

BUSH TRACKS

Bush Heritage Australia's quarterly magazine for active conservation



The Arafura Swamp Rangers

Bush Heritage and Traditional Owners are proudly working in partnership to return the Arafura Swamp region to good health.

Stretching across 70,000 hectares of Arnhem Land is one of northern Australia's largest freshwater ecosystems, the Arafura Swamp or *Gurruwiling*. Here, you'll find peeling paperbark trees, glossy green water lilies, Barramundi, turtles, crocodiles, and, in the wet season, as many as 300,000 birds.

The Yolngu and Bi people of *Gurruwiling* are intricately tied to this landscape and it to them. It is their supermarket and

freshwater supply, and the classroom in which they learn lessons passed down from their ancestors. In return, they keep this country healthy: controlling weeds and feral animals, minimising the threat of damaging wildfires, and working to mitigate saltwater intrusion. But just as those threats are becoming more pressing, there are fewer people on country to control them.

"A long time ago, when the dry season came, we would be going out to hunt for goanna and burning patches here and there to get our food," says Arafura Swamp senior ranger Solomon O'Ryan. "That practice collapsed ... If you look at

the new world now, we see everyone in town."

Solomon is part of a partnership that's helping to return people to country, while also building environmental, cultural and socio-economic sustainability across the region. Recently, that partnership resulted in the Arafura Swamp Rangers Healthy Country Plan 2017-2027.

Incorporating the combined knowledge of 33 Yolngu and Bi clans, the plan

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Above: ASRAC sea ranger Florence Birdjala. Photo by Daniel Hartley-Allen



Left: A Black-necked Stork on Arafura Swamp. Photo by Daniel Hartley-Allen

Right: Feral buffalo threaten the health of the Arafura Swamp region. Photo by Daniel Hartley-Allen

From the CEO



I'm often asked: What difference will losing one species make in the overall scheme of things? But I feel the real questions are:

What value do we place on the diversity of life? And are we willing to risk losing that diversity because of our inaction?

In this edition, we speak with renowned ecologist Prof. Lesley Hughes. The antithesis of inaction, Lesley was the keynote speaker at the Women in Conservation Breakfast, which we jointly hosted in early March with Trust for Nature. In *Weathering the change* (pp. 4-5), her passion is palpable as she warns of a future in which many native species will find their environments increasingly uninhabitable.

I'm proud that the actions of Bush Heritage's conservation community are helping to give native plants and animals the best possible chance

at adapting to climate change. By increasing Australia's network of protected areas, reconnecting habitats, and returning the bush to good health, we're tipping the odds in the favour of our native species.

Equally as important as our on-and off-reserve work is the support we offer to others through our Aboriginal Partnerships program, such as the Arafura Swamp Rangers Aboriginal Corporation. Indigenous communities have been caring for this land for tens of thousands of years and have developed solutions to many of the environmental problems we face today. Yet, these same communities will be among the hardest hit by climate change. It is vital they are well-resourced and supported to face that threat, and others.

Also in this issue, we head to Pullen Pullen Reserve, Qld, (pp. 6-7), where a new research project promises to give us a greater understanding of the threat that feral cats pose to Night Parrots. The recent sighting of a young Night Parrot on Pullen Pullen only emphasises how vital our continued threat management is to the survival of these endangered birds.

A handwritten signature in brown ink, reading "Gerard O'Neill".

Gerard O'Neill, Chief Executive

In this issue

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Ecologist and Climate Councillor Prof. Lesley Hughes discusses how many of our native species will soon find their environments uninhabitable due to our rapidly changing climate.

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Above: ASRAC sea rangers Brendon Warrinyinba Gaykamangu (L), Florence Birdjala (R), and senior ranger Solomon O'Ryan (C). Photo by Daniel Hartley-Allen

Below: The Arafura Swamp Rangers Healthy Country Plan 2017-2027

is a roadmap for the Arafura Swamp Rangers to manage 1.2 million hectares of land and sea under the auspices of the Arafura Swamp Rangers Aboriginal Corporation (ASRAC).

Formed in 2013, ASRAC has partnered with Bush Heritage Australia and others to build its profile, strengthen its governance structures and develop its Healthy Country Plan.

“Bush Heritage’s role in this collaboration is about bringing in additional resources to strengthen ASRAC and enable its work,” says Peter Saunders. As Bush Heritage Healthy Country Manager for Arafura Swamp, Peter is based in the township of Ramingining, on the edge of *Gurruwiling*, where he is now strengthening ASRAC’s capacity to achieve its healthy country goals.

