



Bush Heritage acknowledges the Traditional Owners of the places in which we live, work and play. We recognise the enduring relationships they have with their lands and waters, and we pay our respects to Elders, past and present.

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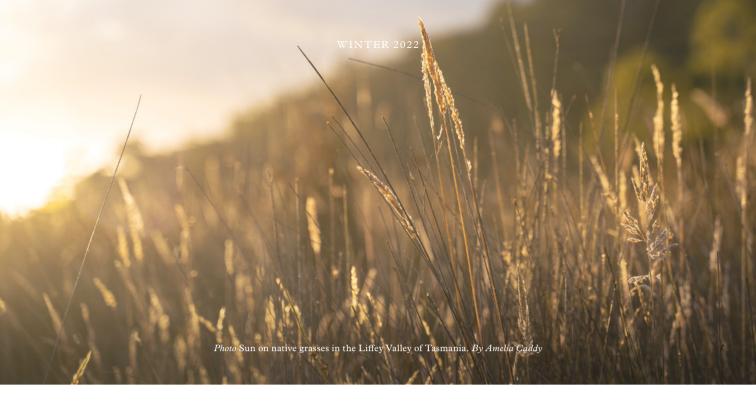


How aerial, controlled burning is utilising climatic conditions at Yourka Reserve on Jirrbal and Warrungu country in Queensland.

Page 10 — Fish River Station



A new fee-for-service model between Indigenous Land and Sea Corporation and Bush Heritage is supporting conservation at Fish River Station in the Northern Territory.



When I asked Bob Brown earlier this year what he would tell supporters about our recent acquisition of Glovers Flat on Palawa country in Tasmania, his words struck a chord. "The forest of Glovers Flat has come home to Bush Heritage," he told me.

"In a world losing its species so rapidly, and where fragmentation is death, this purchase gives a lifesaving integrity and wholeness to an expanse of the Liffey Valley's river-to-mountain ecosystem which is truly magnificent. Congratulations to every Bush Heritage supporter who has helped secure the White Goshawks nesting up there!"

This resonated for a few reasons. Firstly, it spoke to this idea of home. In 1991, the Liffey Valley was Bush Heritage's birthplace and its home. Over 30 years on, that term 'home' has grown significantly in meaning from the two forest blocks that set this organisation in motion—from the island to the mainland, we now work across more than 11 million hectares of land across this vast continent. This is more than a number; it represents home, for the countless birds, reptiles, mammals, plants and people that live in these landscapes and depend on them.

Secondly, it reinforced why our ambitious 2030 Strategy is so important. In a world facing many environmental challenges, our collective actions can be lifesaving and are integral.

Our landscapes are set to change – with increased extreme weather events, altered rainfall and changes to refugia predicted across the country – and we need to

change with them. As you will read in 'A path forward,' we have updated our Priority Landscapes model through in-depth research, climate modelling and analysis to identify three different areas: Resilient, Strengthen and Reconnection. These Landscapes determine where and how we will look to buy land and partner with others to make the biggest impact and to shore them up for future changes. And we are already on our way, with the purchase of three new reserves Ediegarrup, John Douglas Reserve and Glovers Flat.

Thirdly, it reiterated how important people are in this journey. Every inch of habitat that we protect was enabled by the generosity of our supporters, and every inch of land that we work across is done in tandem with others. Our Aboriginal partners guide our right-way approach through their custodianship of the land and deep intergenerational knowledge. And our partnerships with other landholders, such as farmers, takes a whole-of-landscape approach to protecting biodiversity and people.

I hope these pages will deepen your understanding of our work across the country, and light a fire in your belly, as they do in mine.



Heather Campbell

Chief Executive Officer

A path forward

Words by Amelia Caddy
Location across the country

As climate change pushes species and habitats to their limits, Bush Heritage scientists have developed a plan to increase their resilience – starting with three new reserves. Photo Red Moort and Ediegarrup Reserve with Stirling Ranges in the distance. Photo by Greenskills

"Knowledge is power," says Rebecca.

"I don't think we've got nearly

enough knowledge about the impacts

of climate change yet, but we do have

enough to start acting. We need to

build our toolbox now, so it's ready

when it's really needed."

