

WA'S PARKS, WILDLIFE AND CONSERVATION MAGAZINE

# LANDSCOPE

Volume 40 Number 1 Spring 2024 \$7.95



**TOUCHED BY NATURE**  
Devoted to WA's rivers

**Battling feral cats**  
Protecting WA's  
precious wildlife

**Whale strandings**  
Understanding the  
science

**Supporting forests**  
Combating climate  
change



Thank you

to all our loyal subscribers,  
readers and contributors for  
helping us reach this amazing milestone!

As we move into our next decade of sharing stories  
about Western Australia's incredible native species, parks and conservation efforts,  
*LANDSCOPE* will evolve into a new and engaging format as a free online publication.

It's our way of bringing *LANDSCOPE* stories to a wider audience across the globe.

@waparkswildlife    

For more information, please contact us by phoning (08) 9219 9000 or  
email [customer.service@dbca.wa.gov.au](mailto:customer.service@dbca.wa.gov.au)





ON THE COVER

**Front cover** Little pied cormorant (*Microcarbo melanoleucos*).  
Photo – Sue Harper

**Back cover** The sticky carnivorous leaves of a sundew (*Drosera*) found in the Porongurup Range.  
Photo – Cliff Winfield

*LANDSCOPE is produced and printed on Whadjuk Noongar Boodjar, the traditional lands of the Whadjuk people of the Noongar Nation. We pay respects to them, their Elders past and present and to all Aboriginal people and acknowledge their continuing connection to lands across Western Australia.*

We are blessed to have beautiful scenery in Western Australia, from rugged gorges to fantastic forests, vast deserts and magnificent marine parks.

This edition of *LANDSCOPE* celebrates just some of the many places that offer a special connection between visitor and landscape.

When investing in nature-based tourism, it's important to strike the right balance between conservation and visitation.

You can read about a unique cultural experience in Karijini National Park, home of the Banjima people (see '*Karijini Experience*' on page 28), where an annual festival offers four days of culture, art, food and music, with an awe-inspiring backdrop.

Nature-based tourism, such as this, received a boost from the pandemic. A halt in international travel allowed people to explore their own backyard, and beyond. In many places, that got people camping, cycling and walking, and now participation in trail activities is at an all-time high.

Whether it's mountain biking, adaptive riding or bushwalking, there have never been so many kilometres of dedicated trails on offer in WA. And now two popular regional getaways have been recognised as 'premier' trail destinations (see *Gateway to exploration: Collie and Dwellingup accredited 'Trail Towns'* on page 46).

This edition's park feature is the spectacular Porongurup National Park (see page 8) where granite peaks offer amazing views of the Stirling Range and, on a clear day, the Southern Ocean. A recent upgrade of the Castle Rock Trail allows visitors improved access to the popular Granite Skywalk.

And conservation isn't just for the country; city dwellers can do their part too. Admiring the magical dolphins and birdlife in Perth's Swan Canning Riverpark might inspire you to become a citizen scientist, helping to monitor these remarkable creatures, and even become a nature photographer (see '*Touched by Nature*' on page 35).

So, go ahead and explore WA and take that picture; it might be worth a thousand words in your own nature story.

**Luke Bentley, Executive Director, Parks and Visitor Services**  
Department of Biodiversity, Conservation and Attractions



Contributing

**Gooitzen van der Meer** is an accomplished illustrator whose works have graced the pages and covers of *LANDSCOPE* magazine for the last 20 years. Gooitzen specialises in watercolour artwork and is renowned for the careful detail and textures of the natural world that he is able to communicate through his artwork.

This will be the final edition where Gooitzen's artwork will appear on the *Nature's pin-up* feature on page 54 as he is retiring after 49 years in the public service. It has been a privilege to showcase his incredible talent over the years.

**Clinton Hull** is an outdoor enthusiast with a keen interest in exploring marine and park environments, and trails. He has more than 25 years' experience working in parks from the south coast of Western Australia to the mid-west, including Rottne Island. Clint currently works in the Asset Investment portfolio of the Parks and Services Division at DBCA, delivering new capital and asset improvement projects across the State.

**Lynette Marshall** is a passionate environmental scientist with a post-graduate qualification in social research. Lyn is committed to the conservation of the unique south-west environment for its intrinsic, biodiversity and social values. She played a role in the development of the *Forest Management Plan 2024–2033*, the State's major policy for the management and protection of south-west forests. Lyn currently works on policies to support the conservation outcomes and regulatory framework for fauna licensing.



**Editor** Lauren Cabrera.

**Editorial assistance** Jenna Oliver.

**Scientific/technical advice** Margaret Byrne, Steven Dillon, Carl Gopser, Lesley Gibson, Danielle Ayres and John Huisman.

**Special thanks to** Andrew Burbidge.

**Design and production coordinator** Sonja Rose.

**Design** Tiffany Taylor, Katie Bryden, Lynne Whittle, and Gooitzen van der Meer.

**Illustration** Gooitzen van der Meer.

**Cartography** Promaco Geodraft.

**Prepress and printing** Advance Press, Western Australia.

All material copyright. No part of the contents of the publication may be reproduced without the consent of the publishers.

Maps should be used as a guide only and not for navigational purposes.

ISSN 0815-4465

Please do not send unsolicited material, but feel free to contact the editors by email ([landscape@dbca.wa.gov.au](mailto:landscape@dbca.wa.gov.au)).

Published by the Department of Biodiversity, Conservation and Attractions, 17 Dick Perry Avenue, Kensington, Western Australia.

© State of Western Australia, September 2024.

**For more information contact us:**

**On the web** [shop.dbca.wa.gov.au](http://shop.dbca.wa.gov.au)

**By email** [landscape@dbca.wa.gov.au](mailto:landscape@dbca.wa.gov.au)

**By phone** (08) 9219 9000

**By free post** Reply Paid 25, Locked Bag 29, Bentley DC, Western Australia 6983

To purchase *LANDSCOPE* online, visit [shop.dbca.wa.gov.au/landscape](http://shop.dbca.wa.gov.au/landscape)



*LANDSCOPE is printed on recycled paper which contains 55 per cent recycled fibre and is made from pulp, which is derived from well-managed forests, controlled and recycled sources.*

**This page** Pompom head (*Cephalopterum drummondii*), Coalseam Conservation Park. Photo – Tourism WA



Department of Biodiversity, Conservation and Attractions

---

## Features

- 8 Parks for people: Porongurup National Park**  
Home of an ancient mountain range and granite peaks
- 12 The culture and science of whale strandings**  
Understanding the scientific challenges
- 18 Battling feral cats**  
Controlling cats to protect WA's precious wildlife
- 23 Adventure out: Running away from it all**  
Taking on the Margaret River Ultra Marathon
- 28 Karijini Experience**  
A celebration of culture and landscapes
- 35 Touched by nature: Love of the river runs deep**  
Sue Harper shares her passion for Perth's rivers
- 40 Boorn to survive: supporting the south-west forests**  
Reducing the impacts of a changing climate
- 46 Gateway to exploration**  
Collie and Dwellingup accredited 'Trail Towns'

---

## Regulars

- 3 From the desk of Luke Bentley**  
A foreword from the Executive Director, Parks and Visitor Services, Department of Biodiversity, Conservation and Attractions.
- 6 Bush telegraph**  
Short stories from around the State, reader's pic and a guest word.
- 11 In review**  
A collection of books and applications.
- 52 Discovered**  
Spotted triggerplant (*Stylidium tenerrimum*).
- 53 Kaleidoscope**  
Connecting kids with nature.
- 54 Nature's pin-up**  
Western whistler (*Pachycephala fuliginosa*).



Snap  
shot



### READER'S PIC

#### **Bird orchid (*Pterostylis barbata*)**

Photo and words by Lawreen McIver

"We visited the very beautiful pristine environment of Island Point Reserve near Mandurah and came across these freshly flowering bird orchids. In fact, the left-hand side one is not opened fully. Bird orchids are quite common and seem to grow profusely in leaf litter. It is my experience that they grow from Perth to Albany. They look very attractive, often being almost translucent in the sun. It's not uncommon to be able to almost see right through them."

**Have you got a fantastic nature photograph you would like to see published in *LANDSCOPE*?** Send it, along with a 100-word description of the species or how and where you took the shot, to [landscape@dbca.wa.gov.au](mailto:landscape@dbca.wa.gov.au)



### ***Bicentennial Tree partially reopened***

On 8 July 2024, the Bicentennial Tree in the State's Pemberton region reopened for climbing to the 20-metre platform.

The partial reopening is the first step in a program of upgrades at the Gloucester and Bicentennial trees.

In 2023, both trees were closed to allow for structural investigations and upgrades to the viewing platforms. The community and industry have been very patient while arborists and engineers have been working behind the scenes.

The Department of Biodiversity, Conservation and Attractions (DBCA) will continue to work with a range of specialists to detail and implement design solutions for both trees including an upper tree canopy experience at Bicentennial Tree and a mid-tree platform at Gloucester Tree in the next 12 to 18 months.

**Above left** Bicentennial tree platform.

**Above right** Climbing up the sturdy steps.

**Right** Two scent detection dogs, Echo and Alice, in training.

Photos – DBCA

### Detector dogs trialled to sniff out danger

Two scent detection dogs have been brought to Western Australia from New South Wales as part of a week-long trial and feasibility study in detecting *Phytophthora cinnamomi*.

Echo, a three-year-old Brittany spaniel, and Alice, a two-year-old English springer spaniel have been trained to sniff out the soil-borne disease that damages native plants and threatens the health and resilience of national parks, reserves and public gardens.

If the trial is successful, this team would be used as part of the wider program to combat the spread of dieback in affected areas in the State's south west and on the south coast.

Professional dog handler Ryan Tate said Alice and Echo performed well in their phytophthora dieback detection and alert tests.



## Interactive storytelling at Purnululu

Purnululu National Park Visitor Centre was a hive of activity around a new interactive display panel sharing an important story about Gija culture and connection to Country.

Senior Gija Custodian Shirley Drill and Purnululu Aboriginal Independent Community School students were thrilled to see their stories come to life on the screen, alongside long-term project partner Sharing Stories Foundation.

The display features an important creation story 'Jirraginy joo Goorrandal: Frog and Broлга', creatively interpreted by Purnululu School students, along with an interactive map of Gawarre (Bungle Bungles), several short films, stunning artwork, design, animations and reflections from community members.

The installation of the interactive display panel is a collaboration between Senior Gija Custodian Shirley Drill, Purnululu Aboriginal Independent Community School, Sharing Stories Foundation, DBCA's Parks and Wildlife Service, and is supported by Lotterywest.



## Double celebration in the Pilbara

The opening of a new DBCA Parks and Wildlife Service office building in Karratha coincided with the launch of the Pilbara Conservation Project—a new partnership between Yindjibarndi Rangers, DBCA and local industry.

Rio Tinto is providing \$8 million in funding over the next five years to support DBCA's work on Country with Traditional Owners in places like Karijini National Park and Millstream Chichester National Park.

The partnership will see the creation of five new full-time jobs, plus training

and fee-for-service work for Aboriginal ranger groups, and will support the delivery of weed management, wildlife monitoring, feral animal control, and bushfire management.

Environment Minister Reece Whitby visited the region and met with Traditional Owners and DBCA staff.

"I'm pleased to officially open DBCA's new regional headquarters in Karratha, and this new partnership demonstrates how government, industry, and Traditional Owners can work together to manage biodiversity values through practical, on-ground actions," Minister Whitby said.

**Above** Purnululu School students with Shirley Drill.  
*Photo – Liz Thompson*

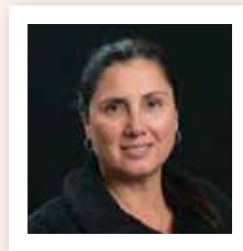
**Left** Hon Reece Whitby MLA Minister for Environment with Traditional Owners in Karratha.  
*Photo – Alex Gore/DBCA*



## Guest column

**Dr Luciana Möller**

*Associate Professor in Marine Biology, Flinders University*



The phenomenon of cetacean (whales and dolphins) mass strandings events (MSEs) have long puzzled scientists and the public (see 'The science

and culture of whale strandings' on page 12). MSEs are strandings of multiple individuals of the same (other than only mother-calf) or different cetacean species that occur around the same time and place.

They have been recorded for thousands of years and many of them seem to have a few features in common. The species that generally strand live in offshore waters and close-knit societies, such as pilot whales. They are often found in places with gently sloping coastlines, such as some bays in WA, TAS, and New Zealand, which may impact on odontocete cetaceans' ability to efficiently use their navigational sonar.

In recent decades, however, MSEs seem to be increasing in frequency and number of animals, and there are several hypotheses why this may be the case. They could be related to an increase in abundance of the species that generally strand, to greater awareness about these events and dissemination by the news media, or could be a sign of the oceans' deteriorating health.

Climate change is leading to warmer oceans, shifts in ocean currents and distribution of marine resources, frequent extreme weather events, and an increase in emerging infectious diseases. Chemical, organic and noise pollution also contribute to oceans' degradation, with signals from low and mid-frequency sonar having the capacity to cause death and decompression sickness in cetaceans.

Because factors involved in MSEs are complex and diverse, we need collaborations with researchers from different fields to understand their causes. These should include detailed post-mortem and genetic studies, microbiological, chemical, and biotoxin testing, and analyses of the atmospheric and oceanic conditions of the area, as well as the animals' behaviour around the time of the event.

Due to the possibility of cross-species transmission of some pathogens to humans, it is also important that people involved in the rescue of animals and those collecting samples from live or dead individuals use personal protective equipment to prevent getting infected. It is only through comprehensive examination of cetacean MSEs that we will ultimately be able to solve this long-standing biological mystery.



## Porongurup National Park

*Porongurup National Park, is about 40 minutes' drive from Albany on Western Australia's south coast, and is home to the spectacular Porongurup Range. The granite peaks of the range rise and fall for 12 kilometres, reaching to 670 metres high and provide views of the Stirling Range and—on a clear day—the Southern Ocean.*

**P**orongurup is an ancient mountain range in an ancient land, known to the original inhabitants of the area as Borongur. There are four Noongar Aboriginal peoples in the area including the Menang people of the Albany region, the Wirlomin people (Gnowangerup), Bibbulmun people (Denmark) and Goreng people (Plantanganet/Gnowangerup and Katanning) and who all consider the Porongurup Range particularly important—both culturally and spiritually.

**Above** View of Porongurup Range from Devil's Slide.

*Photo – Jiri Lochman*

“Porongurup is our most culturally sacred site in this particular region, and it is of significance to the whole Noongar nation,” said Vernice Gillies, a Menang Elder.

### NATURAL BEAUTY

The park is home to lush karri forest, towering granite peaks and spectacular displays of wildflowers in the springtime.

The granite rock that forms the Porongurup Range is more than 1100 million years old. This ancient landscape was exposed by the relentless forces of nature as it weathered away softer rocks surrounding the ridge to reveal the range's outlines. In the process,

the range became an ecological island. Its climate and soils differ greatly from the surrounding lowlands and protect a suite of plant and animals not present in the nearby surrounds.

Perhaps the most well known of these species is the mighty karri (*Eucalyptus diversicolor*) that cloaks the range in green growth. Fossil pollen found throughout the south-west shows that, after an earlier wetter era, karri forest retreated to its present stronghold between Manjimup and Walpole. However, where the soil was right and the rainfall higher, small outlying populations survived. The Porongurup Range is one such island of karri growth.



### Trail improvements to Karri boya-k

**Nancy Peak Trail:** this popular 5.5-kilometre loop trail has been upgraded with nearly 1300 stone steps to address steep and eroded sections. Additionally, the trail has been realigned to avoid sensitive granite areas, respecting both cultural and environmental values.