The Arafura Swamp Rangers’ work is focused on reducing threats to the key targets identified in their Healthy Country Plan. Of those threats, feral buffalo are one of the most damaging. They spread weeds, trample wetlands, increase erosion, and open up channels that enable seawater to intrude on freshwater ecosystems.

“There are lots of feral animals doing big damage to this area,” says Solomon.

“We used to have lots of water lilies, now it’s just dirty water.”

Currently, an external party is contracted to carry out regular buffalo mustering in the region, but it’s hoped ASRAC will have greater control and input into such contracts in coming years.

Another major part of the rangers’ work involves implementing right-way fire to lessen the impact of late-dry season wildfires in the September to December storm season. In doing so, they contribute to reductions in Australia’s carbon emissions, earning them about \$1 million a year in carbon credits through the Commonwealth Government’s carbon abatement program. That money funds vital management activities such as consultations, fire control and equipment purchases, while also building the local economy.

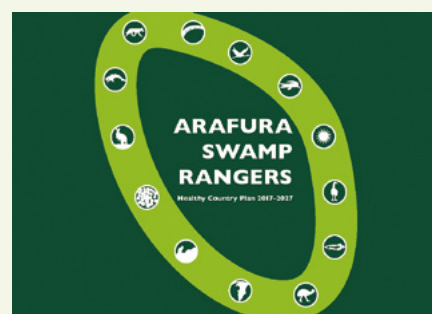
It is a glimpse of what is possible with a strong, stable and well-resourced ASRAC.

“Bush Heritage has a long-term commitment to this partnership, and we are dedicated to supporting ASRAC as it works towards its healthy country goals,” says Peter.

“One of the biggest threats to country and culture in this region is the ever-changing nature of the political and

funding environment that these communities are trying to operate in. We are providing this corporation with consistent support, which contributes to the Arafura Swamp rangers’ delivery of long-standing environmental outcomes.”

Bush Heritage has 24 Aboriginal partnerships across Australia. For more information about our Aboriginal Partnerships program, visit our website.



One of Australia’s largest and most valuable freshwater ecosystems is at threat.

Working together, we can help return Arafura Swamp to good health.

Please join us in this powerful partnership. Donate now.

www.bushheritage.org.au/donate



Weathering the change

Prof. Lesley Hughes is much more than your average climate change expert, for she hails from that ever-so-rare breed of scientists that allow the world to see the passion and emotion driving their work.

An ecologist and Pro Vice-Chancellor at Macquarie University, Lesley studies the impacts of climate change on species and ecosystems. In her 'spare' time, she is a councillor for the publicly-funded Climate Council of Australia, while also contributing her expertise to bodies such as the Wentworth Group of Concerned Scientists.

Speaking to us ahead of the seventh annual Women in Conservation Breakfast, jointly hosted by Bush Heritage and Trust for Nature, Lesley explained why, after more than 25 years, she is still deeply rooted in this research area.

Lesley: The thing about working in climate change is that once you get into it you never get out of it – it's a bit like the Hotel California. The more you find out, the more of a moral imperative it becomes to stay. I got into it more than 25 years ago and I've never left because it is, for me, the most important issue that I could be working on. Morally, I don't see I have a choice.

Bush Heritage: You once said your main fear for the future was 'species extinctions'. What did you mean by that?

Lesley: All organisms on the planet exist in a certain range of physical conditions such as temperature and water availability. Basically, climate determines where everything lives and how everything lives – it's fundamentally important to all life on Earth. We know the climate is changing very rapidly and many species are already being negatively affected. The inevitable upshot of that rapid change is that many species will find themselves in environments that are no longer liveable. If they can't adapt where they are or move somewhere more suitable, extinctions will necessarily follow.

Bush Heritage: What are the key actions we should be taking to help those species adapt?

Lesley: I'm a great advocate of seriously considering moving many species to new places, especially species that are clearly going to go extinct if they stay where they are now. But there's a lot of resistance to that idea.

We need to be strengthening and extending our protected area system to increase habitat availability and build resilience in species populations.

We also need to protect places that are going to be refuges for species in the future, and we need to look at creating new habitat in places - sometimes in places where that particular habitat has not existed before.