The first thing you notice on Red Moort Reserve is the colour. Immediately surrounding this square of land on Noongar country in south-west Western Australia is the monochrome of crops and paddocks. But here, over 450 plant species paint the landscape in every colour imaginable.

This type of native habitat amidst farmlands is precious, but it's also vulnerable. If faced with climatic changes, bushfires, disease or predation from feral predators, animals could be left with little refuge to travel through safely. That will soon change though thanks to Bush Heritage's recent purchase of the neighbouring property, Ediegarrup.

Since 2016, Bush Heritage has focussed its conservation efforts on 'Priority Landscapes' - areas that were identified as being underrepresented in Australia's network of existing protected areas. As climate change progresses, however,

it's become increasingly clear that conservationists need to think strategically not just about where they work, but what those landscapes will look like in the future, and how they can be shored up for the changes to come.

For the past two years, Bush Heritage's Science and Conservation team, led by Dr

Rebecca Spindler, has been doing just that. Drawing on published research and climate data from the CSIRO, they gathered as much information as possible about the changes likely to occur within each of Bush Heritage's Priority Landscapes. Their analysis included everything from rainfall and temperature projections, to projected species changeover and areas of refugia. "Refugia includes rocky outcrops, crags, canyons, valleys and protected slopes which offer a natural buffer from extreme changes in temperature or water availability," says Rebecca. "Whatever biodiversity inhabits these areas; it has a better chance of surviving in a refugial area".

From this research, Rebecca and her team were able to divide Bush Heritage's Priority Landscapes into three categories -'Resilient', 'Reconnection' and 'Strengthen' - according to the severity of changes they would likely experience, and the best management strategies for minimising those impacts.

The 70-kilometre-wide expanse of land between the Fitzgerald River and Stirling Range National Parks, known locally as the Fitz-Stirling - one of Australia's great biodiversity hotspots, where Red Moort and Ediegarrup are located, was deemed a 'Reconnection landscape' under the climate change assessment. While widespread clearing for agriculture has left the Fitz-Stirling region heavily fragmented, the pockets of bushland that remain are home to a disproportionately large amount of biodiversity. But with some models indicating potential for up to 4 degrees of warming and a severe drop in winter rainfall by 2090 (potentially 40% decrease), some species may soon start to find themselves at the limit of what they can endure.

To help them adapt, Bush Heritage's strategy for this landscape is to reconnect those pockets of remnant vegetation. "We want to ensure that if species here need to move to find more appropriate shelter, nesting

sites or foraging habitat, that

they're able to do so through a connected landscape," says Alex Hams, Bush Heritage's Healthy Landscape Manager for the region.

Roughly two-thirds of the Fitz-Stirling region has already been connected, and the newly purchased 1067-hectare Ediegarrup Reserve fills in

another gap, linking Bush Heritage's Red Moort Reserve with the state-owned Corackerup Nature Reserve to the north and crown land to the east. It includes large tracts of remnant bush, but around 600 hectares of cleared land on Ediegarrup will need to be revegetated before the connection is complete.

Over the next year, Alex and his team will develop a revegetation plan outlining which species will be planted and where, based on factors such as soil type and slope orientation. "We've been able to establish well over 100 plant species into our nearby Monjebup revegetation, which is acclaimed within the industry as being very high standard, and we expect to do even better at Ediegarrup," says Alex. He and the team will work closely with Noongar Traditional Owners to ensure that culturally important species are incorporated into the mix. They also plan to trial new techniques aimed at restoring ground coverssomething which hasn't been done before on a large scale.