**Wansbrough Walk:** minor enhancements have been made to improve this eight-kilometre-return hike.

**Tree in the Rock:** 100 metres of newly sealed accessible pathway to small viewing space.



Many of the plants and animals of the main belt of karri forest have also survived here. Visitors may see western grey kangaroos (*Macropus fuliginosus*), brush wallabies (*Notamacropus irma*), birds such as the rufous tree-creeper (*Climacteris rufus*) and the brilliant scarlet and western yellow robins (*Petroica boodang* and *Eopsaltria griseogularis*).

About 750 plant species occur in the park and the local flora is particularly beautiful in the springtime when wildflowers burst into bloom. Wattle and hovea plants are stunning when they occur *en masse*, and around 55 species of orchid also occur in the park.

### EXPLORING THE PARK

A 23-kilometre scenic drive winds around the entirety of the park on mostly sealed roads offering views over the range. There's also a shorter five-kilometre stretch of Angwin Road for views over the granite outcrops and Stirling Range to the north.

To get up close to the natural environment, there are a number of trails and recreation areas, including the well-known Castle Rock (see 'Castle Rock: Walking in the

**Top left** Karri spider orchid (*Caladenia brownii*).

Photo – Marie Lochman

**Top** Balancing Rock.

Photo – Samille Mitchell

**Above left** Karri trees (*Eucalyptus diversicolor*).

Photo – Rob Olver

**Above** Porongurup Range, Castle Rock view to Stirling Range.

Photo – Marie Lochman

**Right** Holly-leaved hovea (*Hovea chorizemifolia*).

Photo – Cliff Winfield



Discover more about  
Porongurup National  
Park

Scan this QR code or  
visit Parks and Wildlife  
Service's 'LANDSCOPE'  
playlist on YouTube.



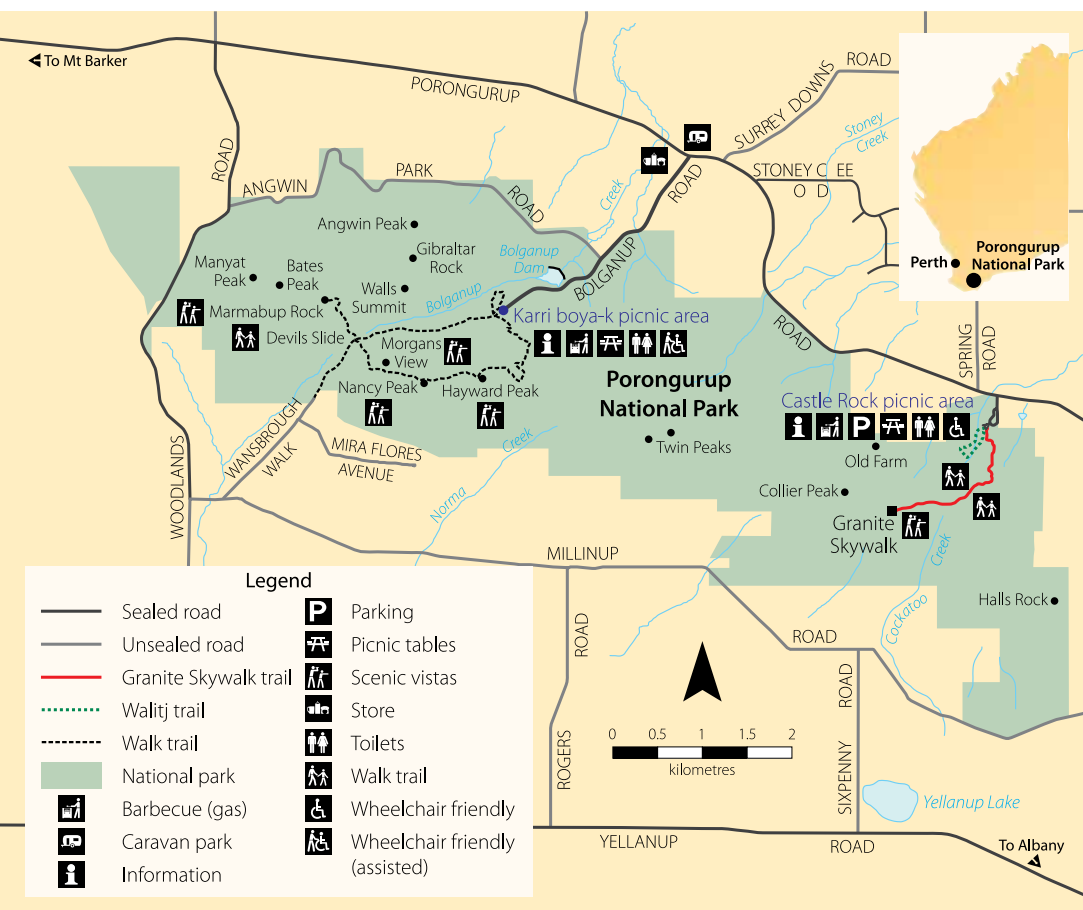
clouds' LANDSCOPE, Winter 2012) with its suspended walkway looking over a rail to the horizon and through a grid to the forest floor. Known as the Granite Skywalk, the 100-metre scramble over granite rocks and an eight-metre-high ladder is reached by first completing a tough two-kilometre uphill walk.

Just a few kilometres away from the popular Castle Rock and Granite Skywalk,

nestled in Menang Country, Karri boya-k (formerly known as 'Tree in the Rock') is a day-use recreation site offering much more than its name would suggest.

Karri boya-k boasts a series of breathtaking natural trail experiences with the unique tree growing from the granite, located just 100 metres along a shaded walk. Outdoor enthusiasts can make a day of it, exploring the trails while revelling in

# Parks for people Porongurup National Park



“About 750 plant species occur in the park and the local flora is particularly beautiful in the springtime when wildflowers burst into bloom. Wattle and hovea plants are stunning when they occur *en masse*, and around 55 species of orchid also occur in the park.”

stunning views of the surrounding peaks and iconic Stirling Range in the distance.

The trails and facilities at Karri boya-k have recently undergone a significant improvement, made possible through the \$15 million Great Southern Adventure Trail initiative funded from the State Recovery Plan.

To accommodate the increasing number of visitors and showcase the natural beauty of the tall karri trees, several improvements have been made to the site’s visitor facilities including new interpretive and directional signage for the trails as well as a new shelter and trailhead.

Carpark upgrades provide an additional 27 vehicle spaces, along with two

dedicated bus/long vehicle bays, which ensure smoother traffic flow.

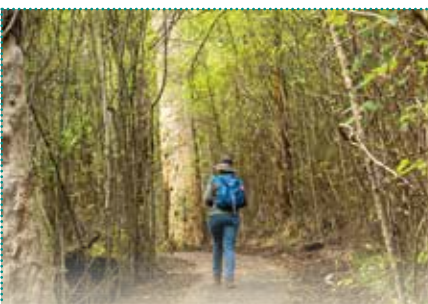
Universal access pathways have been constructed to allow easy access to picnic areas, barbecues, toilet facilities, and the tree growing from the granite providing improved access for more visitors to Karri boya-k.

**Top right** Karri boya-k new facilities, Porongurup National Park.

**Above right** *Brachyloma baxteri*.

**Right** Universal pathways allow easy access to the park.

Photos – Cliff Winfield



## Do it yourself

**Where is it?** 40 kilometres from Albany, north along Chester Pass Road. 400 kilometres from Perth via Mount Barker-Porongurup Road and Bolganup Road.

**Total area:** 2511 hectares.

**Things to do:** Bushwalking, picnicking, rock climbing, abseiling.

**Facilities:** Barbecues, toilets and picnic tables.

**Park fees:** Entry fees apply.

**Nearest Parks and Wildlife Service office:** South Coast Regional Office, 120 Albany Highway, Albany (08) 9842 4500

## BIRDS OF A FEATHER

Former *LANDSCOPE* editor Rhianna King's debut novel, released in March 2024, is a delightful exploration of family and relationships, and celebration of feminism and identity.

While *Birds of a Feather* is fundamentally a drama about finding your place in the world, Rhianna's love for and knowledge of nature and the environment shine through in her many references to and descriptions of native plants and animals, and in her choice of careers for her two main characters—an environmental scientist, and a retired botanist who had worked and volunteered at the Western Australian Herbarium.

The novel is filled with mentions of hakea, bottlebrush, banksia, magpies, willie wagtails, red-tailed black-cockatoos, possums, quenda and motorbike frogs, giving the novel a strong sense of place well before any mention of Perth is made.

*Birds of a Feather* is an enjoyable read, likely even more so for *LANDSCOPE* readers who will recognise and be familiar with many of the references to conservation and the natural environment that add to its charm.

*Rhianna King edited LANDSCOPE between 2011 and 2018. Birds of a Feather is available in paperback, ebook and audiobook from most book sellers – RRP \$34.99.*



## REMEMBERING ROTTNEST

Pat Barblett AM has a relationship with Rottnest Island of more than six decades, beginning with family holidays in the 1950s prior to her becoming the first female member of the Rottnest Island Board in 1976, and founding the Rottnest Foundation in 1985.

Barblett was a member of the Rottnest Island Board for 17 years and spent the last three years of her term as Chair of the Board.

This history has resulted in a remarkable and in depth understanding of and passion for the island, both from the perspective of a holidaymaker and decision maker.

In *Remembering Rottnest*, Barblett recounts memories of past family holidays and some of her achievements while a board member, including establishing the museum, encouraging environmental education, and transitioning the army barracks to tourism. She also delves into the island's history, including its dark history as an Aboriginal prison island.

The book is a fascinating love story between person and place, from the perspective of someone who has undeniably had an enormous influence on what Rottnest Island is today.

*Remembering Rottnest is available for \$25 from the Rottnest Foundation website: [rotnestfoundation.org.au](http://rotnestfoundation.org.au)*



## SHARKSMART WA

The *SharkSmart WA* app will help keep you safe while visiting Western Australia's amazing beaches by providing information on recent shark sightings and beach emergency information.

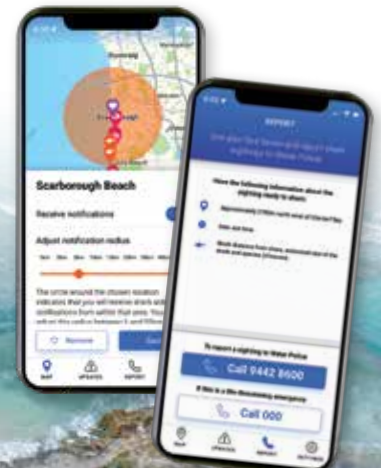
You can search shark reports and detections using the map function as well store your favourite coastal locations to receive notifications about any shark activity within a radius of between one and 50 kilometres.

After selecting Scarborough Beach as one of my favourite locations, I was provided information that on that particular weekday afternoon the beach was not being patrolled and that within five kilometres there had been one shark alert issued, three shark sightings, and three tagged sharks detected in the previous 10 days, with links to the details of each incident.

To help you accurately report shark sightings or whale carcasses (which attract sharks) to Water Police, the app provides accurate information on your current location as well as the phone number to call and make a report.

The app complements the more comprehensive [sharksmart.com.au](http://sharksmart.com.au) website, where you can find more detailed information about shark activity, the State Government's shark mitigation strategy, shark species and scientific research.

*The SharkSmart WA app is free to download from the App Store and Google Play.*





# The **culture** and **science** of **whale strandings**

Along the extensive Western Australian coastline, mass whale strandings have unfortunately been known to occur. While theories exist regarding the reasons behind these events, it can be difficult to determine why some whales strand.

by Dr Holly Raudino, Dr Wayne Webb, Dr Kelly Waples and Dr Chong Wei



**W**adandi people, the Traditional Owners of the area around Geopraphe Bay and the Capes in Western Australia's south-west, have many stories of whale strandings on their Country throughout history. When mammang (Wadandi language name for all whale species) beach themselves, it can mean culturally that ancestors are coming home.

Traditionally, as the carcasses decomposed, and their oil entered the water, large fish and sharks would come into the shallows providing hunting opportunities. A large ceremony would be held, and the people would gather to cook, share food and celebrate.

For people from many other cultural backgrounds, the initial instinct when confronted with a mass whale stranding is to want to help return the whales back to the deeper water where they belong.

Recently, scientists have become aware that this approach isn't optimal for the wellbeing of the whales. After becoming stranded in shallow waters or lying on the sand for extended periods, they may experience significant injuries and extreme stress.

Ultimately, during these events many animals are not able to be returned to sea, and either perish during mass strandings or are euthanised in the interests of animal welfare.

## THE SCIENTIFIC CHALLENGE

On 25 April 2024, a mass stranding of long-finned pilot whales at Toby Inlet near Dunsborough resulted in 31 known whale deaths. Less than 12 months earlier, in July 2023, 97 pilot whales had died in a



similar mass stranding event at Cheynes Beach near Albany.

These occurrences offered scientists valuable opportunities to gather data and develop new insights.

From a scientific perspective there are many hypotheses as to why mass whale strandings occur including illness, geographic hotspots due to the shallow bathymetry, navigational errors, and interference from human-made noise.

While the uncertainty and complexity can be challenging for people to accept, it is unlikely a single cause applies to all strandings. Instead, each stranding event needs to be considered individually.

## WHAT WE KNOW

Species that are more likely to mass strand such as the long-finned pilot whale (*Globicephala melas*) are pelagic, which

means they live in deep, offshore waters a long way from land. They are not frequently encountered in coastal waters and strandings can be an opportunity to learn more about them.

An interesting feature of the species is that they live in large, very tightly knit groups at sea.

Scientists know from studies of wild, free-ranging pilot whales that they live in matrilineal pods, led by female matriarchs. The offspring, including males, remain in their natal pods for life, which is peculiar to a few whale species (killer whales, false killer whales, pilot whales and sperm whales).

Inbreeding is prevented, as breeding opportunities are available when unrelated pods interact with one another. This complex social structure and way of life has been revealed through the study of

.....  
*Previous page*

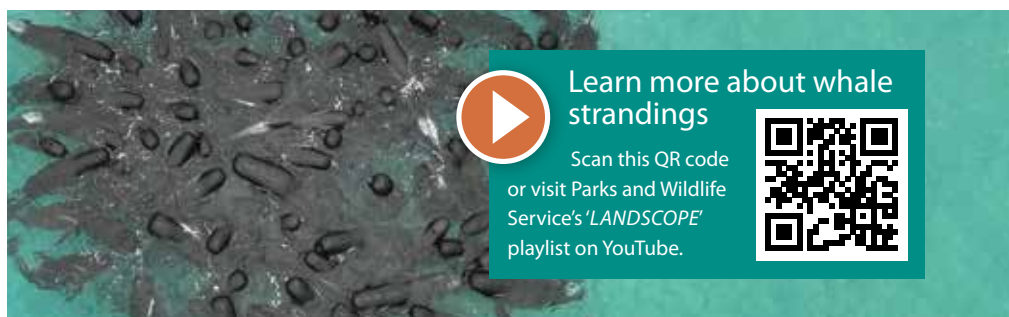
**Main** A pod of whales on the shores of Hamelin Bay.

