlebirds. It is mostly dark grey-brown above, with faint white shafts on each of the feathers.

Coastal banksia is a species of tree that grows along the east coast and is one of the most widely distributed banksia species. Its leaves have dark green upper surfaces and white undersides, a contrast that can be striking on windy days.

Sunshine wattle has fluffy pale golden flowers which are actually a cluster of six to fifteen small flowers growing on an open scrubby bush of up to 2 metres high.

The New Holland honeyeater is mostly black and white, with a large yellow wing patch and yellow sides on the tail. It has a small white ear patch, a thin white whisker at the base of the bill and white eyes. It is an active bird, rarely sitting still long enough to give an extended view. Sexes are similar in looks, but females are slightly smaller in size.

The long-nosed bandicoot is a nocturnal medium-sized marsupial. This species is 31–43 centimetres in length and weighs between 600 and 1100 grams. It has a short, thin tail and grey-brown fur.

The delicate flannel flower is so named because of the soft woolly feel of the plant. Its white or pink flowers bloom all year long, with an extra burst of colour in the spring.

But his recommendation was the creation of a natural sanctuary or nature reserve for wildlife to be established by the National Parks and Wildlife Service (NPWS), which would have responsibility for the native wildlife. He also suggested that the historic site of the Quarantine Station be preserved to encourage only a small number of tourist visitations to protect the existing wildlife.

He suggested that the incorporation of the Quarantine Station would enable a commercially viable wildlife sanctuary as many tourists already visit Manly, and preserving this world-class site would encourage ecotourism to the area.

He concluded that expert staff would be required to protect the existing native wildlife and that the whole area would need to be fenced properly to eradicate feral animals.

After the conference, hosted by the Director of the NPWS Brian Gilligan, the Federal Government transferred the ownership of the land to the NSW State Government. The NSW State Government, in turn, engaged Australian Wildlife Conservancy from Western Australia to manage and conduct the research into the wildlife at North Head.

Today, the fauna and flora are fully protected for future generations.

The grey-headed flying-fox is the largest Australian bat, with a head and body length of 23–29 centimetres. It has dark grey fur on the body, lighter grey fur on the head and a russet collar encircling the neck. The wing membranes are black and the wingspan can be up to 1 metre. It can be distinguished from other flying-foxes by the leg fur, which extends to the ankle.

THE THIN GREEN LINE

A consortium of partners and landowners enhancing a critical wildlife corridor

David Rush

In 2012, the Illawarra-Shoalhaven Great Eastern Ranges Regional Partnership identified several priority focus corridors in the region where environmental need and social and community capacity overlap. One of these corridors, on the Illawarra Escarpment east of Robertson, received a NSW Environmental Trust grant in 2016. Called Thickening the Thin Green Line of the Illawarra Escarpment (Thin Green Line for short), the project has also attracted funding from the Australian Wildlife Society.

Recently, a rare long-nosed potoroo was captured in a motion camera, indicating the importance of the Thin Green Line project and private landholder involvement in reducing feral animals and enhancing corridors for wildlife in this unique part of south-east New South Wales.