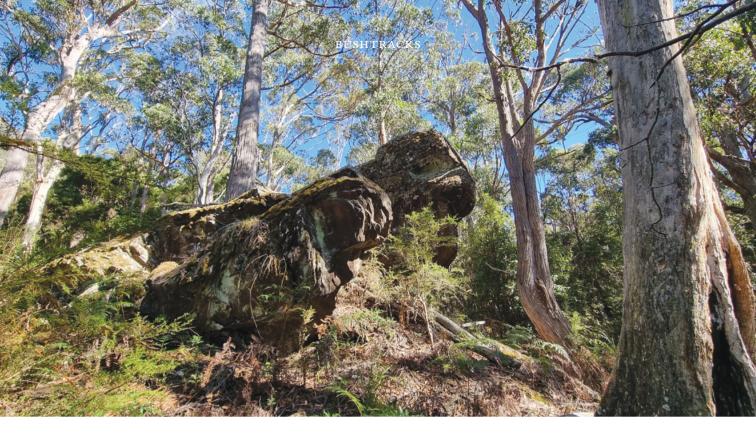


Photo A rocky outcrop at our new Tasmanian reserve, Glovers Flat. By Mike Bretz

The hope is that six years from now, Ediegarrup will be entirely returned to bushland in which native species are foraging, creating homes and, importantly, breeding.

Increasing connectivity is important all over Australia, but some landscapes – those classified as 'Resilient' in Rebecca and her team's analysis – contain large enough areas of intact habitat and refugia that they're already well-placed to weather the impacts of climate change.

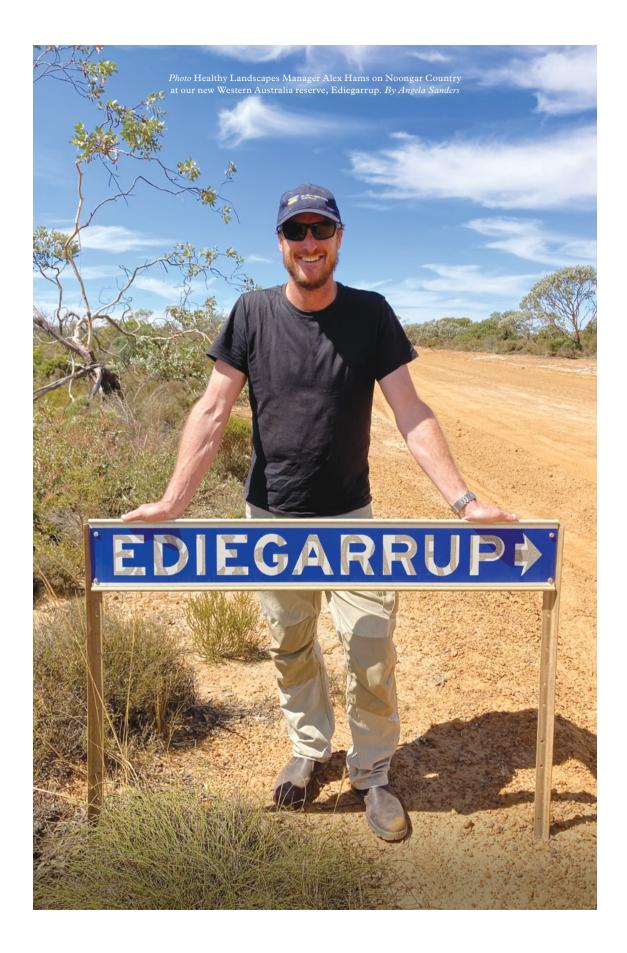
One such example is north-west Tasmania's Liffey Valley, Palawa country, where Bush Heritage recently acquired another new reserve to connect its Oura Oura and Drys Bluff reserves with the 1.5-million-hectare Tasmanian Wilderness World Heritage Area. This vast conservation estate boasts many microhabitats, contains significant refugia areas and will allow species such as Tasmanian Devils and Spotted-tailed Quolls to adapt to climate change in-situ. In 'Resilient Landscapes', Bush Heritage's priority is to increase the area of land under protection through new reserves and to build partnerships with existing landholders and Traditional Owners. Glovers Flat provided a golden and timely opportunity to connect our reserves and manage them as a unit.

In other areas – those under the third category of 'Strengthen landscapes' – species and ecosystems will need much more support to survive significant climatic shifts. Bush Heritage's new 185-hectare reserve in north-central Victoria, on *Djandak* (Dja Dja Wurrung country), falls into this category. Here, Bush Heritage will work with Dja Dja Wurrung people and researchers to generate and trial innovative management approaches.