*Photo – Marc Russo*

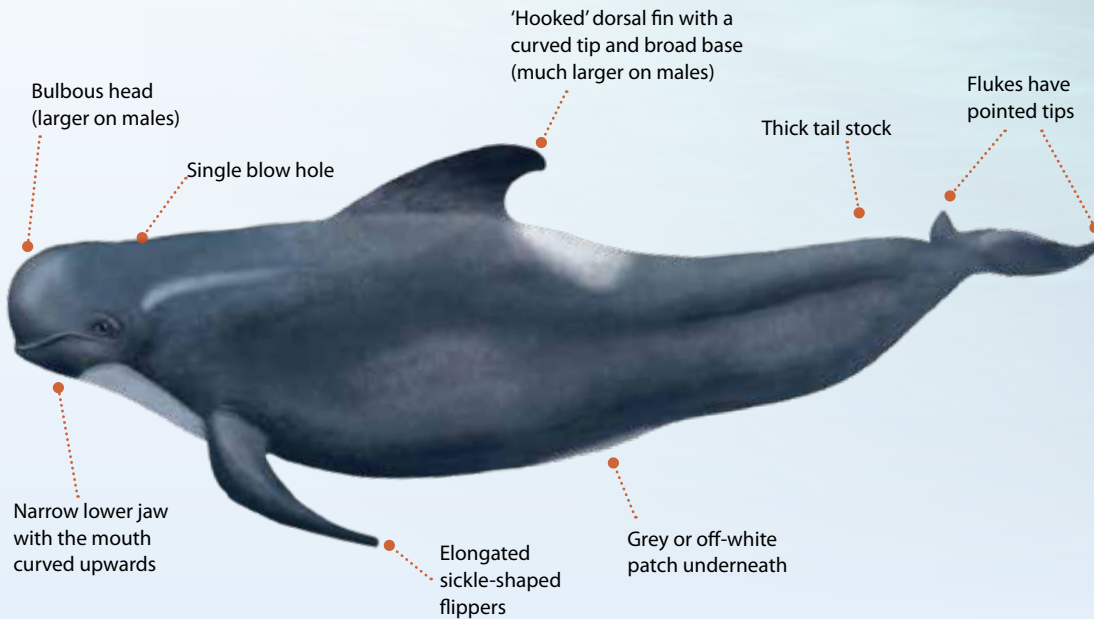
**Above right** Hamelin Bay, 2018.

**Right** Aerial image of pilot whales huddling in a group prior to stranding at Cheynes Beach, 2023.

*Photos – DBCA*



## Long-finned pilot whale (*Globicephala melas*)



### Amazing long-finned pilot whale facts

**Adult length:** 6–7m

**Adult weight:** up to 4500kg

**Newborn:** 1.6–2.0m, 75kg

**Gestation:** 12–16 months

**Lifespan:** males 35–45 years, females up to 60 years

- Second largest member of the dolphin family.
- Calves often remain with their mothers' pods for life.
- Females go through menopause at around 35–40 years.
- They mainly feed on cephalopods (squid) but sometimes fish and occasionally crustaceans.
- They typically live and feed offshore, in pelagic waters hundreds of metres deep.

their behaviour in the wild and confirmed through research on their genetic makeup from wild pilot whales and groups that have stranded.

### LOOKING FOR RELATIONSHIPS

To contribute to this body of knowledge and improve our understanding of the pilot whales that use Western Australian waters, biologists and geneticists at the Department of Biodiversity, Conservation and Attractions (DBCA) have collected small tissue samples from the deceased individuals at recent strandings. They hope to confirm the relatedness between individuals within the pods that stranded at Cheynes Beach and Toby Inlet.

In a collaboration with Flinders University, DBCA scientists are also investigating how related the pods are across Australia using data collected at strandings as far away as Tasmania.

Once the data has been fully analysed, scientists will be able to determine whether genes are shared between pods or are unique, and this will also help inform the population and conservation status of pilot whales in Western Australia.

For example, currently it is unknown if there is one large population of pilot whales that moves around the south and

south-west coast of Australia, or smaller populations that do not mix or breed together.

Comparisons that have been made between New Zealand and Tasmania have shown big differences between whale populations in these two places, so it will be interesting to see what is found at a local level and within Australia.

### POPULATION INFORMATION LACKING

The conservation status of pilot whales globally is 'least concern' based on population estimates from the northern hemisphere that suggest a healthy population of hundreds of thousands.

Such estimates are unavailable for the southern hemisphere aside from an estimate from the 1970s in Antarctica of several hundred thousand.

These dated data and ongoing data deficiency precludes scientists from knowing the actual population size for Australia and being able to explore trends in the population to know whether it is stable or not.

The population size and status are key pieces of the puzzle that scientists and conservation managers would like to know to better understand how these mass strandings impact the overall population.



**Above** Perth Zoo veterinarians sampling for disease and taking swabs and blood samples at Toby Inlet in 2024.

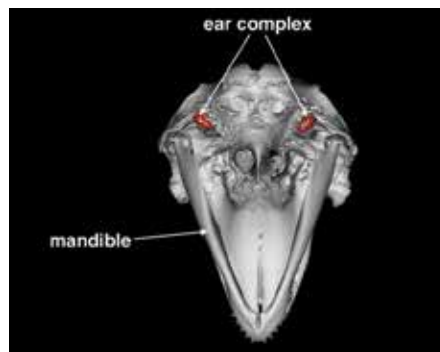
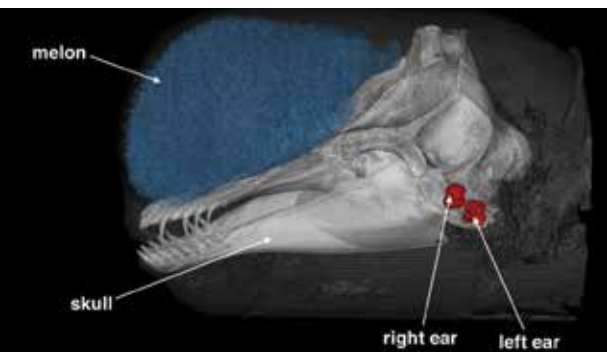
Photo – DBCA

### KNOWN VULNERABILITIES

Other important questions that inform conservation status and impacts on these species include better understanding diseases and vulnerability of local populations.

Diseases such as cetacean morbillivirus can occur in pilot whale populations and some outbreaks can result in multiple mortalities.

Understanding when outbreaks occur can have population level impacts for the



**Above left** Cheynes Beach, 2023.  
*Photo – Shem Bisluk/DBCA*

**Above** Person assisting a whale in the water at Cheynes Beach, 2023.  
*Photo – Peter Nicholas/DBCA*

**Left and far left** CT scans of a young pilot whale's head from the Cheynes Beach stranding.  
*Photos – Dr Chong Wei/Curtin University*

species, noting that cetacean morbillivirus is not contagious to humans.

However, other infectious diseases are transmissible to humans.

The latest emerging health concern for wildlife and for people is highly pathogenic avian influenza. This disease has jumped between species, with thousands of sea lions dying in South America and recent detections in Antarctica in seabirds. To date, Australia is the only continent that has not been impacted.

## CAN SCIENCE SOLVE THE MYSTERY?

One of the key roles of scientists attending strandings is to collect samples to test for a range of diseases. This work is done through collaboration between state government agencies and aims to identify or exclude those diseases that pose a risk to people.

Testing conducted on the pilot whales from the Cheynes Beach stranding has led to some interesting findings, such as a bacterium detected in several whales that has puzzled pathologists and has been added to the suite for testing at future strandings.

The challenge is to confirm whether this bacterium, known to cause disease, contributed to the cause of the stranding or was an incidental finding.

Another important question to ask is whether any contributing human factors can be identified.

Noise is known to disrupt the behaviour of whales and dolphins and some intense noises can damage the ears, causing hearing loss if they are exposed at close range. But how do we know if noise has contributed to these strandings? Although a shared concern nationally and globally, few scientists have tackled this question.

Researchers took on this challenge by using a medical approach and specially designed equipment used to scan human heads and create detailed images so that they could take a closer look at the ear parts of three pilot whales from the Cheynes Beach stranding.

The researchers had not anticipated how much of a logistical challenge this would be. It required the removal of heads from the deceased whales and their transportation to Perth to a medical imaging facility at CSIRO. It took three people and a lot of lifting and manipulation to manage this unusual delivery and store the heads in deep freeze until they could be scanned.

The CT scanner is designed for humans and the sheer size of the whales' heads meant only the youngest whale's head would fit inside the bore of the machine for imaging.

### **How to help**

- Follow directions/instructions of management authorities
- Register as a volunteer
- Wear appropriate personal protective equipment
- Cetaceans ashore can be kept cool with sea water but be careful not to get any in their blowhole which they use to breathe
- Stay quiet and calm
- Keep dogs away



**Top left** Cheynes Beach, 2023  
*Photo – Shem Bisluk/DBCA*

**Top right** Long pectoral (side) flipper of the long-finned pilot whale.  
*Photo – Tahryn Thomson*

**Above** Cheynes Beach, 2023.  
*Photo – DBCA*

Analysis of the younger whale's head found no evidence of catastrophic trauma such as holes in the middle/inner ears, but more detailed investigation is required to rule out more subtle perforations.

The heads of the other, older two whales will now undergo a different process of micro-CT scan and a detailed dissection. For future events, we will now also have the option to use a higher resolution magnetic resonance imaging (MRI) for investigation of potential acoustic damage, due to the generous offer from a local veterinary clinic to use their facilities after hours. The cost of the scans and testing can make this work cost-prohibitive among competing research priorities.

### **INTERNATIONAL COLLABORATION**

Scientists from Australia, New Zealand, Canada, and Iceland have formed a group, bridging the distance across oceans, to share information about pilot whale mass strandings, which occur worldwide.

The focus of this group is to better understand what occurs leading up to the strandings by compiling and reviewing video of pilot whales to characterise their pre-stranding behaviour and group cohesion.

Sometimes, whales strand unobserved, and it is not until they are ashore that they are reported, so important insights into the events preceding the stranding are missed. Armed with this early insight, it is hoped the information not only improves preparedness for strandings, but also informs animal welfare considerations and the decision making around euthanasia.

### **LOOKING FORWARD**

Once the pre-stranding behaviour is better documented and understood, this group of hopeful scientists want to also investigate the behaviour during and after the stranding. When pilot whales are refloated and released there's an opportunity to see if there are things that can be learned, which will lead to better outcomes in future events.

Mass strandings are a global phenomenon that have occurred for thousands of years and will continue. These events offer valuable learning opportunities.

The Wadandi people hope that these events may also be embraced as an opportunity "for community to gather on the beach to celebrate their lives" [Wadandi Traditional Owner Toni Webb] and that cultural ceremony might become part of whale stranding response and protocols in the future.

**Dr Holly Raudino** is a Senior Research Scientist with DBCA with a research focus on threatened marine fauna and the conservation and management of these species. She can be contacted at [holly.raudino@dbca.wa.gov.au](mailto:holly.raudino@dbca.wa.gov.au)

**Dr Wayne Webb** is an Elder, knowledge holder and well respected leader in the south west community. He can be contacted at [admin@undalup.com](mailto:admin@undalup.com)

**Dr Kelly Waples** is a Principal Scientist in the Marine Science Program at DBCA with a background in marine mammal behavioural ecology and conservation management. She can be contacted at [kelly.waples@dbca.wa.gov.au](mailto:kelly.waples@dbca.wa.gov.au)

**Dr Chong Wei** is a post doc at Curtin University who specialises in bio acoustics and 3D modelling of sound in marine animals. He can be contacted at [chong.wei@curtin.edu.au](mailto:chong.wei@curtin.edu.au)

# BATTLING FERAL CATS

by Conor Doherty





Feral cats top the list of the most destructive species in Australia, costing the economy a huge \$18.5 billion over the last 60 years in damage and population control measures. In Western Australia, new technology and community-based action, backed by a nation-first strategy, are helping control feral cats to protect our precious wildlife and biodiversity.

**F**eral cats have a devastating impact on native wildlife, particularly small-to-medium sized mammals, and are considered the most destructive single species in Australia.

They are lethal predators, preying on billions of native animals in the Australian bush each year.

Here in Western Australia, 36 mammals, 22 bird and 11 reptile species are vulnerable to predation by feral cats, and a wide range of other native animals are also adversely affected, including threatened species.

Their prey includes threatened species such as the western ground parrot (*Pezoporus flaviventris*), Gilbert’s potoroo (*Potorous gilbertii*), chuditch (*Dasyurus geoffroii*), woylie (*Bettongia penicillata*), numbat (*Myrmecobius fasciatus*), mainland quokka (*Setonix brachyurus*) and bilby (*Macrotis lagotis*).

A key project under the National Environmental Science Program Threatened Species Recovery Hub estimated a typical feral cat roaming the Australian bush can kill more than 700 small animals a year.

## WHAT IS A FERAL CAT?

Feral, stray and domestic cats are the same species, *Felis catus*, however they differ markedly in how and where they live and their reliance on people.

Domestic cat ownership is regulated under the *Cat Act 2011*, which requires their identification and registration, and encourages responsible cat ownership.

Stray cats live in the wild fending for themselves because they have become lost or abandoned. They are found in and around towns, cities and rural properties.

Feral cats live and reproduce in the wild. They are not owned or socialised and survive on their own in the wild by hunting.

Feral cats are found across Western Australia in all types of habitats including forests, woodlands, grasslands, wetlands and arid areas. They were declared a pest animal in Western Australia in June 2019 under the *Biosecurity and Agriculture Management Act 2007*, allowing for the



humane management of feral cats to mitigate their impact on native fauna.

## STRATEGIC MANAGEMENT

The Western Australian Feral Cat Strategy 2023–2028 is the first of its kind to be implemented by a State or Territory Government in Australia. The strategy supports the National Threat Abatement Plan and was developed by the Department of Biodiversity, Conservation and Attractions (DBCA), the Department of Primary Industries and Regional Development (DPIRD) and a range of key stakeholders.

In a state with a total land area of more than 2.5 million square kilometres, coordinating landscape-scale management of feral cats presents a huge challenge to government, landowners, community and not-for-profit groups.

In response to the ongoing decimation of native fauna by feral cats, the Western Australian Government launched the state-wide strategy in July 2023 to mitigate impacts of this introduced predator.

The five-year plan encourages the use of new technology to help combat feral cat impacts on native wildlife and provides a framework to guide a four-year, \$7.6 million government investment and ensure there is a coordinated approach to feral cat management across the State.

The funding will enable research programs, conservation projects and landscape-scale management of feral cats in key conservation areas across WA.



Hear more about feral cats

Scan this QR code to listen to the episode or search for 'Western Australia by nature' wherever you get your podcasts.



Previous page

**Left, clockwise from top** Numbat (*Myrmecobius fasciatus*). Photo – Jiri Lochman. Slender tree frog (*Litoria adelaidensis*). Photo – Alice McGlashan/Sallyanne Cousins Photography. Western ground parrot. Photo – AlanDanks/DBCA **Right** Feral cat. Photo – alan1951/Adobe Stock

**Above** Feral cat caught on camera with a brush-tailed phascogale (*Phascogale tapoatafa*). Photo – DBCA

## Grants

Feral Cat Management Grants are one of the initiatives funded under the WA Feral Cat Strategy. The grants are managed by the DPIRD's State Natural Resource Management Program in partnership with DBCA and are available for community-based projects to support feral cat management with conservation outcomes for WA's native fauna.

There is \$2 million available over four years to support Traditional Owners, community groups and non-government organisations to control feral cats and build community awareness.

Funding recipients from the first two grant rounds were announced in March and August 2024, with \$500,000 in grants allocated to five projects in round one and a further \$500,000 to three projects in round two.

Successful projects from the first two rounds have included an aerial baiting program to protect greater bilby (*Macrotis lagotis*) populations in parts of the Pilbara, trialling innovative trapping technologies to protect native species including malleefowl (*Leipoa ocellata*) and chuditch (*Dasyurus geoffroii*), undertaking strategic feral cat management to create buffer zones around priority areas in Dryandra Woodland National Park, and delivering a coordinated approach to feral cat management to protect threatened species including the chuditch, hooded plover (*Thinornis cucullatus*) and Australasian bittern (*Botaurus poiciloptilus*) in the Great Southern region.

## Management options

Options to manage feral cats in Western Australia include:

- landscape-scale management: strategically using aerially deployed feral cat bait options such as Eradicat® baits
- supporting Aboriginal ranger programs to manage feral cats
- trapping and shooting: although labour intensive, trapping and shooting may be feasible for protecting native species at key sites
- using new technologies: new poison-delivery technology for use in specific situations, such as Felixer™ grooming traps.

Feral cat control must be humane and undertaken in accordance with the *Animal Welfare Act 2002*.