Business as usual – where we just try to conserve everything where it has been historically – is not an adequate approach when our climate is changing so rapidly.

Bush Heritage: What can everyday people do to make a difference?

Lesley: We can think about our own individual footprint and be aware that everything we do has an impact on the planet, and try to minimise that impact as much as possible. There's a lot of environmental tokenism around. People think: 'well, as long as I put my recycling in the recycling bin, that's enough.' And then they'll get into their four-wheel-



*Above: Boolcoomatta Station Reserve, SA.
Photo by Peter Ashton*

*Below: Prof. Lesley Hughes, as
photographed for the 'Scared Scientists'
photo exhibition. Photo by Nick Bowers/
nickbowers.com*

drive and roar off to the shops. We need to start thinking holistically about the net impact of living on the planet and trying to minimise that.

There are also lots of things individuals can do for little or no money. Actions like installing solar panels or buying green power are great, but they're not within the capacity of many individuals financially. We all just have to do what we can.

For people who want to do more, my best suggestion is to join a network of like-minded people and draw strength from others, because I think it can be a pretty lonely and frustrating path just trying to do it all by yourself.

*For the full conversation
with Lesley, see our website:
www.bushheritage.org.au/blog*





Eye in the sky

On Charles Darwin and Eurardy reserves in Western Australia, the innovative use of a remote sensing technology is marking the start of a new era in Malleefowl monitoring.

For Dr Vanessa Westcott, spotting an elusive Malleefowl bird is matched only by the prospect of contributing to the development of a technology that could improve the conservation of this threatened species.

Vanessa, a Bush Heritage ecologist, is the heart and brains behind a monitoring project using Light Detection and Ranging (LiDAR) to identify Malleefowl nesting mounds on Bush Heritage reserves.

“You have this device that allows you to navigate right to a possible Malleefowl mound,” says Vanessa. “As you get closer the anticipation builds: ‘will it be active? Maybe I’ll even see a bird’. It’s kind of addictive.”

Thanks to LiDAR, Bush Heritage has identified 82 new mounds on Charles Darwin Reserve and 20 new mounds on Eurardy Reserve, in Western Australia. It will now monitor those mounds annually for signs of activity, helping to inform both regional and Australia-wide Malleefowl population records.

LiDAR technology itself isn’t new – it has long been used for everything from mapping the ocean floor to assisting in emergency response situations – but its application for ecological monitoring is an emerging field.

To monitor for Malleefowl, LiDAR is attached to the underside of a light plane which is then flown over areas of Malleefowl habitat. During flight, light in the form of pulsed laser is used to map the Earth’s surface. That information is then passed through an algorithm which identifies the distinctive profiles of Malleefowl mounds.

The GPS coordinates of those potential mounds are then downloaded onto a smart phone, which Bush Heritage volunteers and staff can use to verify, or ‘ground-truth’, the mounds on foot.

The technology has dramatically improved both the efficiency and effectiveness of Bush Heritage’s Malleefowl monitoring. Charles Darwin Reserve, tucked away on the northern edge of the West Australian wheatbelt, contains the dense, long unburnt shrublands that Malleefowl prefer, making it something of a Malleefowl hotspot. But while

the thick scrub provides the birds with cover and protection, it also makes finding and monitoring their mounds a difficult and somewhat scratchy task. Eurardy Reserve’s York Gum woodlands and thick acacia scrub present a similar problem.

“We used to search for mounds by getting a large group of people together, putting them in a line and walking through the bush,” says Ben Parkhurst, Bush Heritage ecologist for the Western Rangelands. “It was hot and time-intensive work in scratchy, thick scrub, and there was no guarantee you’d find anything.”

The use of LiDAR has led to collaborative work between Bush Heritage and many of its regional neighbours, as well as local organisations like the North-Central Malleefowl Preservation Group.

It is also contributing data to a National Adaptive Management Project, developed by the National Malleefowl Recovery Team and University of Melbourne, which is assessing the impact of feral predator control methods on these unusual birds.



Opposite: A Malleefowl on its mound.
Photo by Jiri Lochman/Lochman
Transparencies

Above: A Malleefowl mound in Western
Australia. Photo by Jiri Lochman/
Lochman Transparencies

Below: 3D images of a Malleefowl
mound generated through LiDAR.

Malleefowl are ground-dwelling birds that are known for building mounds up to five metres wide and one metre high. They fill these mounds with leaf litter, which decomposes and creates heat to incubate the eggs.