The next step for Rebecca and her team is to use predicted likely changes right down to the individual property level, and to consider proactive rather than reactive management actions.

"Knowledge is power," says Rebecca. "I don't think we've got nearly enough knowledge about the impacts of climate change yet, but we do have enough to start acting. We need to build our toolbox now, so it's ready when it's really needed."

The purchase of Bush Heritage's new reserves Ediegarrup, Glovers Flat, and John Douglas Reserve was made possible through the support of the Alerce Trust, Mark and Jenny Harwood and a gift in memory of Kaethe Balkau, along with support from many passionate Bush Heritage donors.



Biodiversity on the books

Words by Bron Willis
Photo by Matthew Taylor
Location New South Wales

Ecologist Imogen Semmler is touring farms in NSW, to measure the health of farm ecosystems as part of Bush Heritage's emerging focus on working with farmers to increase biodiversity. Photo Ecologist Imogen Semmler assesses soil texture for Smart Farms project.

In Spring 2021, ecologist Imogen Semmler stood surrounded by granite boulders, astonished at the woodland she saw in front of her. "It felt really magical," she says. "The diversity of native plants was off the charts, more than anything I've ever seen."

The woodland was not part of a conservation reserve, but a mixed grazing-cropping farm in the Gulgong region of NSW, where farmer Col Seis has been caring for the woodlands for decades. Imogen was visiting the farm as part of her work assessing the overall ecological health of 50 farms as part of the Smartfarms Farm-scale Natural Capital Accounting project.

The Smartfarms project, led by Dr Jim Radford for La Trobe University, is just one of a number of Bush Heritage programs demonstrating its emerging focus on working with farmers to enhance biodiversity across 10 million hectares of agricultural land by 2030 through 'natural capital in agriculture' initiatives. With 58% of Australia used for agricultural production, the work that Imogen does with farmers like Col has huge potential to give many more native species and the habitats they rely on, a brighter future.

Imogen's goal is to articulate to farmers, the economic benefits of managing the natural assets of their farms; the native vegetation, soils, wildlife and water – and to accelerate a global shift of thinking towards seeing biodiversity as a benefit, rather than a cost.

"Farmers are interested to know how natural capital can contribute to and improve a farming system," says Imogen. "If your farm is eroded, for example, it won't be as productive. But if you have the data and knowledge to improve water flow, you can improve your farm's agricultural production, as well as outcomes for native species such as Platypus and native fish."

Angela Hawdon, Bush Heritage's Business Development and Strategic Projects Manager, is excited about the opportunity that programs like Smartfarms, and the latest Farming for the Future project with Macdoch and the National Farmers' Federation, offer in growing our understanding of the relationship between natural systems and production systems on a farm. This growing field of expertise is known as natural capital accounting.

"Natural capital accounting can help us understand the relationship between production and biodiversity," says Angela. "On one end of the spectrum you've got conservation reserves that exist to maximise biodiversity without monetary returns. At the other, you've got farms that focus 100% on agricultural production and high artificial inputs to earn income. These projects help to answer the question: 'Where's that sweet spot for farmers where nature has space to provide benefits for production?'"

While not all farmers have healthy productive woodlands like Col, the number of farmers seeking to improve the health of their farms is growing. Bush Heritage's farm assessments will give them powerful data to help them achieve their goals.

"You can't manage what you don't measure, and most farmers haven't put biodiversity on the books before. They've never measured how healthy their remnant vegetation is or asked, 'how much does the presence of native pest-eating birds in that remnant vegetation benefit the crops in nearby paddocks?""

Once Imogen's assessments are complete, she presents each farmer with a clear picture of the health of their farm, setting them up to take any number of next steps according to the results, including reviewing their practices to improve specific goals such as water flow, groundcover or soil health. Farmers who have healthy ecosystem function can also leverage the results to attract buyers who are willing to pay for their premium product, or ecosystem markets for carbon in planted trees.

"There are some incredibly enthusiastic brands who are keen to see natural capital accounts on the farms they buy from," says Angela. "Consumers want to make a better choice about what jumper to purchase on the basis of where it's from, how much carbon was produced or how their purchase supports native grasslands."