## Robot technology

One new technology the strategy supports is the use of Felixer™ grooming traps, which received Commonwealth Government approval in 2022 for rollout after successful research trials.

Felixers™ use lasers and cameras to detect the shape and movement of a cat, before shooting a toxic 1080 gel. The feral cat will instinctively groom itself to remove the gel and, in doing so, ingests a lethal dose of poison.

While not effective as a means of landscape-scale feral cat control, Felixer™ traps provide a promising method for small-scale and targeted control of feral cats in locations such as islands, enclosures or localised areas of high conservation value.

In 2018, DBCA in collaboration with Roy Hill and Fortescue Metals Group commenced testing three Felixer™ units in photo-

only mode in the Pilbara region in the presence of northern quolls (*Dasyurus hallucatus*) and a variety of other species to test for target specificity.

Northern quolls, which are endangered nationally and in WA, were identified as a potentially problematic target-species for Felixer™ use due to their cat-like shape.

Felixers™ have been deployed in various parts of the State including the Southern Jarrah Forest, Pilbara and south coast and have shown promise as a complementary tool.



**Above** Powderbark Wandoo Track, Dryandra Woodland National Park.  
Photo – DBCA

**Below** Feral cat feeding on a kangaroo roadkill carcass in South Australia.  
Photo – 169169/Adobe Stock

**Inset below** A solar-powered Felixer cat grooming trap, on site at Chingarrup Sanctuary, as part of Bush Heritage's Fitz-Stirling Fauna Recovery Program.  
Photo – Eddy Wajon/Sallyanne Cousins Photography





Almost \$2.7 million will increase aerial feral cat baiting through the Western Shield program, allowing the number of baits laid to increase by more than 45 per cent under the strategy. Another \$2 million went to the State Natural Resource Management Grants Program to support community-driven projects.

## HELICOPTER MONITORING

On occasion, with the aid of helicopters, DBCA monitors feral cats fitted with GPS collars to gain valuable insight into their behaviour and habitat use to improve feral cat management.

The GPS collars used on feral cats have a limited communication distance for downloading the data. In some instances, the collared feral cats are too far away from roads, inhibiting access to the data from road-based vehicles.

By using helicopters, the team can survey large areas efficiently and quickly, successfully tracking the feral cats and downloading the data from the air.

A VHF antenna fitted to the front of the aircraft is connected to the receiver in the aircraft to roughly locate the cat. The receiver 'beeps' when flying over a collared feral cat on the ground.

Data collected helps to determine a feral cat's home range, how far they travel, and when they frequent these areas.

This information can then be verified against, and guide, on-ground monitoring

methods where cameras are used to assess activity trends for feral cats to gauge management effectiveness.

Aerial monitoring of collared feral cats via helicopter is conducted DBCA's South Coast and Midwest regions and in the Avon Valley.

## SIGNS OF SUCCESS

1080 baiting is recognised as the most effective method for landscape-scale management of feral cats on mainland Australia. Landscape-scale baiting with 1080 poison through DBCA's Western Shield program is the primary tool used to manage feral cats on DBCA-managed land.

Funding allocated through the WA Feral Cat Strategy is enabling the area baited with the patented feral cat bait, Eradicat® to be significantly expanded to include new sites in the Wheatbelt and South Coast regions to reduce the impact of feral cats on our native fauna.

Despite significant challenges, there have been success stories. Managing introduced predators has supported the recovery of black-flanked rock wallabies in the Calvert Range and Cape Range National Park.

In the Goldfields, feral cat management in collaboration with the Wiluna Martu Traditional Owners has allowed the reintroduction of free-ranging bilbies and brushtail possums (*Trichosurus vulpecula*).

**Above left** Dr Michelle Drew tracking feral cats from a helicopter.

**Above** Feral cat being fitted with a GPS tracking collar.

Photos – DBCA

**Below** Common brushtail possum (*Trichosurus vulpecula*).

Photo – Sarah Comer/DBCA



**Conor Doherty** is a Communications Officer in DBCA's Public Information and Corporate Affairs branch. She can be contacted at (08) 9219 9919 or [conor.doherty@dbca.wa.gov.au](mailto:conor.doherty@dbca.wa.gov.au)

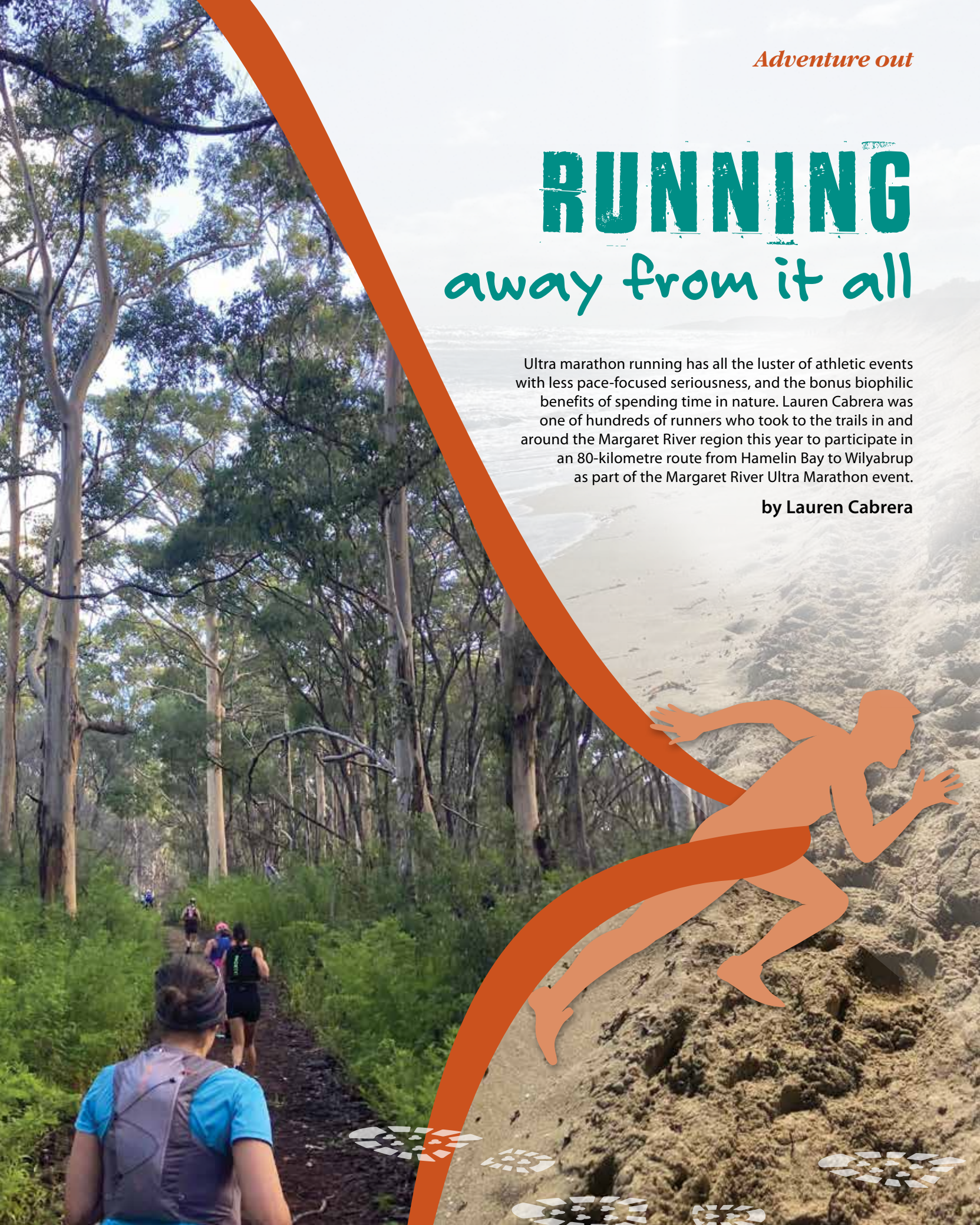
*Adventure out*

# RUNNING

## away from it all

Ultra marathon running has all the luster of athletic events with less pace-focused seriousness, and the bonus biophilic benefits of spending time in nature. Lauren Cabrera was one of hundreds of runners who took to the trails in and around the Margaret River region this year to participate in an 80-kilometre route from Hamelin Bay to Wilyabrup as part of the Margaret River Ultra Marathon event.

**by Lauren Cabrera**





**A**s my shoes sank into the soft white sands of Hamelin Bay, I looked up to the throngs of supporters lining the rocky cliffs that flanked the shore. Unlike other start lines of running events where someone always decides electronic dance music is acceptable at 7:30am, we wrestled with our nerves to the sound of a steady bass rhythm that got louder as the start time neared.

The crowd responded, their cheers increasing as the countdown began.

.....  
*Previous page*

**Main left** Running through the Boranup Forest.

*Photo – Lauren Cabrera*

**Main right** The long stretch of soft sand on the second leg.

*Photo – Peter Smith*

**Above** Lauren happy in the forest.

*Photo – Photos4sale*

**Inset** Pete left it all on the course.

*Photo – Lauren Cabrera*

As a particularly average and naively enthusiastic trail runner, I was looking forward to the challenge of completing 27.5 kilometres of the 80-kilometre course from Hamelin Bay to Howard Park winery at Wilyabrup in WA's south-west. In a relay team, we would be running past the famous surf break of the Margaret River Masters surf competition, the beautiful Boranup Forest, over parts of the Cape to Cape Track, as well as campgrounds, wineries and coastal towns.

My vision of being the inspirational athlete in a motivational video was stymied after the first 100 metres by my clumsy attempt to lumber up and onto a jetty from the sand. As we rounded the first corner, someone very helpfully explained “Only 79.9 kilometres to go!”

## AWAY WE GO

The Margaret River Ultra Marathon is a popular event, each year bringing hundreds of people to the region to run over the trails that follow in and around

the coastline of this most picturesque part of south-west WA.

Event organisers, Rapid Ascent, have a self-imposed entry limit to preserve the competitor experience and the event consistently reaches participant capacity months out from race day.

I got the luck of the draw and was designated the first two legs of the race—11.5 kilometres and 16 kilometres, respectively. Arguably the easier out of all five legs and with the added benefit of starting first thing in the morning, instead of having to wait until later in the day to get going.

The first leg took me inland through heathland and karri forest, following single track and four-wheel-drive tracks on the way to Boranup campsite. I slowed through the aid station, past the expectant faces of friends, family and relay team members as they searched for their runner to cheer them on, re-supply them with water or food, or hand over the timing chip to the next team member.



## Ultra marathons

The broad definition of an ultra marathon is any distance greater than a marathon, which nominally clocks in at 42.2 kilometres. Ultra marathon events generally start at 50 kilometres, and can go all the way up to 50 miles, 100 kilometres, 100 miles and even up to 200 and 350 miles and more.

This event saw competitors completing the full 80-kilometre distance solo, or in a mix of teams of between two and five people sharing the distance split over five legs. The second day saw competitors completing a marathon distance of 42.2 kilometres over a similar course.

“There’s no greater equaliser than an ultra marathon,” Rapid Ascent Event Director Sam Maffett said.

“To see how people from all walks of life come together to conquer and achieve the unthinkable—80 kilometres, on foot, in a single day—it really is special!”



I reassured myself the reason people were overtaking me at the start of the second leg was because they were starting fresh, not on tired legs after an hour of running up and down hills and sandy coastal tracks. No way was it a reflection on my athletic prowess, certainly not!

We rounded the corner and into the stunning Boranup Forest, with its cool, tall trees and quiet majesty. I couldn’t take the grin off my face, and if it weren’t for my fellow runners I would have spent many a moment with my arms outstretched like Jack and Rose on the front of the Titanic.

Trail running gives me such quantifiable joy. I am by no means a fast runner, but I find great pleasure running through the bush for hours with a backpack full of snacks and water with a goal to simply finish a decent distance, and no desire to set any kind of remarkable pace record.

I drank in the beauty of the forest as the kilometres passed by. The course gently undulated and was wholly

**“The Margaret River Ultra Marathon is a popular event, each year bringing hundreds of people to the region to run over the trails that follow in and around the coastline of this most picturesque part of south-west WA.”**

runnable. The vibe was encouraging, and I happily chatted with other runners when we slowed to hike up the steeper hills.

Conto Campground approached, and I was greeted by my teammates. I passed over the timing chip to Pete who was running arguably the hardest 19 kilometres of the course. Long stretches of soft sand over the beaches of Leeuwin Naturaliste National Park. Steep hills and rock hopping over challenging terrain.

“Deep in the soft stuff now! No running on this bit!” came the text to the group chat from Pete after 10 kilometres.

Pete ran over sections of the Cape to Cape Track, enjoying the spectacular views above Conto Cliffs and past Redgate.

“Large sections of this area were burnt in the 2021 fires, but new life is plentiful with the vegetation coming back,” Event Director Sam Maffett said.

**Top left** Running through picturesque vineyards.  
*Photo – Rapid Ascent Events*

**Above left** Enjoying the scenic views of Leeuwin Naturaliste National Park.  
*Photo – Lauren Cabrera*

**Above right** Start line for Margaret River Ultra Marathon.  
*Photo – Rapid Ascent Events*



## WRAPPING IT UP

Our final teammate, Zoe, met Pete at Prevelly to hand over the timing chip before setting off past the famous Margaret River Mainbreak at Surfers Point and back onto sections of the Cape to Cape Track.

It was mid-afternoon at this point, six hours after I set off that morning, and Zoe was only getting started. She had the longest distances for the final two legs, with almost 32 kilometres to cover.

“Dying on leg 5 now, the old tank is empty,” came the text from Zoe. “This is brutal.”

I waited at the finish line for Zoe, happily chatting to a woman called Wendy whose daughter Jodi was completing the 80 kilometres solo. The predictive tracker said Jodi was due to pass over the finish line any minute but there was no sign of her.

Jodi was an experienced ultra runner, and completing the Margaret River Ultra meant she would be awarded with the coveted ‘triple crown’ after finishing three of Australia’s largest, and most noteworthy ultra running events—Margaret River Ultra Marathon (80km), Run Larapinta Stage Race (127.5km) and Surf Coast Century (100km).





“Ultra marathons are no easy feat. These endurance races challenge not only your body but your mind, and it is a magical feeling when we overcome something that challenges us to such an extent.”

Zoe passed over the finish line as the sun was well on its way down at 6pm. The finish line was much like the opening scenes of the movie *Love Actually*, where exhausted bodies were swallowed up in the loving embrace of friends and family.

It was sometime later as I was lining up to get some food that I heard Jodi’s name called over the loudspeaker. I never saw Jodi, but I breathed a sigh of relief for an anxious Wendy and hoped her daughter was ok.

Ultra marathons are no easy feat. These endurance races challenge not only your body but your mind, and it is a magical feeling when we overcome something that challenges us to such an extent.

I lost count of the number of times the pain in my legs and lungs was quickly forgotten as I lifted my head to the scenes that surrounded me. We are so blessed in

Western Australia to have such natural beauty and I count my blessings that I am able to run in and around, over and through it all with my little backpack full of snacks.

.....  
*Opposite page*

**Above** Start line for Margaret River Ultra Marathon.

**Below** The challenging terrain of the course involved runners scrambling up rocks.

**Inset** Runner enjoying the gorgeous Leeuwin Naturaliste National Park.

*This page*

**Above** Start line for Margaret River Ultra Marathon.

*Photos – Rapid Ascent Events*

**Right** Zoe and Lauren at the finish line.

*Photo – Lauren Cabrera*



**Lauren Cabrera** is a *LANDSCOPE* editor. She loves running trails through the Perth Hills where she lives. She can be contacted at [lauren.cabrera@dbca.wa.gov.au](mailto:lauren.cabrera@dbca.wa.gov.au) or (08) 9219 9903.