Once born, chicks push through the leaf litter and head out into the world on their own, making them an easy target for foxes and feral cats.

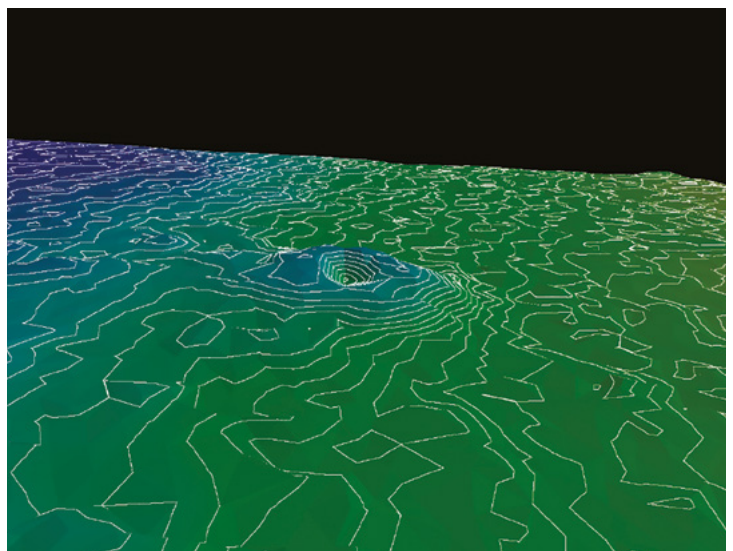
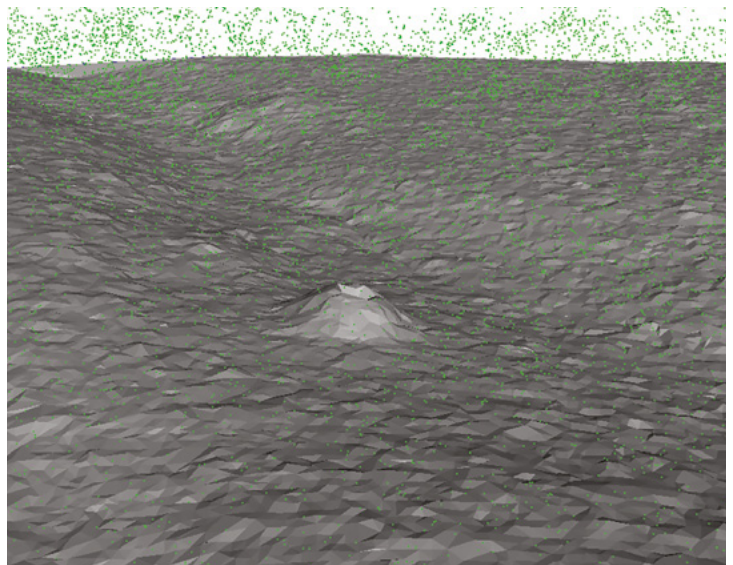
Land clearing, altered fire regimes, competition from introduced herbivores and habitat fragmentation are also major threats to the species, which is listed nationally as vulnerable.

Due in large part to their elusive nature, relatively little is known about Malleefowl populations in Australia, aside from that they've broadly declined. But projects like this one are beginning to change that.

"We're now collecting information that will tell us whether or not we are doing the right thing, and how we can improve our management of Malleefowl," says Vanessa.

"Unless you collect all the right information, you can't be adaptive and smart in your management. Bush Heritage is leading the way in using new techniques to be more efficient and effective on the ground so that we can continue to make good decisions."

Bush Heritage's use of LiDAR on Charles Darwin Reserve was supported by the Gunduwa Regional Conservation Association. LiDAR on Eurardy has been completed thanks to support from the WA Department of Biodiversity, Conservation and Attractions, as well as the Northern Agricultural Catchment Council and National Landcare Program.





Creatures of the night

On Pullen Pullen Reserve, the age-old adage of ‘cat vs dog’ is playing out to the benefit of Night Parrots and other native species.

In 19th century France, a physician by the name of Paul Broca divided the world’s animals into two categories: the smellers and the non-smellers. Dogs, along with most other mammals, fell into the former category, and humans into the latter.

Today, much of Paul’s thinking has been debunked, but what has held true is the extraordinary smelling ability of dogs. With around 50 times more smell receptors and 40 times more brain space devoted to processing scents than humans, they are natural-born sniffers.