Imogen's assessment will be repeated at exactly the same points of the farm in three to five years to produce consistent data and to monitor the effect of any changes farmers may have made. •

The Farming for the Future program is initiated by Macdoch Foundation in partnership with National Farmers' Federation.



"This country is designed to burn."

That's how Reserve Manager Paul Hales describes Yourka Reserve, Jirrbal and Warrungu Country, in far-north Queensland.

Yourka has a tropical climate that alternates between two extremes: the hot, dry season and the humid wet season. This is integral to how the landscape is managed.

For years now, Paul and, more recently, the National Fire Program Manager, Rhys Swain, have been building and implementing an effective fire plan for the reserve, including one method that could be mistaken for the title of a thriller novel: storm-burning.

Though, not as suspenseful as the literary genre, stormburning is a technique specific to this climate, whereby fires are lit in between early wet season storms.

"After the first rain, and before the next bit of rain, you get the helicopter equipped with an incendiary device, which is a mounted device on the aircraft, and drop little capsules of Condy's Crystals injected with glycol, which oxidise and create a small flame." says Rhys.

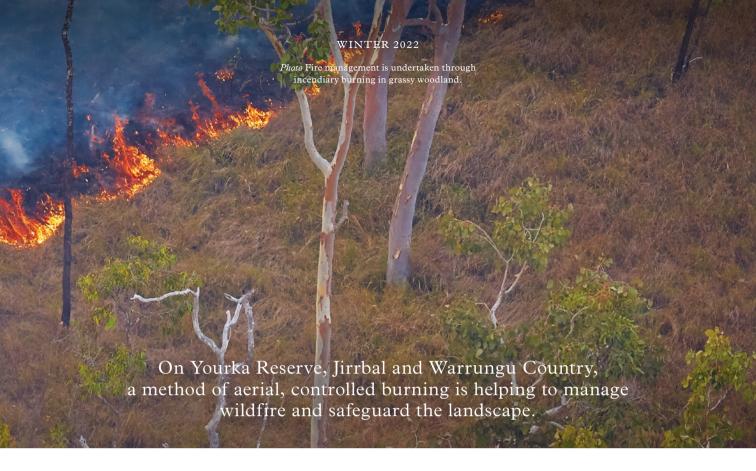
One of the reasons for this is to control woody thickening, a common phenomenon in northern Queensland where an invasion of woody species is leading to a loss of grasslands. Over time, landscapes are tightening, turning open savannahs and woodlands into closed ones and less grass and shrubs means less of the species that rely on them, such as granivorous birds, rodents, small mammals and ants.

Controlled fire regenerates the landscape and keeps woody thickening under control, but how much fire is too much fire?

According to Rhys, it must be done according to the specific and varied needs of plants and animals.

"If hot, large-scale fires are burnt annually, the landscape would suffer. But if you go consecutive years without fire, grasslands can decline, woodlands become denser, and you are more exposed to dangerous late-season wildfires."

To understand how fire experts like Rhys and Paul view the landscapes they manage, it's useful to think of it from a bird's eye view, where vast areas are managed like a grid. To the untrained eye, a landscape like Yourka can seem bewilderingly complex: different topographic formations, significant changes in altitude and variations in vegetation, broken up by river systems, rocky outcrops and an infinite number of inhabitants that all rely on one another to survive. "From a bird's-eye view, it can be



broken down by establishing control lines and breaking up the landscape into one kilometre transects determined by ridge-tops, tree lines, creeks, rivers and gullies," says Paul.

In the face of climate change and a national increase in high fire danger days, the window for prescribed

burning is shortening and the risk of extreme fire events is increasing. Yourka's vicinity to the coastline, altitudinal range and variety of habitat mean that it is likely to be highly adaptable to climate change when factoring in projections of future rainfall, temperatures and refugia, but that doesn't mean it's safe from threat.

"It's important to listen to and read country. We can learn from Traditional Owners by not getting stuck in western styles of fire suppression and instead be adaptive to what each landscape is telling us it needs."