# Karijini EXPERIENCE

A celebration of culture  
and landscapes



Visitors to the annual Karijini Experience enjoyed a diverse and inclusive program of high-quality arts and cultural experiences, while also forging a connection with the homeland of the Banjima people, amongst the awe-inspiring landscape of Karijini National Park.

by Richard Campbell



The beauty and awe of Karijini National Park must be experienced firsthand to get a full understanding of its depth, both in terms of natural landscape and its heritage. When visitors drive into the park they can feel the warmth, and there is no doubt that it is a special place.

The Banjima people have looked after this Country for thousands of years, and each year, people gather in celebration of the people on Country at the annual Karijini Experience event.

Visitors take in the stories and language of the Banjima people, starting with a welcome ceremony and opening Barlgabi corroboree before four days of

guided walks, workshops, entertainment and storytelling before the final Barlgabi and Yurlu Lounge concert.

The experience honours the long-held culture with respect and understanding of Country.

### A WEEK TO REMEMBER

The Karijini Experience is not just one event; it is made up of more than 50 related events that bring together four days of culture, art, food and music on Country.

In 2024, the Karijini Experience ran from 4 to 7 April and events included culture weaving (including an immersive weaving workshop using First Nations knowledge and cultural practices), kids sewing, art workshops, bush medicine and even football skills provided by the Perth Football Club.

Storytelling, language workshops and sharing of artefacts gave visitors exposure to the Banjima culture. In the evenings, kangaroo and damper was prepared using traditional methods and shared with visitors.

A moving tribute was paid to the late Mr Maitland Parker, a key figure behind the Karijini Experience. The family put together a pictorial and historical account of his involvement on Banjima homeland.

To supplement each day, live entertainment brought people together through music and dance. Bands and solo musicians performed each night, all with Aboriginal roots and influences—two Western Australian bands, Bradley Hall

and Broken Tides, as well as soloists from NSW and Victoria.

The headline act was Dan Sultan on his second trip to the Karijini Experience, who performed in the event finale, the Yurlu Lounge.

### SPOILT FOR CHOICE

One of the greatest explorations of culture is through food. Visitors enjoyed two dining experiences with Fervor at Dales Gorge, who offered Aboriginal produce and flavours through a degustation that rivalled upmarket city restaurants.

Indigenous chef, Zach Green, introduced Iluka Kitchen and presented two dinners. He also offered cooking demonstrations and prepared meals for the Elders. Iluka provided a great option for visitors to have onsite food available from one of the region's leading chefs.

Visitors enjoyed a fitting film under the stars called 'Sweet As', which was shot in the Pilbara region with fantastic backdrops and a moving story line. Fashion parades promoted local talent on the catwalk in the red dirt Karijini landscape. The show was put together by Wonnarua woman, Amanda Healy of the fashion house Kirrikin, and featured Banjima artist and fashion designer, Kaninda.

Another highlight enjoyed was the Jundunmunnah Art Exhibition held at the Karijini Visitor Centre; a showing and sales opportunity for local Indigenous artists fostering their incredible talent and showing off the rich culture of the region.

#### Previous page

**Main** Banjima guided walks were held daily throughout the event.

**Inset from top** Traditional dance in celebration of Country. A variety of workshops were enjoyed by young and old. Visitors enjoyed Aboriginal produce and flavours.

**Above** The stunning backdrop of Karijini National Park.

Photos – CMS Events

Discover more about Karijini National Park

Scan this QR code or visit Parks and Wildlife Service's 'LANDSCOPE' playlist on YouTube.



3)



4)



5)

“One of the greatest explorations of culture is through food.”



6)



7)



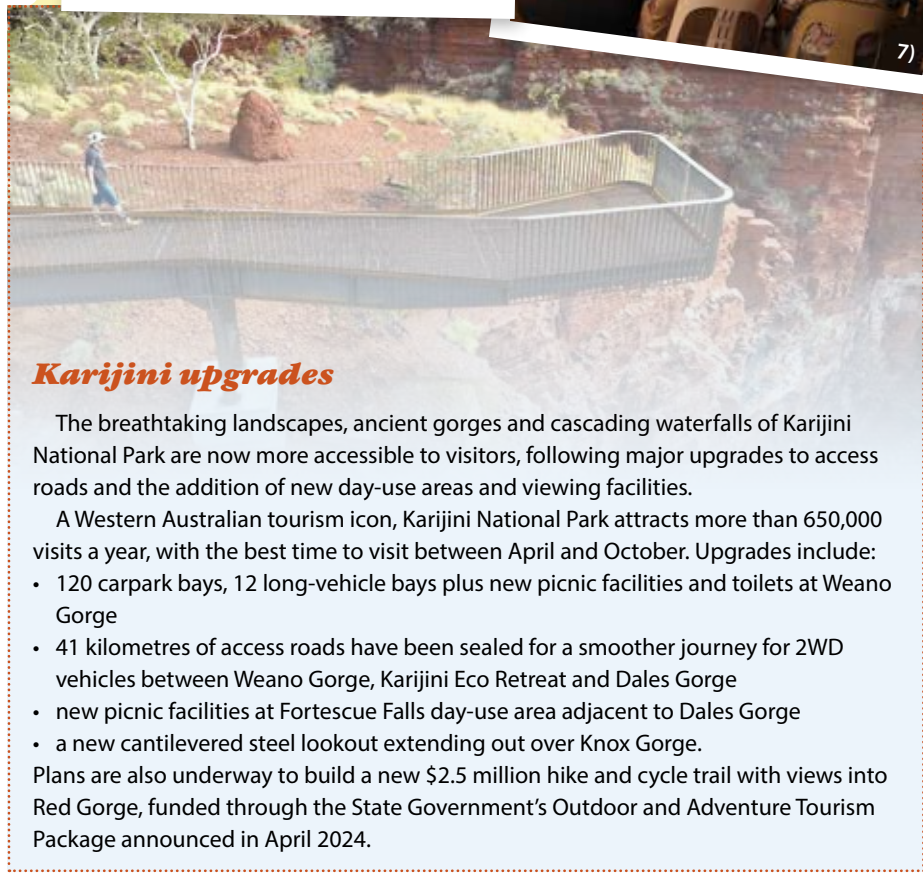
## MAKE THE TRIP

While the schedule of the Karijini Experience was action packed, including early morning yoga sessions and massage, the trip to the Pilbara was well worth it for visitors.

Outside of the Karijini Experience event, the vast landscape and expansive gorges of the region, including the impressive Joffre Gorge, are incredible to witness. Especially for those who want to be a little more adventurous and go hiking followed by a refreshing break in one of the natural pools.

.....  
*Opposite page:* 1) Perth Football Club workshop and skills session. 2) Models getting ready to show off local artists in the fashion parade.  
*This page:* 3) Sharing traditional face painting techniques as part of the Banjima experience. 4) Bradley Hall Band on the first night. 5) Fervor's dining experience at Dales Gorge. 6) Culture weaving was very popular under the main marquee. 7) Relaxing to enjoy the screening under the stars of 'Sweet As', filmed in the Pilbara. *Photos – CMS Events*

**Right** New lookout extending over Knox Gorge. *Photo – Shem Bisluk/DBCA*



### *Karijini upgrades*

The breathtaking landscapes, ancient gorges and cascading waterfalls of Karijini National Park are now more accessible to visitors, following major upgrades to access roads and the addition of new day-use areas and viewing facilities.

A Western Australian tourism icon, Karijini National Park attracts more than 650,000 visits a year, with the best time to visit between April and October. Upgrades include:

- 120 carpark bays, 12 long-vehicle bays plus new picnic facilities and toilets at Weano Gorge
- 41 kilometres of access roads have been sealed for a smoother journey for 2WD vehicles between Weano Gorge, Karijini Eco Retreat and Dales Gorge
- new picnic facilities at Fortescue Falls day-use area adjacent to Dales Gorge
- a new cantilevered steel lookout extending out over Knox Gorge.

Plans are also underway to build a new \$2.5 million hike and cycle trail with views into Red Gorge, funded through the State Government's Outdoor and Adventure Tourism Package announced in April 2024.



## TRAIL CLASSIFICATIONS



### Class 2

No previous experience required. Suitable for all fitness levels.



### Class 3

Some bushwalking experience and minimal navigation skills. Moderate level of fitness required.



### Class 4

Experienced bushwalkers and moderate navigation skills. May require navigation equipment. Self-reliant in emergency first aid and weather hazards. Good level of fitness required.



### Class 5

Very experienced bushwalkers only. High level of navigation skills with navigation equipment. Self-reliant in emergency first aid and weather hazards. High level of fitness required.



**WARNING!** Flash floods can occur at Karijini. If it rains while you are in the gorges, please leave gorges safely and promptly.



## EXPLORING KARIJINI GORGES

In the north of Karijini National Park, small creek beds, hidden in the rolling hillsides and dry for most of the year, suddenly plunge down 100-metre chasms. Further downstream the gorges become wider and their sides change from sheer cliffs to steep slopes of loose rock. Finally the drainage systems emerge as alluvial fans into the Fortescue Valley. The gorges provide a refreshing retreat from the arid plains above. Visitors can take one of the many walk trails through the gorges and experience the spectacular scenery, dramatic waterfalls and clear, fresh pools.

Trails in Karijini are rated from Class 2 to 5. Please see trail classification information (left).

**Dales Gorge** See the tranquil sunken gardens, deep sedge-fringed pools, and permanently cascading waterfalls.

**Joffre and Knox gorges** Appreciate the power of water shaping the landscape. There are impressive waterfalls, and deep, cold pools. See for yourself how the gorges were formed.

**Hancock and Weano gorges** Experience the spectacular views, precipitous cliffs and narrow passages. Banded iron rock formations tower over the valleys far below.

**Kalamina Gorge** A great introduction to the gorge system with its delightful trail and picnicking area.

**Hamersley Gorge** This gorge has dramatic colours, textures and reflections.

**Above Handrail Pool, Weano Gorge.**  
Photo – Remi Bremont

**Left** Guided tours are popular in the gorges.  
Photo – CMS Events

**Richard Campbell** is the Director of CMS Events that hosted the Karijini Experience event. He can be contacted at (08) 9201 9888 or richard@cmsevents.com.au



PRESENTED BY **LANDSCOPE** MAGAZINE  
WESTERN AUSTRALIA 2025 CALENDAR

**WIN!**  
a two-night  
stay at RAC  
Karri Valley  
Resort



## Western Australia 2025 Calendar

- 12 stunning photos
- large date squares
- spiral binding

RRP \$14.95 each

**LANDSCOPE** subscriber price \$12.70

\*Apply discount code LANDSCOPE-SUB at checkout for online purchases

# WIN

## A two-night stay at RAC Karri Valley Resort!



Enjoy a break from the everyday as you lap up the tranquil surroundings of Karri Valley Resort, situated deep within karri forest and overlooking beautiful Lake Beedelup. Will it be a cosy, romantic escape, or full of outdoor adventure?

Pemberton is but a short drive away, as are a large range of local attractions, so settle in and make what you will of this magnificent opportunity.



Purchase online at [shop.dbca.wa.gov.au](http://shop.dbca.wa.gov.au)

# wa naturally

(08) 9219 9000

[customer.service@dbca.wa.gov.au](mailto:customer.service@dbca.wa.gov.au)

17 Dick Perry Avenue, Kensington WA 6151

Reply Paid 25, Locked Bag 29,

Bentley DC WA 6983



@waporkswildlife

- Yes, I would like to order \_\_\_ (qty) calendar/s at \$12.70\* each** (plus postage, see calculator below)
- Yes, I would like to order \_\_\_ (qty) calendar/s at \$14.95 each** (plus postage, see calculator below)
- Please send all calendars to my address
- Please send \_\_\_ calendars to my address and \_\_\_ gift calendar/s to gift recipient addresses

### My details

Name

Address

Phone

Email

### Gift recipient 1 details\*\*

Name

Address

Phone

Email

### Gift recipient 2 details\*\*

Name

Address

Phone

Email

\*\*Include additional gift recipients on separate paper and attach to this form.

### Payment section

Payment enclosed: cheque/money order made payable to 'Department of Biodiversity, Conservation and Attractions'.

Visa  Mastercard

Card number

Expiry date  /  Amount \$

Signature

Name as it appears on card

#### Postage calculator – 2025 calendar

Based on Australia Post pricing June 2024. Prices subject to change.

#### Within Australia

1 calendar – add \$4.50 (large letter) per address

2 calendars going to the same address – add \$10.60 (parcel)

3 or more calendars going to the same address – add \$14.50 (parcel)

#### Overseas

Outside Australia add \$14.65 per calendar (Economy air).

# ORDER FORM

	SUBSCRIBER'S PRICE	RRP	QTY
<b>Bush Books:</b>			
Common Birds in the Backyard	\$5.90	\$6.95	
Frogs of Western Australia	\$5.90	\$6.95	
Bush Tucker Plants of the South-West	\$5.90	\$6.95	
Australian Birds of Prey	\$5.90	\$6.95	

*Western whistler* art print available in:  
A3 \$35, A4 \$25, or A5 \$15

	<b>PRODUCT TOTAL</b>	\$
1-2 items...\$4.00	<b>Shipping and handling</b>	\$
3-4 items...\$6.50	International orders add \$10 per address	\$
5-10 items...\$12.00	Express orders add \$5 per address	\$
11 or more items...\$15.00		\$
* Large format \$12.50	<b>ORDER TOTAL</b>	\$

## Your details

Name

Address

Postcode

Contact number

Email address

## Payment section

Payment enclosed: cheque/money order made payable to 'Department of Biodiversity, Conservation and Attractions.'

Visa  Mastercard

Card number

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
----------------------	----------------------	----------------------	----------------------	----------------------	----------------------	----------------------	----------------------	----------------------	----------------------	----------------------	----------------------	----------------------	----------------------	----------------------	----------------------	----------------------	----------------------	----------------------	----------------------

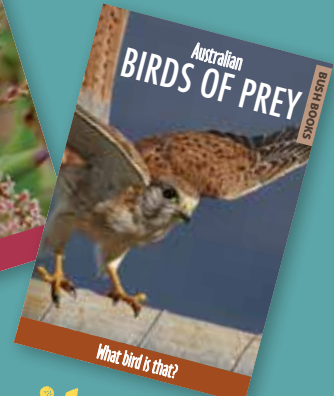
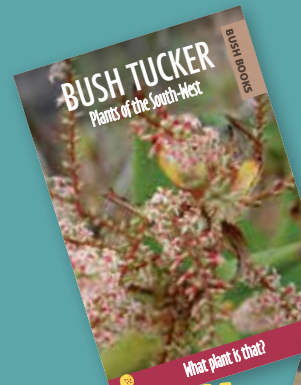
Expiry date  /  Amount \$

Signature

Name as it appears on card

# Capturing your curiosity

Pocket-sized bush books about WA's wonderful wildlife.