“A dog’s sense of smell is so incredibly acute that they can pick up on the minutest of scent particles,” says Bush Heritage volunteer Shane Jackson. “They’ll find things we don’t even know exist.”

Recently, Shane and his feral cat detection dog Annie ventured out to Pullen Pullen Reserve in western Queensland, where feral cats are thought to pose a dangerous threat to the resident population of endangered Night Parrots, as well as many other native animals.

The nose knows

Over five days and nights, Shane and Annie patrolled Pullen Pullen’s border fences, watercourses, sandstone plateaus and spinifex plains looking for cats. At 56,000 hectares, there’s a lot of space for cats to hide from Shane’s keen eyes, but avoiding Annie’s sensitive snout is not so easy.

“Cats are stealthy, and if disturbed they will go into hiding and disappear,” says Bush Heritage Healthy Landscape Manager Dr Alex Kutt. “But with a dog like Annie you’re conducting a scent-based search, so you’re not relying on visual clues.”

Annie, a two-year-old Catahoula, has been trained not to kill feral cats, but rather to track them and hold them in one spot, much like a sheepdog corrals sheep.

“That’s the other advantage of using a dog – it means we can find, catch and collar cats to track their movements around Night Parrot habitat, which is what we want to do,” says Alex.

The bigger picture

In many ways, managing for feral cats is the same as managing for a threatened species: before you begin, you need to have a good understanding of where the species lives, what habitat it prefers, how it uses the landscape and which other species it is interacting with. Without that knowledge, your management could have unintended consequences.

“What we don’t want to do at Pullen Pullen is to go in there willy-nilly and shoot cats for the sake of it,” says Alex.

“We know cats are there and we know predation is a threat to Night Parrots, but we need a much better understanding of the nature of that threat, and how cats interact with other predators, like dingoes.”

For that reason, Bush Heritage is embarking on a project that will see us track and map feral cat activity on Pullen Pullen, with support from the Threatened Species Recovery (TSR) Hub of the Australian Government’s National Environmental Science Program. And when that project



Opposite: Bush Heritage volunteer Shane Jackson and his Catahoula dog Annie. Photo by Leanne Hales

Above left: Annie bails up a feral cat on Pullen Pullen Reserve. Photo by Shane Jackson

Above right: A feral cat caught on a motion-sensor camera.

Below: Creeklines on Pullen Pullen Reserve, Qld. Photo by Wild Vista Digital Productions

starts, cat detection dogs such as Annie will be vital to its success.

“We want to find out what parts of the reserve feral cats show a preference for: are they staying near creek lines and in the timber? Or do they prefer spinifex country? Are they active near Night Parrot nests or the feeding grounds?” he says.

Following the collection of a live specimen in 1912, no live Night Parrots were sighted for almost

100 years, leading most scientists to presume the species extinct. So, when the population on what is now Pullen Pullen was discovered in 2013, Bush Heritage immediately began negotiating with the Queensland government to transfer the land’s pastoral lease into its own name.

Today, Bush Heritage is working with the Night Parrot Recovery Team, the University of Queensland’s Green Fire Science Lab, and the TSR Hub to learn

more about the Night Parrot’s biology and threats to its survival, while also protecting other native species that call the reserve home.

The upcoming project with the TSR Hub will help to fill critical gaps in our knowledge of the species, ensuring our management strategies give these mysterious birds the best chance at survival and recovery.





Above: A young Night Parrot photographed on Pullen Pullen Reserve in December 2017. Photo by Nick Leseberg

Opportunistic breeders

The Smithsonian Institution has described the Night Parrot as ‘one of the world’s most elusive birds’, but researchers are slowly beginning to piece the Night Parrot puzzle together.

In December last year, one of those researchers captured photographs of a young Night Parrot on Bush Heritage’s Pullen Pullen Reserve in western Queensland. University of Queensland PhD student Nick Leseberg estimated the parrot was two-to three-months-old at the time, meaning it likely hatched around early September.

“This suggests that Night Parrots were still breeding at least seven months after the last substantial rain had fallen, and following a very dry year,” says Nick.

“This recent sighting is a really important discovery. It means that even when conditions don’t seem that good, the birds might be trying to breed.”

Pullen Pullen, named after the Maiawali Traditional Owners’ word for Night Parrot, is a 56,000 hectare property identified as being home to one of the only known Night Parrot populations in the world.