In December 2019, a major lightning-strike fire swept through Yourka, threatening a population of Mareeba Rock-wallabies and burning 43% of the reserve. Paul, Bush Heritage staff and the Queensland Rural Fire Service spent 10 days containing the fire and despite a late wet season, the landscape recovered quickly. Due to the reduction in canopy cover of Tea Tree and Casuarina, grass and herbage appeared where it had never been seen before.

These events highlight the importance of having experienced people in the landscape. Paul has been reading and responding to this country for 14 years and burning to a calendar is not the answer.

"We use modern techniques like helicopters, incendiary machines, satellites and maps...but really, the effect of

what we're doing is well aligned with how Traditional Owners would've originally managed country for fire," says Rhys.

Much of Rhys's early education on fire management came from working with Traditional Owner groups in the Kimberley, and this is a type of knowledge sharing that he sees as critical to looking after country.

"It's important to listen to and read country. We can learn from Traditional Owners by not getting stuck in western styles of fire suppression and instead be adaptive to what each landscape is telling us it needs." •

Fish River Station

Words by Eliza Herbert Location Northern Territory

Indigenous rangers and Bush Heritage come together at Fish River Station – 178,116 hectares of immaculate beauty, conservation value and cultural significance in the Northern Territory.

Photo The mighty Daly River in the Northern Territory. Photo by David Hancock

When the road is rough, it can take Terry Nimit over two hours from when he turns off the bitumen on Daly River Road to arrive at his place of work.

"You've got hilly country that you come over and then you go through the gate, and down the belly. It's flat ground and you've got a couple more ridges to climb and creeks to cross until you get to the homestead, Fish River."

But the drive is always worth it.

Terry is a Ngan'giwumirri (Labarganyin) Traditional Owner looking after a 178,116-hectare property in the Northern Territory known as Fish River Station.

Approximately 270 kilometres south of Darwin, Fish River is a former pastoral lease of immaculate beauty and conservation value. It protects long stretches of the Daly River, with billabongs fringed by savannah woodlands and

pockets of rainforest, and it is culturally significant for the Ngan'giwumirri (Labarganyin) and Wagiman people.

"I like to be out on country, out there with family, looking after the land and letting the land look after you," says Terry.

"When you need supplies out there, like meat or bush tucker, we go out camping. And that's why I love being out there: to get the land back, not only for me, but my family and the young children growing up today."

As is the story across most of Australia, Aboriginal people looked after this country for millennia until European settlement disrupted their environmental stewardship.

Today at Fish River, through efforts of the Indigenous Land and Sea Corporation (ILSC) and conservation groups, Traditional Owners like Terry are reconnecting to their country and are continuing this stewardship once more.

In 2010, when the property's former owner put the place on the market, it was purchased in partnership with ILSC, Caring for our Country, The Nature Conservancy and Pew Environment Group.

Together, they worked closely to employ Indigenous rangers and establish a ranger station at the old Fish River homestead, which has since been used as a base

to undertake feral animal control, biodiversity surveys and reintroduce fire practices that have reduced the impact of late dry season wildfires from 36% of Fish River Station to less than 5%.

"I like to be out on country, out there with family, looking after the land and letting the land look after you," says Terry.

In 2022, Bush Heritage continues this legacy – having entered into an agreement with ILSC to support the management of Fish River through the appointment of a new reserve manager to assist with day-to-day management. This includes coordinating the ranger program; maximising community access, connection and management of country and strengthening Traditional Owner engagement.

"Bush Heritage lives and works with deep respect and a right-way science approach, which are the foundations upon which the Aboriginal partnerships program is built," says Kelly Retief, Bush Heritage's Aboriginal Partnership Manager in the Northern Territory.



Photo Fish River Ranger Ryan Daly in the early dry season.

By Rhys Swain



Photo Fish River Rangers and Traditional Owners gather in March for fire planning. By Rhys Swain

"By entering into this fee-for-service model with ILSC, we can support land management outcomes through an annual work plan and, importantly, assist Traditional Owners with their aspirations for healthy country for the benefit of people and biodiversity."

The illustrious Daly River is a stronghold for the Pig-Nosed Turtle, an important cultural icon and food source for Indigenous people, as well as a huge diversity of fish such as Barramundi and threatened sawfish and Freshwater Whipray.