Purchase online at [shop.dbca.wa.gov.au](http://shop.dbca.wa.gov.au)

# wa naturally

(08) 9219 9000  
customer.service@dbca.wa.gov.au  
17 Dick Perry Avenue, Kensington WA 6151  
Reply Paid 25, Locked Bag 29,  
Bentley DC WA 6983



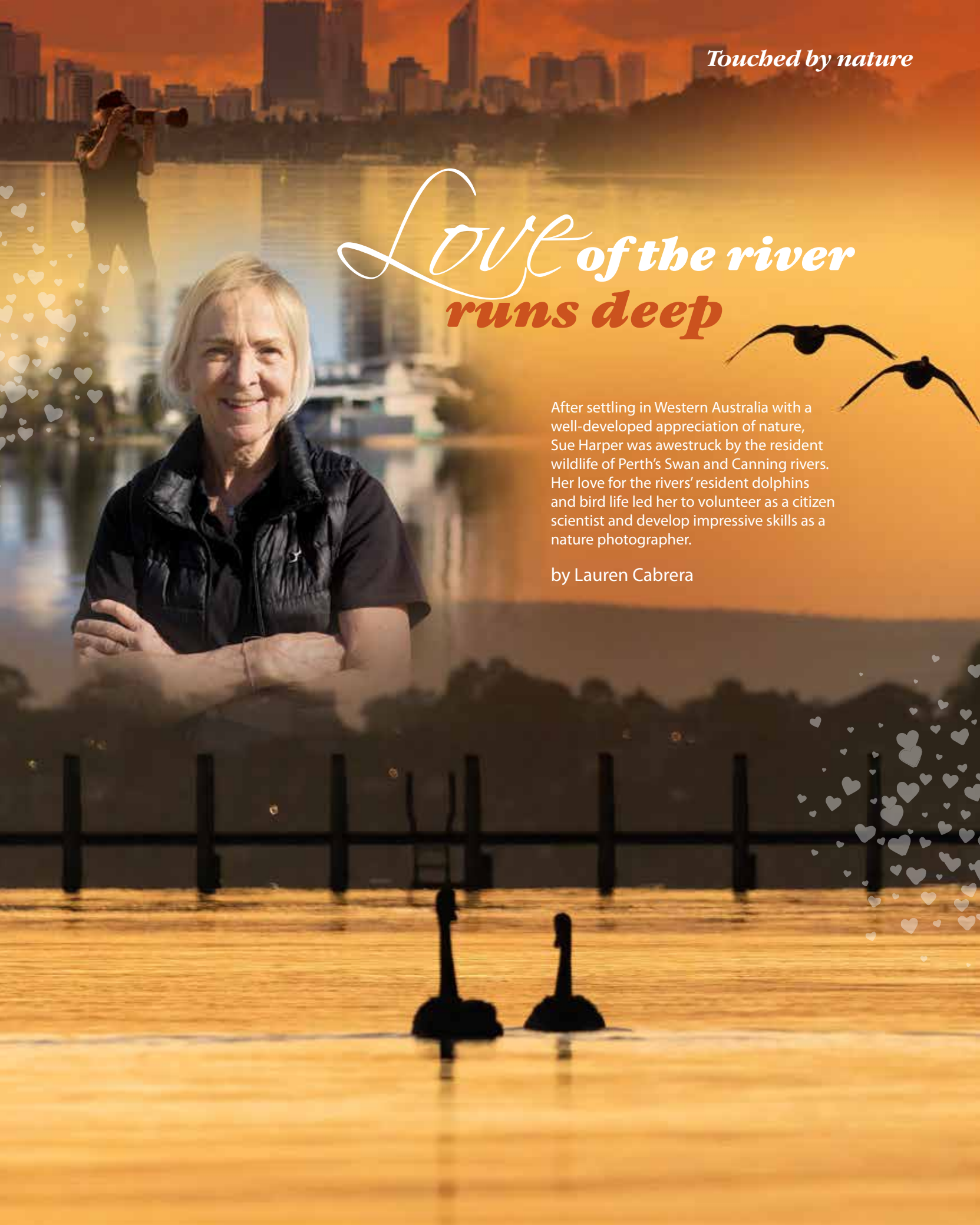
@waparkswildlife

*Touched by nature*

# *Love of the river runs deep*

After settling in Western Australia with a well-developed appreciation of nature, Sue Harper was awestruck by the resident wildlife of Perth's Swan and Canning rivers. Her love for the rivers' resident dolphins and bird life led her to volunteer as a citizen scientist and develop impressive skills as a nature photographer.

by Lauren Cabrera



Growing up in the rolling countryside of south-west England, Sue Harper's deep connection to nature blossomed from an early age. Weekends were spent exploring ponds and streams, digging up fossils, sketching and painting nature.

She has lived and worked in London, followed by stints in California and Korea before falling in love with Western Australia. Sue and her family eventually migrated to Perth, settling in Mount Pleasant.

"I wanted to live as close to the river as possible as I was enchanted by the sheer size and beauty of the Riverpark. It was far from the hustle and bustle of city life we'd known and with dolphins on our doorstep!" Sue said.

## HAND IN HAND

Sue would often walk her dog around the Canning and Mount Henry bridges, always looking out over the river. Sue had enjoyed volunteering over the years in different countries so after reading an article in The West Australian newspaper in 2010 about River Guardians calling for volunteers for their Dolphin Watch program, she thought what better way to put her hours of walking around the river to good use.

"I thought it was the perfect opportunity for me to learn more about our



dolphins and help protect them," Sue said.

Fourteen years later, she is still volunteering and loving it.

"It's just so rewarding, and I've learned so much about Perth's Indo-Pacific bottlenose dolphin population, our river system and the abundance of wildlife that it supports."

"In the process, I've developed a passion for photography. It goes hand in hand with my love of nature and I really enjoy being able to capture all the beauty that I see."

Sue has won several awards for her volunteering work and her photography and is a self-confessed 'bird nerd'.

"You don't always see dolphins, but you always see birds," Sue said.

Sue attributes her dedication to volunteering to her connection to nature and how being by the river made her feel connected to her new country.

"People gravitate to the river for different reasons and many people deeply care about our rivers. They have a strong



.....  
*Previous page*

**Top** Sue photographing the Swan River.

*Photo – Alan Gill/DBCA*

**Main** Black swans (*Cygnus atratus*) on the Swan River at sunrise.

*Photo – Sue Harper*

**Inset** Sue Harper.

*Photo – Alan Gill/DBCA*

**Above** Resident dolphin in the Canning River.

*Photo – Sue Harper*

**Left** Sue in action capturing dolphin fin identities and data, to assist the Dolphin Watch project.

*Photo – Alan Gill/DBCA*



sense of guardianship to protect this incredible natural resource and ensure it remains a healthy and thriving ecosystem for the wildlife that it supports.”

“When you love something, you want to take care of it.”

Sue has a lot of respect for the cultural values of the Swan and Canning rivers, and strongly feels that sense of place when she is there.

“The Riverpark is a site of great cultural significance and it’s important to recognise that, coming to Australia. The Whadjuk Noongar connection with these waterways goes back more than 40,000 years, which just amazes me.”

### GIVING BACK

“Time spent by the river is good for my well-being and good for my fitness, so why not give back to science while I’m out there too. I’m so grateful we have so many community volunteer groups that donate their time to protecting and enhancing the health of the river systems.”

**“...many people deeply care about our rivers. They have a strong sense of guardianship to protect this incredible natural resource...”**

Dolphin Watch volunteers gather data from what they have observed while in and around the rivers, and input that data into reports via the River Guardians website or smartphone app. The project combines data from research scientists and reports from Dolphin Watch volunteers to help better understand how the Indo-Pacific bottlenose dolphins (*Tursiops aduncus*) use Perth’s rivers and estuary.

“I can’t speak highly enough of the friendly, engaging and committed Dolphin Watch team and volunteers, as well as the researchers from Murdoch and Edith Cowan universities who are experts in their fields. Their enthusiasm is infectious and has resulted in a highly successful citizen science project.”

### NATURE’S WAY

Sue not only gathers information on the wildlife that reside in the Riverpark, but also empties fishing line bins dotted along the shoreline as part of the ‘Reel It In’ project.

**Above left** Often seeing shorebirds, Sue captures Australian pied oystercatchers (*Haematopus longirostris*).

Photo – Sue Harper

**Top** Recording data into the Marine Fauna sightings app.

Photo – Alan Gill

**Above** Indo-Pacific bottlenose dolphins (*Tursiops aduncus*) socialising in the river.

**Below** Osprey (*Pandion haliaetus*) on the Canning River.

Photos – Sue Harper





### ***How can you help care for the Swan and Canning rivers***

- Join River Guardians via [riverguardians.com](http://riverguardians.com)
- Champion a Reel It In bin near you
- Be Dolphin Wise
- Be RiverWise by practicing low-impact gardening techniques and reduce harmful fertilisers going into waterways
- Collect any rubbish you see around the Riverpark
- Fish responsibly and dispose of fishing gear appropriately
- Report sick and injured wildlife to the Wildcare Helpline (08)9474 9055
- Participate in education programs for children and adults



“The devastating impacts that discarded fishing line and entanglements have on our wildlife really concerns me,” Sue said. “It’s one of the worst risks to our dolphin populations, from what I’ve seen.”

“It’s not only about the threats to our dolphins as everyone loves to see pelicans, swans, as well as other shore and migratory birds. Nobody wants any harm to come to them.”

While it’s always wonderful to see a new dolphin calf, Sue knows all too well about the high mortality rate. One resident female dolphin, Akuna, has lost

three calves due to illness, injury and fishing line entanglement, strengthening Sue’s devotion to clearing up hazardous discarded fishing gear.

“As I was the first to photograph Akuna’s new calf in 2018, Super was kindly named after me, an amalgamation of ‘Sue’ and ‘Harper’...Super.”

It was heartbreaking for Sue to witness Super struggle with injury and poor health. She disappeared in January 2022 and was never seen again. In June of that same year, Akuna had another calf, Kaya.

“Thankfully, Kaya seems to be thriving and is a very lively calf,” Sue said.

“The hard moments make you appreciate the good ones. The mortality rate is high so it’s a bit of a fight to survive and always so great to see the calves thrive.”

### **DOING YOUR BIT**

Sue has enjoyed many special moments while she has been observing the rivers. She’s witnessed all kinds of dolphin behaviours including fishing frenzies, tail slapping and tossing jellyfish.



**Above** Black swans on the Swan River.

*Photo – Sue Harper*

**Inset** A Reel It In bin installed as part of the River Guardians project.

*Photo – Alan Gill/DBCA*

**Left** Some of the river dolphins that Sue helps to protect.

*Photo – Sue Harper*



Once she saw a dolphin leap out of the water several times and was able to capture the moment with her camera, which was shared many times on social media.

Whether people are running, walking, riding their bike or picnicking, everyone stops and stares at a dolphin and is so thrilled to see them.

Sue delights in swapping a dolphin story with Riverpark visitors, talking to others and sharing some dolphin facts. She knows how to tell each of the dolphins apart by looking at their distinct dorsal fin

markings. With the help of Finbook, she can take a close look at her photos and get a reliable identification.

“I feel privileged and lucky to live in such a special place and feel a great sense of responsibility to help protect those who can’t protect themselves.”

“There are so many risks for wildlife and river health in general; a lot due to human impact such as rubbish, pollution and entanglements. It’s the wildlife that must cope with everything that ends up in the waterways.”

“To us, our rivers are recreational, but for wildlife, their rivers are home. Their needs should come before ours.”

“I advocate for wildlife in my own small way by reporting my dolphin observations and any wildlife injuries I see. I’m glad my photos can help serve a purpose to showcase the beauty of the river as well as the plight of wildlife so something can be done to ensure its well-being and survival.”

“It’s been a real life-changer for me being a part of an environmental volunteer group. I’ve met so many amazing people and learnt so much, it’s so rewarding.”

“I would encourage anyone who loves dolphins and enjoys the Riverpark

to join a conservation wildlife group like River Guardians or support your local environmental group. There’s so much out there that people can get involved in, even in a small way, that will make a difference in supporting a healthy river system.”

**Above left** Australian pelican (*Pelecanus conspicillatus*) with fishing tackle tangled on its leg.

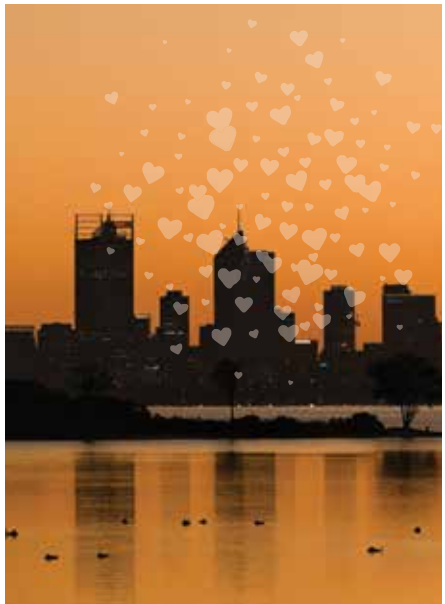
Photo – Sue Harper

**Above right** Sue encourages other river users to help protect the river.

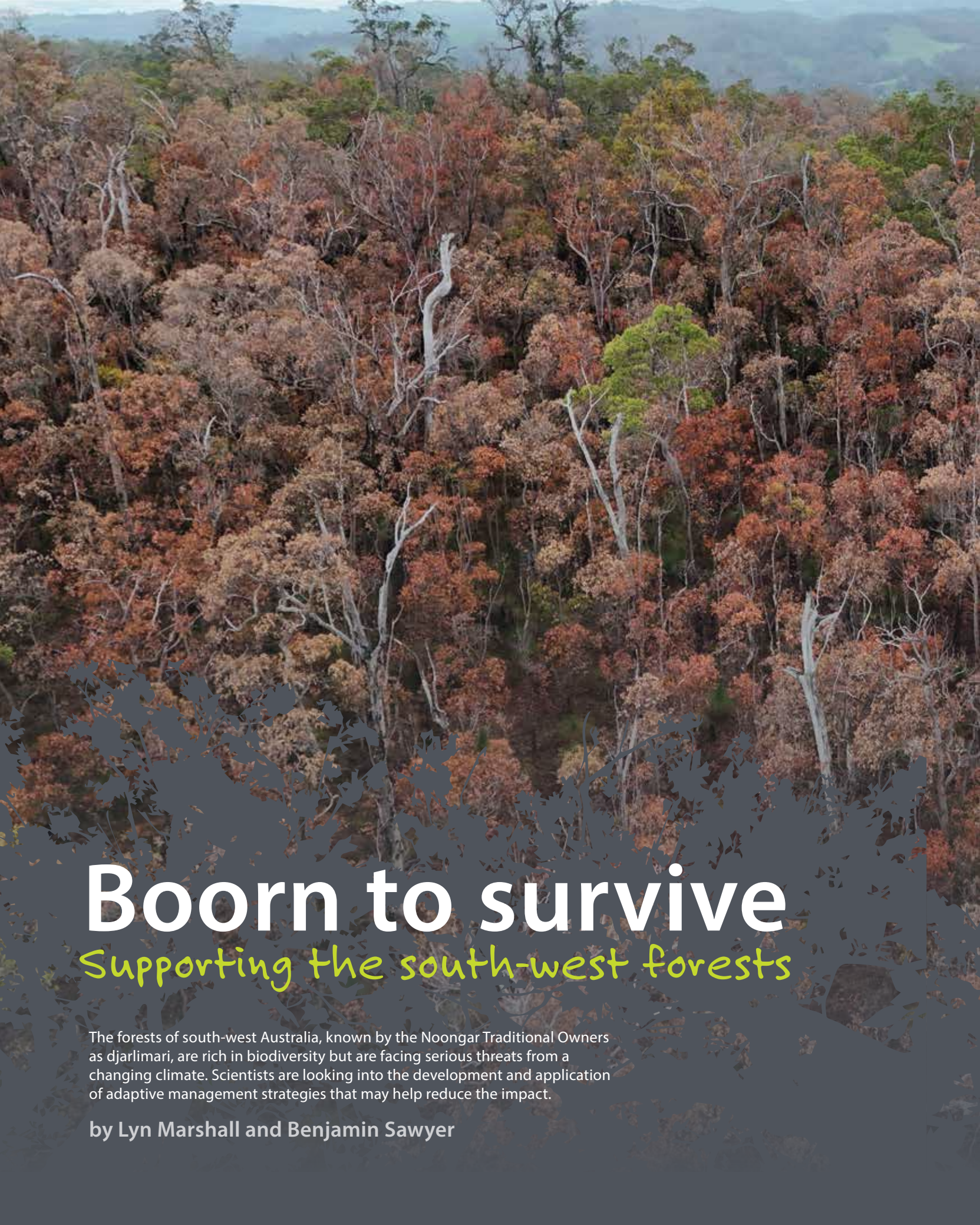
Photo – Alan Gill/DBCA

**Right** Perth city skyline and the Swan River viewed from Melville Bird Sanctuary.

Photo – Sue Harper



**Lauren Cabrera** is a LANDSCOPE editor. She can be contacted at (08) 9219 9903 or [lauren.cabrera@dbca.wa.gov.au](mailto:lauren.cabrera@dbca.wa.gov.au)



# Boorn to survive

## Supporting the south-west forests

The forests of south-west Australia, known by the Noongar Traditional Owners as djarlimari, are rich in biodiversity but are facing serious threats from a changing climate. Scientists are looking into the development and application of adaptive management strategies that may help reduce the impact.

by Lyn Marshall and Benjamin Sawyer





**A**ustralia's south-west djarlimari (forests) are the traditional lands of the Noongar peoples and are a subset of the Southwest Australian Floristic Region (SWAFR)—a globally recognised biodiversity hotspot, which also includes areas of Yamatji country. Biodiversity hotspots are so named because they are both biologically rich and yet deeply threatened.