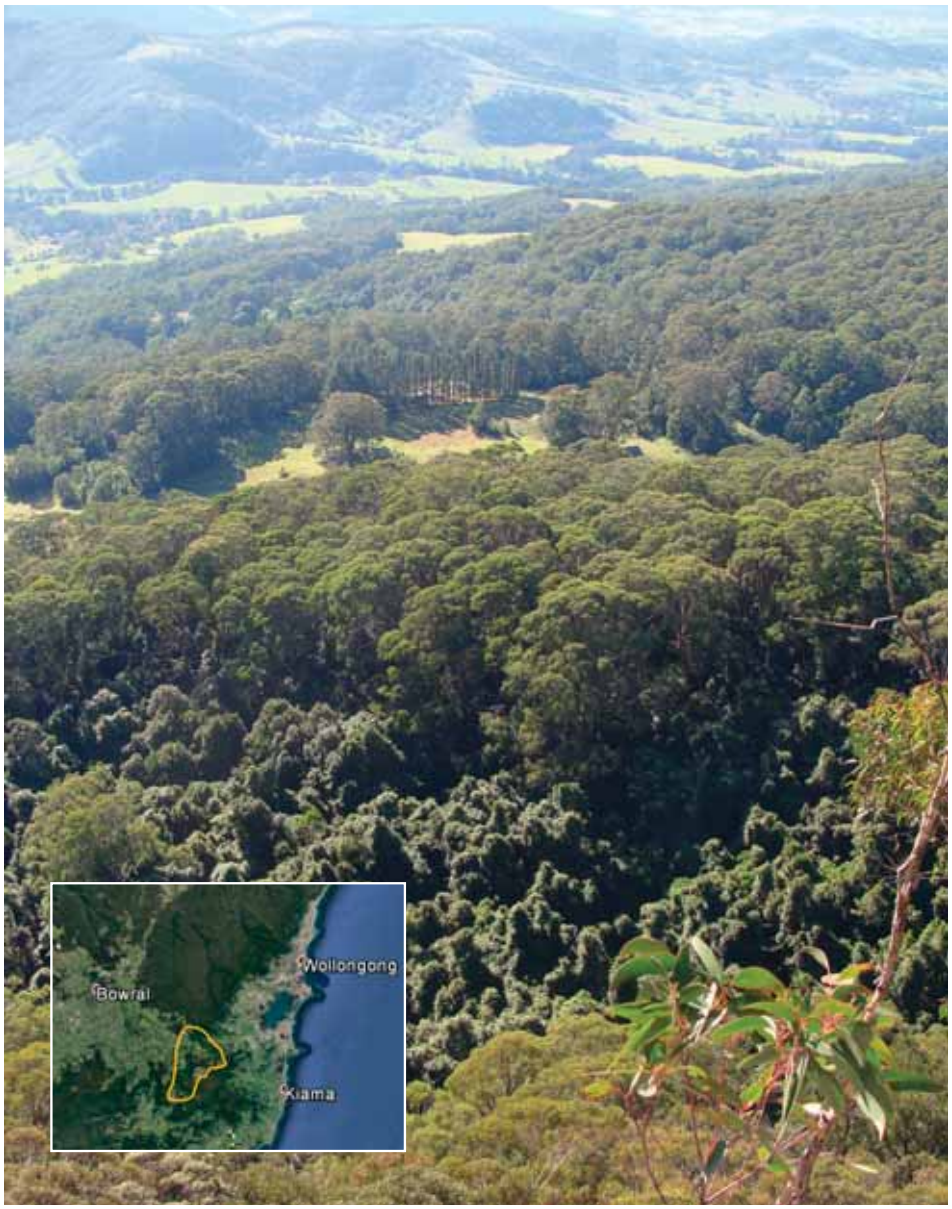
Pinch Point

Studies on the Illawarra Escarpment, Coastal Plains and Plateau areas have identified a rich and diverse mix of native animals including 40 animal species listed as threatened with some species that are only found along the Escarpment. The rainforests and moist eucalypt forests of the escarpment are recognised high-quality habitat for the sooty owl, stuttering frog, Australian brush-turkey, logrunner, grey-headed flying fox, spotted-tailed quoll, long-nosed potoroo and Highland's forest skink, just to name a few.

Some of the forests of the Illawarra Escarpment and plateau areas are well represented in a number of formal conservation areas that provide significant refuge for native plants and animals. However, there exist significant gaps between the conservation areas and the habitat that supports this rich biodiversity which is at its thinnest point regarding connectivity between Sydney and the Victorian border. Without connected corridors and effective pest species control, many of the rare and threatened species will become increasingly isolated, and their populations and genetic diversity will also decline.

A partnership approach

Increasing habitat connectivity and reducing feral animal impacts is, therefore, a vital part of the strategy to 'thicken' this thin green line, particularly in the face of climate change. The project is part of the NSW Environmental Trust Bush Connect program which will run from 2016 to 2026 (the first six years are funded). It involves a consortium



Thin Green Line project location – a pinch point in the Great Eastern Escarpment.

of community, government and organisational partners including lead partner the National Parks Association of NSW (NPA), Wingecarribee Council, South East Local Land Services (SELLS), University of Wollongong, Illawarra Aboriginal Land Council, NSW National Parks and Wildlife Service (NPWS), Office of Environment and Heritage (OEH) and landholders.

The Thin Green Line project engages landholders through workshops, training opportunities and funding assistance for stock fencing materials, tree planting and weed control. Another important component of the project is landholder education about the existence and impacts of foxes and feral cats on native animals.

New partner

In early 2017, the Thin Green Line project attracted the attention of a new partner, the Australian Wildlife Society. The Society's board of directors approved additional funding of $5,000 to purchase fox and feral cat traps and deliver workshops between June and September 2017. Thirty-two landholders attended the workshops which were delivered jointly by SELLS (the vertebrate pest animal component) and the NPA (the motion cameras component). We were delighted when one of the motion cameras captured a threatened long-nosed potoroo on a property north-east of Robertson. Foxes were also


The brown antechinus, also known as Stuart's antechinus and Macleay's marsupial mouse, is a species of small carnivorous marsupial of the family Dasyuridae.

captured in the majority of cameras, and this has led to a more intensive engagement of landholders in feral animal control in this area.