At least 225 animal species have been recorded at Fish River, including threatened species such as the Northern Quoll, Gouldian Finch and Northern Masked Owl.

A team of four full-time rangers helps manage the property and some of the Traditional Owners are opening a cultural centre and exploring nature-based enterprise opportunities like art, cultural tourism and bush foods.

Their voices are essential for the ongoing management of this land.

"I'll put it this way, if I go to another man's land, I don't know what's there. So, the Traditional Owner from that land needs to tell me and direct me and tell me what's right. When other people come to my land, I'm going to look after them and teach them. At Fish River now, there's a lot of sacred sites and rock art paintings. Country needs

the Traditional Owners out there because they know their country," says Terry.

In the first week of May, Traditional Owners from the community of Nauiyu, Fish River Rangers and Bush Heritage staff travelled to Fish

River to participate in aerial incendiary machine operator training, work on fire plans and conduct prescribed fire burning.

For Terry, it was also another opportunity to keep connecting his family and the next generation to country.

"All of my focus is on teaching the boys how to live on the land and to look after the land - going back to our homeland and looking after it and getting more family out there to come and see what it's like." •

"Country needs the

Traditional Owners out there

because they know their

country," says Terry.



Photo Katrina Blake, Events and Visitation Manager, at Nardoo Hills, Dja Dja Wurrung Country, Vic. By Annette Ruzicka

I am going to be controversial here and say that my happy place is being on country, period. Since I began working at Bush Heritage in 2005, I have had the privilege of visiting all but a few reserves (just our new ones to go!). I have run supporter trips ranging from one day wanders to five-day remote camping trips. I have stepped in as caretaker at places such as Boolcoomatta, Naree and Bon Bon when reserve managers have been on holidays. I've seen rugged ridgelines, ancient Red Gums and rolling dunes; watched the sun rise up in early morning skies and set across many vast plains; and even heard the call of the Night Parrot. But what defines each memory, is the unique experience each place presents and the people I have shared them with.

On one of my very first trips, to Ethabuka Reserve on Wangkamadla country in remote Queensland, we got rained in. 128mm fell in the 24 hours following our first night – a group of 12 supporters and three staff, paying witness to a land transforming before our eyes. There

was no way out until things dried up, so it was an exciting time. Within days, bright green foliage was carpeting the barren ground, waterholes and claypans filled and Shield Shrimp and frogs emerged. We watched in awe, wondering, 'Where the heck did it all come from?' The rain, while inconvenient, allowed us to see Ethabuka up close and personal, and what a sight!

On country, there's always a new track to explore or a place to wander. Be it a moment of solitude in the early morning light, when the air is crisp, and you have the place to yourself. Or an afternoon stroll with ecologists or volunteers, pausing constantly to get out your 'binos' (binoculars) to spy on a bird, search for movement or just scan the distant horizon. Time unfolds at its own pace and many a story is told – on tracks, under stars and by campfires – these stories and travels have formed lifelong connections for me. Connections to people and nature, all which are part of my happy place.

Coupon Photo Swamp Wallaby at Tarcutta Hills Reserve, Wiradjuri Country, NSW. By Richard Taylor

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Bush Heritage is an independent not-for-profit conservation organisation that buys and manages land, and partners with Aboriginal people, to protect our irreplaceable Australian landscapes and native species.

Founded by Bob Brown in 1991, we have since grown to protect and help manage over 11 million hectares - that's more than all of Tasmania. These landscapes span from rainforests to woodlands, savannas to deserts, and everything in between.

Our work would not be possible without the support of people like you. We gratefully acknowledge the estates of Elaine Cairns, Robert James Wilson, Joan Pearson, Sydney Strauch, Sheila Storrs, Warwick Mayne-Wilson, Alan J. Williams, Joan Barlow, Rachel Boyd, Sonia Oelrich, Julianne Elisabeth Bell and Dorothy Searle as well as the many other people who have recently donated to our work.

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Cover photo Towering White Gums on Glovers Flat Reserve, Palawa Country, Tasmania. By Mike Bretz