These nocturnal, ground-dwelling birds are famous for avoiding detection. From 1912, there were no confirmed sightings of live Night Parrots for nearly 100 years.

Then, in 2013, naturalist John Young discovered the population on what is now known as Pullen Pullen Reserve. Bush Heritage immediately set about purchasing the land with support from the Pullen Pullen Founders Circle and the Queensland government.

Nick Leseberg, whose Night Parrot research is funded by Bush Heritage, is helping to uncover the conditions in which Night Parrots are likely to breed, and where they’re likely to be found.

“We need to ensure that whenever the birds are breeding, we are giving their young the best chance of survival. Ongoing management, particularly of potential predators like cats, is critical to achieving that,” he says.

Nick’s research builds upon that of Dr Steve Murphy, Australia’s foremost expert on the Night Parrot. “When Steve started his research we knew almost nothing about Night Parrots; it was arguably the world’s most mysterious species. He spent three years generating a way to go about researching these birds, and I’m just trying to build on that foundation,” says Nick.

Bush Heritage Australia acknowledges the Traditional Owners of the places in which we live, work and play.

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Bush Heritage online



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www.bushheritage.org.au/blog

The residents of Fan Palm

Motion-sensor cameras were recently put out for the first time on Fan Palm Reserve in the Daintree area of far north Queensland. Retrieved after one month in situ, the cameras gave a clear and at times comical insight into the residents of this rainforest paradise. Species recorded include a young Southern Cassowary, Orange-footed Scrubfowl, Dingo, Musky Rat-kangaroo and Long-nosed Bandicoot.



Chereninup Creek reveals its secrets

Botanist Libby Sandiford and Bush Heritage ecologist Angela Sanders recorded 562 native plant species during 2017 surveys of Chereninup Creek reserve, including two possible new species. As part of the Fitz-Stirling group of reserves in the south-west of Western Australia, Chereninup Creek sits in one of the world's 35 'biodiversity hotspots' – areas with large numbers of species found nowhere else, and which are heavily threatened. Seventy-seven of the species recorded in the most recent surveys have not been observed on any of the other Fitz-Stirling reserves in the region, while at least two areas qualify as threatened ecological communities.

Lazy Spider Orchid (Caledonia multiclavia).
Photo by Libby Sandiford



Being part of the solution

In December last year, over 15,000 scientists from 184 countries signed an ominous *World Scientists' Warning to Humanity: A Second Notice*, a follow-up to their first letter published in 1992. Included in this letter were 13 suggested strategies for restoring Earth's balance and transitioning to a more sustainable way of life. In this blog post, Bush Heritage Chief Executive Gerard O'Neill reflects on how, thanks to your ongoing and generous support, Bush Heritage is already actively implementing six of those strategies, in particular: 'prioritizing the enactment of well-funded and well managed reserves' and 'restoring native plant communities at large scales'.

A volunteer helps to revegetate Scottsdale Reserve, NSW. Photo by Annette Ruzicka





Above: Whistling Ducks on the billabong, Arafura Swamp. Photo by Daniel Hartley-Allen

Visit a Bush Heritage reserve

This year, give yourself a holiday like no other and take a trip to one of our many reserves across the country. For a full list of 2018 visitation opportunities, please visit our website www.bushheritage.org.au/places-we-protect/visit.

Self-guided day visits

All year round, weather dependent

- Kojonup, WA
- Chereninup Creek, WA
- Liffey Valley reserves, Tas.
- Reedy Creek, Qld
- Currumbin Valley, Qld

Camping

Booking required

- Charles Darwin, WA, April to October
- Carnarvon Station, Qld, May to September

Please note that Boolcoomatta campground will be closed in 2018 for management reasons.

Station Stay

Various accommodations, booking recommended

- Hamelin Station, WA, mid-March to mid-October

Guided tours

Bush Heritage and third parties operate tours on our reserves throughout the year. Please check our website for up-to-date details.

Thank you

Thank you to the many supporters who have generously donated to our work. A full list of those who have recently given in memory and in celebration is available on our website.

We gratefully acknowledge the following estates, whose lasting legacies will help ensure that both current and future generations can continue to experience the bush as we know it:

Kwok Paul Lee, Sheila Brown, Gretel Woodward, Elizabeth Constance Carr, Donald Blair Mackay, Jane Scragg, Patricia Naylor and Dr Ann Monica Murphy.



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