Many of these landholders will take up the use of traps because, for a variety of reasons, not all of them can use baits for fox or rabbit control. However, the traps will be a good option for them, and they will join other landholders who have also attended training workshops east of the Robertson area in recent years. The fox control effort will be truly landscape scale with the involvement of the SELLS Feral Fighters program and the OEH Quallidor project which is another partnership with landholders operating within and extending for a one-kilometre buffer around Budderoo National Park and Barren Grounds Nature Reserve.

Consistent message

When considering what the project success would look like, we would see a trend of fewer feral animals across the Thin Green Line landscape with a corresponding increase in threatened species population numbers and distribution. But it is difficult to monitor threatened species because there are so few of them. One way to measure success is to monitor more common ground-dwelling native species including bush rats, brown antechinus, long-nosed bandicoots and some of the arboreal mammals such as sugar gliders and ring-tailed possums. Researchers from the University of Wollongong are involved in this. Landholder records of the number of feral animals controlled is another way to measure success. While this can be done with baiting programs, trapping and shooting records tend to be more accurate.

Given the range of different partners involved in the project, it is important that project messages are promoted and delivered consistently. To this end, people are reminded that feral animal control is every landholder's responsibility. There has never been a better time to get involved in pest animal management, and landholders are asked to choose their preferred method of feral animal control. Whatever the methods used, the important thing is to be involved and to continue to be involved seasonally for a number of years in a coordinated effort with others in the same landscape at the same time. This will provide the best results.

Cat traps are made available to private landholders.


National Parks Association and Local Land Services training local farmers how to dispose of feral cats, dogs, foxes and rabbits to save our native animals in and around Barren Grounds Nature Reserve and national parks.

The long-nosed potoroo is a species of potoroo. These small marsupials are part of the rat-kangaroo family.

Long-nosed potoroo captured by motion camera near Robertson in August 2017.

The stuttering frog is a large species of frog that inhabits temperate and subtropical rainforest and wet sclerophyll forest in Australia.

Get involved

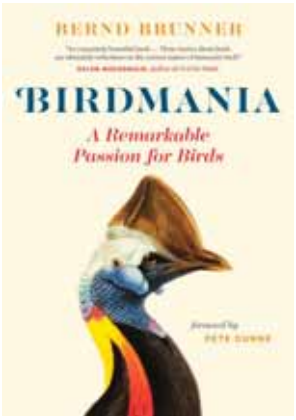
Target areas for the project are Mount Murray, Macquarie Pass, Tongarra, Robertson, St Anthonys, Bells Hill, Knapsack Hill, Pheasant Ground, Knights Hill, Jamberoo Mountain and Upper Kangaroo River Valley areas.

Landholders who would like to get involved or who would like further information are encouraged to contact project officer David Rush on 0418 977 402 or davidr@npansw.org.au.

To attend a pest animal control training course, contact Charles Signorelli on 0418 241 251 or email: charles.signorelli@lls.nsw.gov.au

Editor's note: David Rush started his conservation career with the National Parks & Wildlife Service (NPWS) and worked as a ranger and senior ranger with the ACT Parks and Conservation Service. He has also worked with various local and state government agencies including the NSW Rural Fire Service and NSW Crown Lands, and also dabbled in environmental consultancy work for Shoalhaven Council, NPWS and private enviro companies. David has been a tour guide for BridgeClimb, enjoys growing fruit and vegetables and has been involved karate for over 20 years. He has a Bachelor of Applied Science and currently coordinates the Thin Green Line and Berry Bush Links Bush Connect projects with partnership consortiums in the Illawarra–Shoalhaven GER Region.

Book Reviews



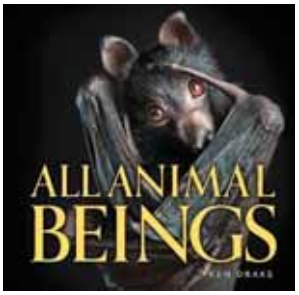
***Birdmania: A Remarkable Passion for Birds* by Bernd Brunner**

A window on the world of birders-obsessive, passionate, quirky, and always interesting.

Like bird watching itself, reading *Birdmania* is filled with surprises and a sense of discovery. But in this collection it is the watchers, not the birds, who are on display – ornithologists and bird lovers of every description, revealed in sketches and anecdotes that are quirky, intriguing, and always affectionate. Highly enjoyable. – Thor Hanson, author of *Feathers: The Evolution of a Natural Miracle.*

An exquisitely beautiful book...These stories about birds are ultimately reflections on the curious nature of humanity itself.