Although their intact habitat represents just 2.5 per cent of the world's land surface, these hotspots support more than half of the world's plant species and nearly 43 per cent of bird, mammal, reptile and amphibian species are endemic to these areas (found nowhere else in the world). Recent study has identified 8379 native vascular plant species and subspecies occur in the SWAFR. South-west djarlimari support more than 3750 plant species and subspecies—a remarkable richness considering the

limited topographic and climatic variation across the region.

South-west djarlimari are the focus of the *Forest Management Plan 2024–2033* and sit in an ancient, weathered landscape of low nutrient soils that has remained geologically undisturbed for tens of millions of years. This stability and low nutrient status allowed plant species to evolve without major extinctions seen elsewhere in the world and develop diverse traits that promote survival in fire-prone, infertile habitats.

These evolutionary traits include a variety of strategies to withstand the long dry spells that are common to this part of the world, such as specialised root systems to maximise uptake of water and nutrients, and leaf morphology that minimises loss of moisture to transpiration.

## CHALLENGING CLIMATE

Bureau of Meteorology (BOM) research has identified that since the 1970s fewer and weaker cold fronts and low pressure systems crossed the south-west region during the cooler winter months, while high pressure systems and associated warm, sunny dry days were stronger and more frequent. This is particularly problematic for the south-west djarlimari as winter cold fronts and lows are the primary source of rainfall. The latest climate projections from the Intergovernmental Panel on Climate Change agree the one region in the world



where most of the models concur on the magnitude of rainfall changes and where signs of climate impacts are already evident is south-west Western Australia.

Evidence from sequencing DNA indicate the dominant overstorey boorn (trees) of south-west djarlimari (*Eucalyptus* and *Corymbia*) dates back to Gondwanan times when Australia was still connected to Antarctica and typifies the survival mechanisms adapted by plant species to their environment over the subsequent eons. Boorn play a crucial ecological role in water, nutrient and

.....  
*Previous page*

**Main** Djarraly (*Eucalyptus marginata*) or jarrah die-off between Kirup and Donnybrook.  
*Photo – Joe Fontaine/Murdoch University*

**Above** Mighty djarraly showing signs of water stress.  
*Photo – Benjamin Sawyer/DBCA*

**Above right** Parrot bush (*Banksia sessilis*) have adapted to long periods of dryness and heat.  
*Photo – E. Shok*



**Inset above** Kari (karri) die-off.  
Photo – George Matusick/Murdoch University

**Above right** Djarraly die-off.  
Photo – Benjamin Sawyer/DBCA

**Above far right** Australian honey fungus (*Armillaria luteobubalina*) grows on stressed trees.  
Photo – Richard Robinson

**Right** Carnaby's black-cockatoos (*Zanda latirostris*) rely on boorn and canopy for survival.  
Photo – Sallyanne Cousans

carbon dioxide cycles. They also support biodiversity in their own right by providing habitat to an incredible array of plant, animal and fungi species, many of which have their own survival strategies based on their relationship with boorn.

These south-west boorn species demonstrate high levels of resilience by readily re-sprouting from lignotubers or epicormic buds beneath the bark following disturbances such as fire, and have adapted to limited rainfall over the summer months by accessing ground water stores.



Discover more about ecological thinning

Scan this QR code or visit Parks and Wildlife Service's 'LANDSCOPE' playlist on YouTube.





“South-west djarlimari sit in an ancient, weathered landscape of low nutrient soils that has remained geologically undisturbed for tens of millions of years.”

## PUSHING THE LIMITS

However, despite this suite of remarkable adaptations, reducing annual rainfall and increasing depth to groundwater, higher mean temperatures, extreme temperature events and prolonged drought are causing physiological challenges that can push boorn to a threshold beyond where they are able to survive.

Studies of global ecology changes suggest that the speed at which plants succumb, and the nature of the impacts,

can be rapid and abrupt. Even minor reductions in average rainfall have been observed to result in significant increases in the frequency and severity of drought events.

Higher temperatures amplify the effects of drought, weaken trees and reduce their defences to stressors such as disease and pests, which have been shown to thrive in warmer conditions. Drier, hotter conditions also increase the likelihood and occurrence of high intensity bushfires to which forests have lower resistance.

In early 2011, following an acute drought and series of heatwaves, approximately 16,000 hectares of forest experienced die-off in patches across the Northern Jarrah Forest. In these areas, the death of mature boorn affected the djarlimari canopy, changing the overall forest structure that in turn affected associated animal and fungal species.

Another significant vegetation die-off event began in February 2024 in the djarraly (*Eucalyptus marginata* – jarrah)

and kari (*Eucalyptus diversicolor* – karri) djarilmari following the 2023/24 protracted hot and dry summer.

Increasing die-off is predicted to occur as the climate in south-west WA continues to warm and dry. Enhancing our understanding of such events could allow improved responses in the future.

## LOOKING FOR ANSWERS

The Department of Biodiversity, Conservation and Attractions (DBCAs), in collaboration with Murdoch University and other university partners, are conducting fieldwork following the 2011 and more recent events. Scientists and forest managers are using a range of techniques including remote sensing and satellite data to determine the location, severity and size of die-off patches, the vegetation types and species affected (and those unaffected), and susceptible site characteristics including geology and soils.

Field and laboratory research continues with the intent to better understand the ecophysiology of key species and in particular, their water use strategies, drought tolerance, ability to recover from drought, and critical thresholds of water availability and heat likely to cause plant deaths.

By understanding the common and unique characteristics of die-off sites within



.....  
**Above** Majestic boom of the south-west kari forest.

Photo – DBCA

**Left** Eucalyptus epicormic resprouting after bushfire, an adaptive survival mechanism.

Photo – Jiri Lochman



**Above left** Comparison of no ecological thinning (left) and ecological thinning (right), in the djaarily regrowth forest.  
*Photo – Cliff Winfield*

**Top** DBCA officer measuring soil moisture.

**Above** Measuring boorn diameter to understand growth rates in response to climate and management.  
*Photos – DBCA*

a vegetation community, ecologists and land managers like DBCA may anticipate future events, target research and produce vulnerability maps that predict how djarilmari might be impacted. This also enables the development and application of adaptive management strategies that may help reduce the impact of die-off events in certain circumstances.

## REDUCING STRESS

Once such adaptive management approach being implemented under the *Forest Management Plan 2024–2033* is the application of ecological thinning (selectively removing smaller stems from an area) to areas identified as vulnerable to water stress due the impacts of climate change.

Many forest stands in south-west djarilmari consist of young over-dense tree populations as a result of past regenerative forest management practices. The high water demand of these stands makes them particularly vulnerable to increased temperatures and drought events.

Although djarraly and kari djarilmari have self-thinning tendencies, this process has been shown to be slow and cannot occur quickly enough to relieve water stress (by naturally reducing the number of trees) in an increasingly warming and drying climate.

Ecological thinning (selectively removing smaller trees from an area) can reduce moisture stress to mitigate the effect of climate-induced impacts on our boorn and forest ecology.

Boorn remaining after ecological thinning are anticipated to become healthier and stronger and better able to resist the interaction of threats such as less available groundwater, disease, weeds and bushfire. They will also provide ecological benefits as they grow to maturity, such as providing habitat hollows and greater storage of carbon.

## WHAT'S NEXT

Evaluating and learning from the forest's response to events such as the 2011 and 2024 die-off informs management approaches to improve forest health and resilience. Analysis of these events, and the abiotic and biotic contributing factors, is being incorporated into selection of forest enhancement areas (those areas in which ecological thinning is planned and undertaken) and ecological thinning processes.

Managing south-west forests into an uncertain future is a challenge. Research and contemporary management actions seek to support the boorn and protect the flora and fauna of the south-west djarilmari.

**Lyn Marshall** is a project officer with DBCA's Wildlife Protection Branch and worked on the development of the Forest Management Plan. She can be contacted at [lyn.marshall@dbca.wa.gov.au](mailto:lyn.marshall@dbca.wa.gov.au) or (08) 9219 9956.

**Benjamin Sawyer** is coordinator of the Forest Management Plan with DBCA's Conservation and Ecosystem Management Division. He can be contacted at [ben.sawyer@dbca.wa.gov.au](mailto:ben.sawyer@dbca.wa.gov.au)





# GATEWAY TO EXPLORATION

Collie and Dwellingup accredited 'Trail Towns'

Participation in trail activities is at an all-time high, making it an ideal time to venture out and revel in nature. Popular regional towns Collie and Dwellingup have just been recognised as Western Australia's premier Mountain Bike Trail Towns by Trails WA.

by Rod Annear

A trail town is more than a mere stopover for outdoor lovers—it's a gateway to exploration, a hub of community spirit, and a symbol of sustainable tourism. Collie and Dwellingup in the popular tourist centre of south-west Western Australia have earned Trail Town status for meeting all the requirements for services and infrastructure by Trails WA.

Not only do the towns offer a variety of mountain bike trails, but they also serve as hubs for the renowned Munda Biddi bike trail and Bibbulmun walking track. These towns epitomise the shift of regional centres from industry-focused to tourism-driven, offering visitors an immersive and genuine experience in regional WA.

With more than 1000 authorised trails spread across the State listed on trails.wa.com.au, outdoor enthusiasts have so many options to explore, each offering a distinctive experience that celebrates the natural beauty and cultural heritage of the region.

Previous page

**Left** Riders crossing the Murray Bridge.

Photo – Russel Ord

**Right** Inzamia Trail.

Photo – Denzil Heeger

**Right** Collie Visitor Centre welcomes all trail enthusiasts.

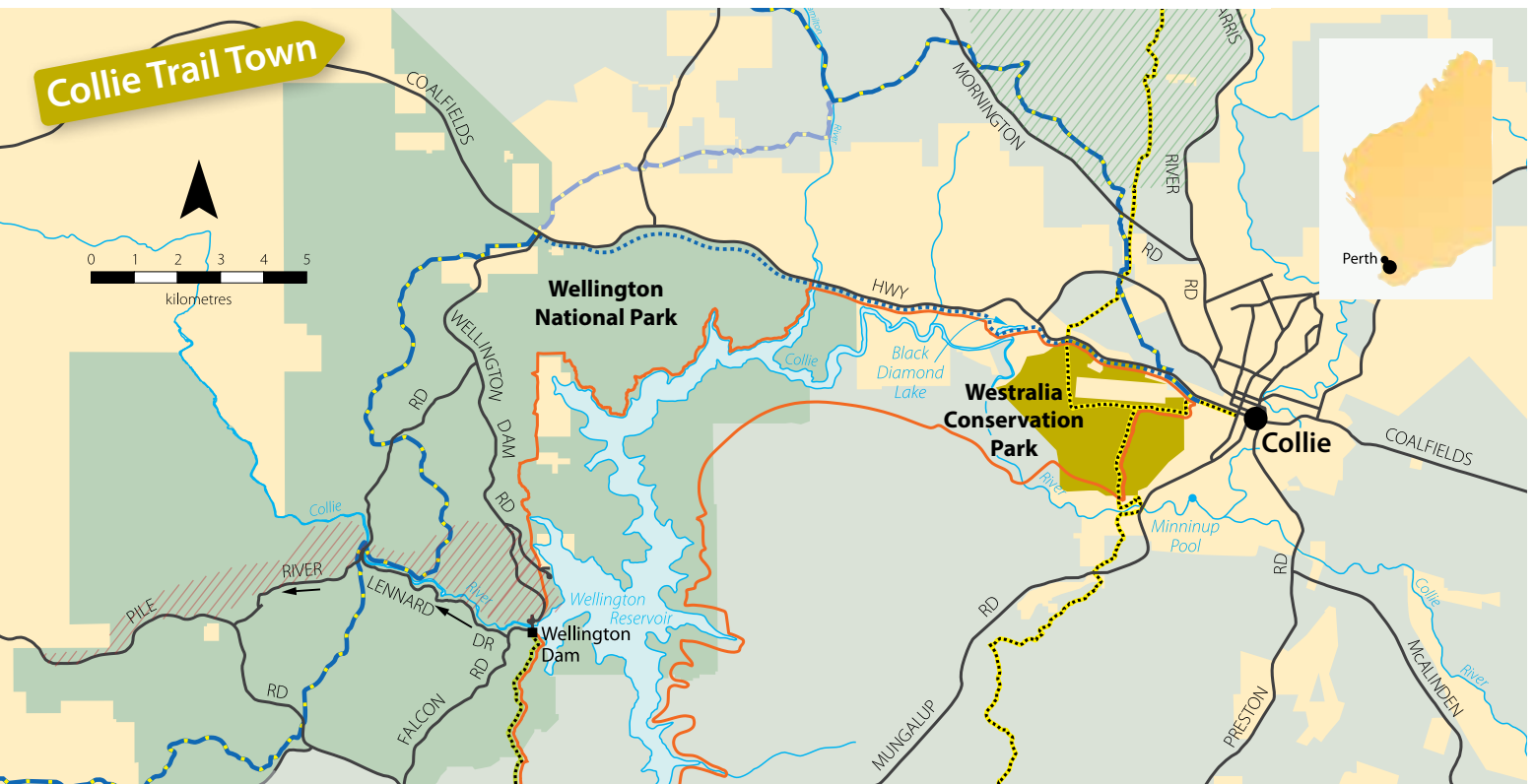
Photo – Bianca Turner

## ENHANCING EXCELLENCE

Collie and Dwellingup have earned recognition as Western Australia's premier Mountain Bike Trail Towns. This prestigious title highlights their commitment to outdoor activities, community involvement, and sustainable tourism. The Trail Town initiative, led by Trails WA in partnership with the Department of Biodiversity, Conservation and Attractions (DBCA) and the Department of Local Government, Sport and Cultural Industries (DLGSC), works to present these towns as lively tourism

hubs deeply integrated with their local trail networks.

The Trail Town accreditation process was built around strict criteria, developed in partnership with DBCA and DLGSC, including trail infrastructure, landscapes, tourism marketing, maintenance and community engagement. By meeting these standards, towns like Collie and Dwellingup can proudly showcase the Trail Town logo, signalling to visitors that they are welcoming destinations for outdoor enthusiasts seeking adventure and authentic experiences in regional Western Australia.