Publisher: Allen & Unwin
RRP: $34.99



***All Animal Beings* by Ken Drake**

What a gorgeous book, filled with portraits of some of the most character-filled beings! You could frame every photograph and feature them on your wall. All animal beings have their own unique personalities, they share our emotions, they share our fears, and they share our love. For many years we were taught that animals were mere automatons, driven purely by instinct. Only recently, in the last couple of decades, has science really caught up with what animal lovers have known for centuries and probably since the dawn of humanity. We forget that our raw emotions of love, lust, hate, hunger, happiness and fear are shared with each mammal and bird on the planet.

Publisher: New Holland Publishers Australia
RRP: $49.99

Australian Wildlife Society

(ACN 134 808 790)

Formed in 1909 and dedicated to the conservation of Australia's wildlife

Patron: His Excellency General the Honourable Sir Peter Cosgrove AK MC (Retd)
Governor-General of the Commonwealth of Australia

Australian Wildlife Society
Conserving Australia's Wildlife since 1909

109th ANNUAL GENERAL MEETING
AGENDA

Wednesday 7 March 2018
Commencing at 11.30am

1st Floor Meeting Room, 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 108th Annual General Meeting held on Wednesday 1 March 2017.
4. President's Report for 2017.
5. Treasurer's Report for 2017. Receive and adopt the Balance Sheet and Income and Expenditure of the Society for the year ending 31 December 2017 in accordance with our Constitution.
6. Election for the Board of Directors of the Society:
    a) Noel Cislowski retires in accordance with the Constitution (10.3) and will not stand for re-election
    b) Sash Denkovski retires in accordance with the Constitution (10.3) and being eligible, offers himself for re-election
    c) Ken Mason retires in accordance with the Constitution (10.3) and being eligible, offers himself for re-election
    d) Election of vacant office in accordance with the Constitution (10.2)
7. Appoint the Auditors for 2018 - John Dickie and Co
8. Closure.

Issued by authority of the Board of the Wildlife Preservation Society of Australia Limited Trading as Australian Wildlife Society.

Patrick W Medway AM
HONORARY SECRETARY/CHIEF EXECUTIVE OFFICER
15 January 2018

All members are cordially invited to attend the annual President's luncheon at the conclusion of the Annual General Meeting.

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

Tel: 02 9556 1537 **Mob:** 0402 435 049

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

Australian Wildlife Society
Conserving Australia's Wildlife since 1909

Directors of the Board of the

Australian Wildlife Society

Cordially invite you to the

ANNUAL LUNCHEON

of the Society

Wednesday 7 March 2018
Commencing at 12 noon

in

Cellos Restaurant
Level 4, Castlereagh Inn Boutique Hotel
169 Castlereagh Street Sydney

RSVP by 25 February 2018. Booking and prepayment essential

Acceptance form:

I am pleased to accept your kind invitation to the Annual Luncheon.

$.....for ..... Tickets at $65 per person
2 course - main, dessert and coffee. Wines, beer and soft drink included.

Name ..... Address.....

..... Email .....

Cheques can be mailed to:
Australian Wildlife Society
PO Box 7336
Mt Annan NSW 2567
Telephone (02) 4647 7420 with credit card details.

Direct debit:
Australian Wildlife Society
BSB: 062 235
Account No: 1069 6157
Confirm details via email at info@wpsa.org.au

Visit the Australian Wildlife Society website at www.aws.org.au to find out the latest on what is happening in our fight to preserve Australia's unique wildlife

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 7336
MT ANNAN NSW 2567

Email: accounts@aws.org.au
Telephone enquiries to: (02) 9556 1537

You may also commit by visiting www.aws.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)

Regular Payment can be made by EFT

BSB: 062 235
Account No: 1069 6157
Account Name: Australian Wildlife Society

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 write to PO Box 7336, Mt Annan NSW 2567 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

Membership

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

Australian Wildlife Society
Conserving Australia's Wildlife since 1909

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: $2,000

(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)

☐ Direct Debit ☐ 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 7336, MT ANNAN NSW 2567.
Email: accounts@aws.org.au Website: www.wpsa.org.au
Tel: (02) 4647 7420

Direct debit: **BSB:** 062 235
Account No: 1069 6157
Account Name: Wildlife Preservation Society of Australia trading as the Australian Wildlife Society

Membership Hotline: Mob: 0424 287 297

Note: All cheques to be made out to the Australian Wildlife Society

Consider - A Bequest

Another way which you can support the work of the 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 trading as the Australian Wildlife Society 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 trading as the Australian Wildlife Society.

"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.

Photo: Doug Gimesy