- National park
- Conservation park
- State forest
- Sealed road
- Unsealed road

- Traffic direction arrow
- Bibbulmun Track
- Wellington Spur (Bibbulmun Track)
- Munda Biddi Trail

### Legend

- Munda Biddi Trail to be closed
- Munda Biddi Trail realignment
- Wilman Bilya walk trail

### Mountain Bike Trail Networks

- Arklow Trails Network
- Wellington Trails Network



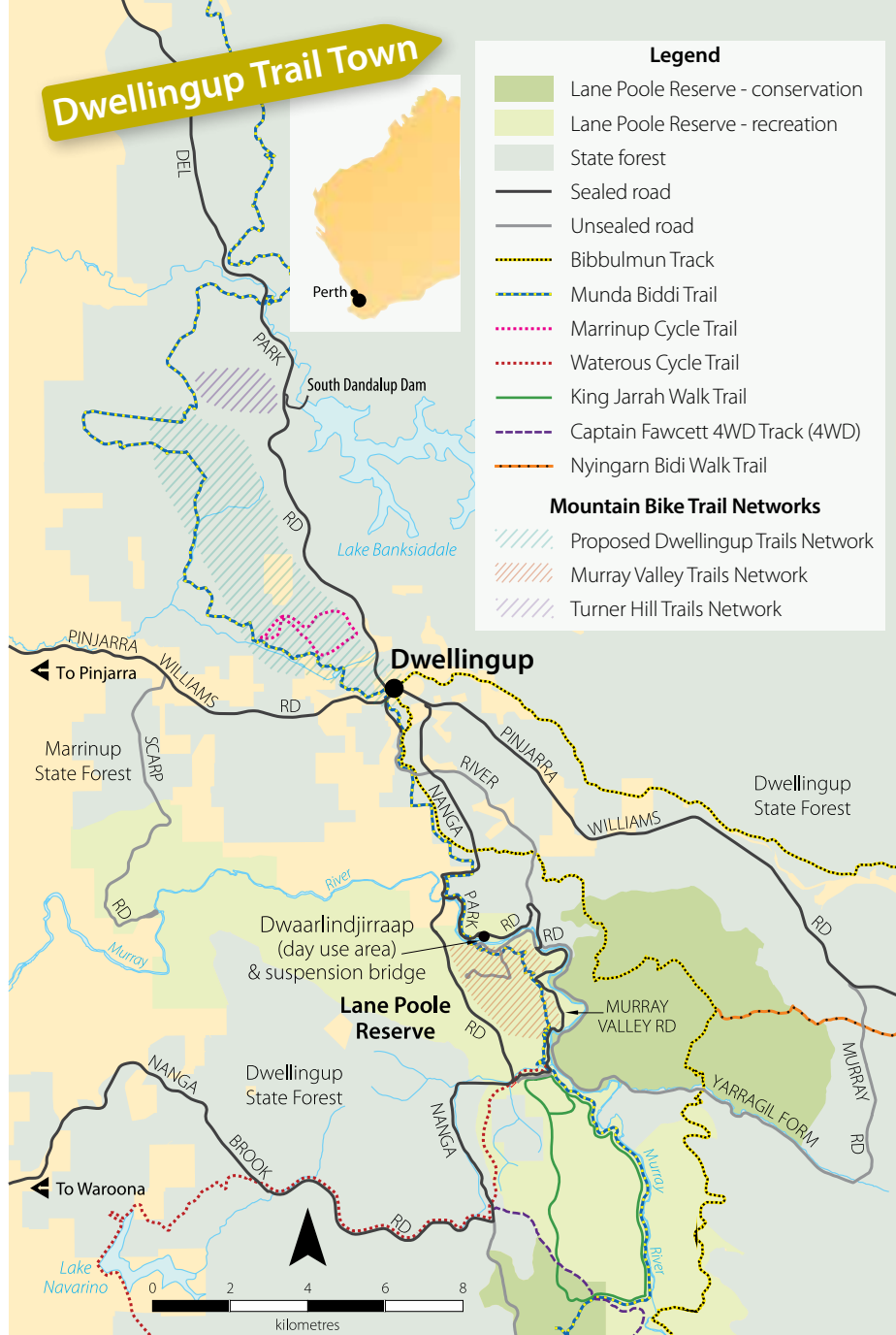
Suzanne Hillier, Chairperson of Trails WA, emphasises that the Trail Town initiative is more than just acknowledgment; it's about transformation. By embracing these standards, towns can reinvent themselves as bustling activity centres, attracting visitors, stimulating commerce and fostering community pride. The accreditation process is designed to be inclusive and supportive, offering personalised guidance to help towns enhance their appeal to trail visitors and improve their trail tourism offerings.

### VISITING A TRAIL TOWN

When exploring Collie and Dwellingup, visitors can expect a warm reception from the local community, a wide array of outdoor pursuits, and an opportunity to immerse themselves in the breathtaking landscapes and rich history of these trail towns. From serene spots for picnics and observing wildlife to challenging mountain bike trails and family-friendly escapades, these towns cater to all preferences. One notable feature is the proximity of certain trails to the towns, allowing visitors to access some of the trails right from the town centre.

Businesses with the Trail Friendly Business landmark play a vital role in enriching visitors' experiences by providing services and local expertise that support exploration of the top-notch trails in WA. Whether travellers are on their own, with family, or in a group, Collie and Dwellingup have the necessary amenities for a memorable trail experience.

Collie and Dwellingup shine as premier trail towns in WA, standing out as outstanding examples of outdoor recreation, community involvement, and sustainable tourism. These towns



not only offer a gateway to adventure but also embody community spirit, cultural enrichment and environmental conservation. By embracing and discovering these lively trail towns, visitors can immerse themselves in Western Australia's stunning trail networks and create lasting memories in the heart of nature.

**Above right** The Dwellingup Trail Network is vast and varied.  
Photo – Tourism WA

**Right** Dwellingup Trails and Visitor Centre.  
Photo – Trails WA





## Collie's crown jewels

The Wambenger Trails—Collie's vast network of kayak, hike, and mountain bike trails—are named after the local brush-tailed phascogale. This cute little dynamo is common to the area, and if you don't see one out on the trails, you'll spot their likeness in logos across town or at the main trailhead at Central Park.

At the trailhead at Central Park or outside the Collie Visitor Centre, you'll find maps, or you can head to [trails.wa.com.au](http://trails.wa.com.au) for up-to-date information.

### Morning:

Start your day with coffee at the Wagon in Central Park for great coffee and takeaway breakfast and lunch options. If you'd prefer a sit-down affair, head across the street to Barn-Zee's for table service and hearty trail fuel.

Begin your adventure by pedalling along the Collie River Trail from Soldiers Park to Minninup Pool. From here, you can jump onto the Kylie Trail, an easy to moderate trail through Westralia Conservation Park with an option to return to town via the Karak Trail. Alternatively, warm up on the Collie Wagyl Biddi Trails, suitable for beginners to intermediates and featuring a skills area.

### Afternoon:

Just out of town, explore the expansive Arklow Trails, sweeping through the jarrah forest. Start with a warm-up on the Arklow Adaptive Trail, a 9.2 kilometre loop suitable for adaptive bicycles. From here, connect to the 220 Trail for a fun and challenging ride following the contours of Harris River Dam. Alternatively, try Railway Rise for a warm-up climb or Bull Ant for a roller coaster ride to the Munda Biddi Trail connection.

### After lunch:

Take a pleasant 30-minute drive to Wellington National Park. This stunning park boasts the largest dam mural in the world, spanning 8000 square metres. View it from the platform near Kiosk At The Dam or the dam wall crossing. Enjoy trails ranging from easy to difficult for hikers, mountain bikers, and kayakers. For a fun cross-country treat, try Big Dipper, with an option to loop back on Lichen This, or head down Van Dam for an easy descent toward Sika Trail. For more adrenaline, try Black Glove, a technical trail traversing rocky terrain.

If you prefer hiking, explore the Wiilman Bilya Trail, a challenging 87 kilometre multi-day adventure starting in Collie and winding around Wellington Dam. For an easier option, try the Sika Trail, a dual-use trail linking the Kiosk with Potters Gorge. The Jabitj Trail is another excellent option, following the Collie River to the beautiful Honeymoon Pool.

Refuel at Kiosk At The Dam, offering toasties, homemade cakes, pies, coffee, and craft beer.

### Evening:

Finish your day with a specky pub meal at the Crown Hotel Collie, serving modern pub fare with friendly service.



1) Wagon in Central Park



3) Wellington dam



2)

This page

Above left Lichen This Trail in Wellington National Park.

Photo – Denzil Heeger

2) Exploring Collie Trail networks. 4) Federal Hotel, Collie.

1) 2) 3) 4) Photos – Russel Ord

Opposite page

5) Photo – Chad Gerber 6) Photo – Peter Nicholas/DBCA

7) Photo – Sarah Coote 8) Local pump track at the Dwellingup Trails and Visitor Centre. Photo – Trails WA

Far right Collie Darkan Rail Trail, Collie.

Photo – Ian Pavey



4)

## Dwellingup delights

### Morning:

Start your day at Waypoints Café, located in the Dwellingup Trails and Visitor Centre, offering great coffee and a selection of food. Enjoy your coffee in the sun or relax on the outdoor seating. If you prefer a sit-down meal, head up the street to Blue Wren Café for a full breakfast and lunch menu with outstanding homemade cakes. Needing gear for your day out on the trails? Visit Dwellingup Adventures to hire or purchase bikes, kayaks and camping equipment.

To get your bearings, head to the Dwellingup Trailhead and take The Mack, an easy dual-use loop trail around the town. For a faster pace, follow the signs to the Munda Biddi and take Emu Run through to Solitary. Loop back into town on the Munda Biddi, or challenge yourself with the Marrinup Circuit Trail or surrounding moderate trails locally known as 'Town Trails'. For a family-friendly warm-up, try the local pump track next to the Dwellingup Trails and Visitor Centre.

### Afternoon:

For lunch, enjoy the quaint and lush settings of Garden Eats, offering a vegetarian and plant-based menu. Check out the adjoining gallery for local and regional art. For a heartier meal, try Longriders Café for great burgers and local beer.

Just south of town, nestled in Lane Poole Reserve, discover the Murray Valley Mountain Bike Trails. Start at the Murray Valley Trailhead and warm up on Captain Hook, then traverse Yarri Up to The Roost. Test your skills on the challenging Busted Nuts Trail or enjoy the gentler Year 1 Trail. The Roost Trailhead can be accessed using the shuttle road if you prefer to avoid climbing.

In Lane Poole Reserve, explore hiking, kayaking, or picnic and camping spots alongside the Murray River.

### Evening:

Head back to town for a relaxing dinner at the iconic Dwellingup Hotel, offering local dishes and cold beverages with a lovely street frontage dining area.

### Other attractions:

In addition to trails, explore the Hotham Valley Railway for a scenic steam train ride. Visit Wine Tree Cidery for a cosy atmosphere and a great selection of ciders and wines. On your way home, stop by the Forest Discovery Centre to view creative local art and crafts and enjoy an immersive walk following the Noongar seasons.

Within the Dwellingup Trails and Visitor Centre, find locally made gifts and merchandise, as well as detailed trail information. For bike, kayak, and camping gear rentals, visit Dwellingup Adventures. They also offer guided tours, from thrilling white-water rafting trips to scenic strolls along the Bibbulmun Track.



Garden Eats



**Rod Annear** is the Assistant Director for Visitor Services with DBCA's Parks and Wildlife Service. He can be contacted at (08) 9219 852 or [rod.annear@dbca.wa.gov.au](mailto:rod.annear@dbca.wa.gov.au)

There are more than 28,750 triggerplant (*Stylidium*) specimens housed in Australian herbaria, each providing a verifiable record of a particular species in a particular place at a particular time. These specimens are at the heart of research efforts to compile a detailed account of the more than 300 species found across Australia. Recent travel to a number of herbaria to examine and accurately catalogue their collections has led to a suite of novel discoveries, one of which turned out to have been named and described 165 years ago.

In 2019, an unusual specimen from Annaburroo Billabong, which lies between Darwin and Kakadu National Park, was unearthed at the Northern Territory Herbarium. Collected in 1984 by freshwater plant specialist Helen Aston, the plants were notable for their delicate growth form, stalked flowers, and white corolla with a purplish-brown spot on each lobe. This collection didn't match any others in the herbarium and was therefore flagged as a potential undescribed species. Similar plants were subsequently photographed at Charnley River-Artesian Range Wildlife Sanctuary in Western Australia's Kimberley region and posted on iNaturalist by WA Herbarium Research Associate Bevan Buirchell before being collected from the same area during the 2022 Wilinggin-West Kimberley Bush Blitz expedition. They appeared to match the mystery species at Annaburroo, although additional observations were needed to be sure.

Information was shared with Kym Brennan, a scientist with considerable expertise on the Territory's flora who relishes the thrill of the chase. He was dogged in his efforts to relocate plants at Annaburroo, searching through swampy habitat in searing heat for several hours before eventually finding the plants, which were restricted in their distribution and observed to be at risk from feral pig activity. His pressed specimens and photographs helped to establish that the Annaburroo and Charnley River plants were indeed identical.



## Spotted triggerplant (*Stylidium tenerrimum*)

Meanwhile, a similarly determined hunt through historical botanical literature was occurring to ensure the species hadn't already been scientifically named and described. This included an assessment of species named by Ferdinand von Mueller in 1859 following his travels across northern Australia on an expedition led by Augustus Gregory. His Latin description of *Stylidium tenerrimum* leapt off the page—'corolla alba, lobis omnibus macula sanguinea signatus' [corolla white, the lobes all marked blood-red]. The corresponding specimen, collected in 1855 between Macadam Range and Providence Hill, was examined online via the Global Plants image database, revealing our mystery species as one and the same. Moreover, in a classic case of mistaken identity, the specimens filed under *S. tenerrimum* at the Northern Territory Herbarium were found to belong to a different species.

Additional collections of *S. tenerrimum* from Kakadu National

Above Spotted triggerplant (*Stylidium tenerrimum*).

Photo – Kym Brennan

Park and near the Daly River have since been found at the John T. Waterhouse Herbarium (University of New South Wales) and Australian National Herbarium although the species remains poorly known, especially in Western Australia. One can't help but wonder whether more material will come to light as the myriad of Australian collections are slowly but surely examined and verified.

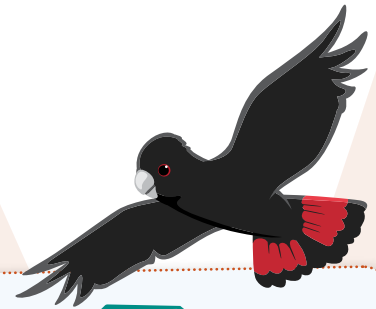
Revised information on *S. tenerrimum* will soon be published in *Nuytsia*, the journal of the Western Australian Herbarium, as part of a major taxonomic update on the triggerplants of northern Australia. This research, which has been supported by funding from the Australian Biological Resources Study, will include the description of a raft of novel species, many of them poorly known.



## Protecting our plants

Here in the southwest of Western Australia we are lucky enough to be in one of only 36 biodiversity hotspots in the world, meaning we have some pretty unique plants. Spring is the perfect time to head out on a bushwalk in one of our national parks to observe these plants and their beautiful wildflowers.

There are a few important things to remember when we head out in the national parks, have a go out the below game to find out the do's and don'ts of bushwalking.



### On a roll



#### Instructions

- Each player must find a gum nut as their playing piece.
- Use a dice or download a dice rolling app.
- Each player takes a turn at rolling the dice and moving their gum nut from the 'start' position.
- First player to reach the finish wins.





## Western whistler (*Pachycephala fuliginosa*)

Formerly considered a subspecies of the eastern states' golden whistler (*Pachycephala pectoralis*), the western whistler is a rounded songbird with a heavy, thick bill. The western whistler spans from Kalbarri south, and east to drier regions of south Australia and western Victoria. The male western whistler has an olive-yellow back, black head, white chin, bright yellow underparts, and a black-tipped grey tail. Females are plain grey. Their calls include a loud piercing whistle with a whip-like ending.

Illustration by Gooitzen van der Meer

Reference photo by Mark Davidson

# Western Australia by Nature



A LANDSCOPE  
MAGAZINE PODCAST

Listen to the scientists, adventurers, twitchers and flora enthusiasts you've been reading about in *LANDSCOPE* articles.

Subscribe, download and listen in to **Western Australia by Nature** wherever you get your podcasts. Tune in for a new science series, launching in late 2024.



2023\_683

ISSN 0815-4465 0 1



9 770815 446003



[shop.dbca.wa.gov.au](http://shop.dbca.wa.gov.au)

**wa naturally**