

WA'S PARKS, WILDLIFE AND CONSERVATION MAGAZINE

LANDSCOPE

Volume 40 Number 2 Summer 2024–25 \$7.95

FULL BOTTLE
WA's iconic
bottlebrushes

**Sniffing out
dieback**
Detector dogs
in action

Mountain Country
Tourism in Great
Southern

Yalbunullup trails
Urban mountain
biking

Western Australia by Nature



**NEW SCIENCE PODCAST
- OUT NOW!**

Science communicator Alan Gill talks science
with the people making waves in Western
Australia's natural world.

Subscribe, download and listen to
Western Australia by Nature
wherever you get your podcasts.



ON THE COVER

Front cover *Callistemon* sp. In the early stages of inflorescence, as its unique stamens unfurl into bloom.

Photo – Rachel Walmsley

Back cover Singing honeyeater (*Gavicalis virescens*) on an eastern states crimson bottlebrush (*Callistemon citrinus*), commonly cultivated in WA.

Photo – Jiri Lochman

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.

As travellers, we visit places to discover something new, something unique; the people, the foods, the culture and the nature of each place. It is these unique characteristics that fascinate and delight us in places newly discovered. In a state as vast as Western Australia, it never ceases to amaze me how distinctly different the natural values of each region are compared to the next.

Experiences in nature have the power to change our perspective, to calm us, to centre us and to connect us. Facilitating tourism experiences in WA's incredible natural areas feels like a privilege and it is the focus of DBCA's newly developed Nature-based Tourism Division.

New and emerging tourism opportunities including tours (see 'Wanga Mia experience' on page 44), visitor services, accommodation, events and experiences (see 'Urban mountain biking in Perth's north', page 36) are being prioritised in key areas.

Promoting, facilitating and managing tourism experiences is no mean feat and takes the coordinated effort of land managers, Traditional Owners, local communities, tourism operators and not-for-profits (see 'Wander with the wild in Mountain Country' on page 18).

As land managers, we must strike the right balance between protecting the natural integrity of these areas so they can continue to be a home for wildlife as well as allowing access for visitors to see and enjoy them.

While a consistent framework is being established to assess and facilitate tourism opportunities, it is our responsibility, whether visitor or resident, to care for these lands and waters so that we and others may enjoy them.

Western Australia's natural wonders have existed long before we came to be, and, with our help, will continue to exist long after we are gone.

Sveva Falletto, Executive Director, Nature-based Tourism Division
Department of Biodiversity, Conservation and Attractions



Contributing **Dominic Castledine** is the public information manager with the polyphagous shot-hole borer response at the Department of Primary Industries and Regional Development. His work is focused on community education and collaboration with local government agencies to help eradicate this invasive borer and protect WA's forests and urban tree canopy. More information on PSHB can be found at agric.wa.gov.au/borer



Kathryn MacNeil is a passionate tourism trailblazer, tour guide and business owner in the Great Southern region. Based in Mount Barker WA, she is championing the development of sustainable tourism in the region, while leading Mountain Country Tourism, a respected not-for-profit association, into some exciting new projects. Kathryn's love of the ancient mountains, rich Indigenous culture and abundant agricultural landscapes matches perfectly to promoting the region.



Kenny Chatelain is a general hand employed by Workpower, and previously Activ Foundation Inc. Kenny has been one of many supported employees who, for the past 40 years, have packed LANDSCOPE magazine at the Bentley and Victoria Park sites. During his 36 years' service, Kenny unpacks the pallets and cartons, heat seals the plastic sleeves and repacks the finished product. Kenny is an enthusiastic, hardworking individual who is willing to undertake any job that needs doing, including many commercial contracts on and off site.



Editor Lauren Cabrera.

Editorial assistance Jenna Oliver.

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

Special thanks to Andrew Burbidge.

Design and production coordinator Tiffany Taylor.

Design Katie Bryden, Sonja Rose and Lynne Whittle.

Illustration Philippa Nikulinsky.

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).

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

© State of Western Australia, January 2025.

For more information contact us:

On the web shop.dbca.wa.gov.au

By email 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



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 Porongurup National Park.

Photo – David Bettini



Department of Biodiversity, Conservation and Attractions

Features

- 8 Parks for people: South Coast Marine Park**
Jointly managing the marine environment along the southern coastline of WA
- 12 Small beetle, big problem**
Battling the polyphagous shot-hole borer
- 18 Wander with the wild in Mountain Country**
Innovative tourism in WA's Great Southern region
- 24 Full bottle: celebrating the iconic bottlebrush**
The hardy backyard beauty with its distinct brushy flowers
- 28 Gateway to an ancient world**
New trails at the Valley of the Giants
- 33 Rapturous raptors**
Australia's birds of prey
- 36 Urban mountain biking in Perth's north**
New Yalbunullup trails, Yellagonga Regional Park
- 44 Adventure out: Wanga Mia experience**
Cultural tour in Yanchep National Park
- 48 Passing the smell test**
Detector dogs helping identify *Phytophthora dieback*

Regulars

- 3 From the desk of Sveva Falletto**
A foreword from the Executive Director, Nature-based Tourism Division, 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.
- 43 Discovered**
Seaweeds in the Swan-Canning Estuary.
- 53 Kaleidoscope**
Connecting kids with nature.
- 54 Nature's pin-up**
Leafy seadragon (*Phycodurus eques*).



**Snap
shot**



READER'S PIC

Scarlet robin
(*Petroica boodang*)

Photo and words
by Rick Dawson

"I was out checking some artificial hollows in Steak Hill (east of Mandurah) for Carnaby's cockatoos when this darling little scarlet robin caught my eye. I am pleased to say two out of six hollows already have cockatoo eggs, which is great as we were expecting a very late season."

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.



New resident koalas for Yanchep

Three koalas have arrived at Yanchep National Park. Miffy, a seven-year-old from Ballarat Wildlife Park, and Louie and Franklin Doogsie are 18-month-old brothers from Cleland Wildlife Park. Although not native to WA, koalas have been a beloved part of Yanchep National Park since 1938 and these arrivals are the first koalas to come to the park from interstate since the 1980s. They're now part of a satellite breeding program supporting national conservation efforts.

Conservation milestone for black cockatoos

September saw a major milestone marked for endangered native black cockatoos in Western Australia.

Fifteen mature rehabilitated Carnaby's black cockatoos (*Zanda latirostris*) were released into Yanchep National Park, bringing the total number of rehabilitated black cockatoos released into the wild to 1000!

Every year, hundreds of injured black cockatoos are treated at Perth Zoo vet hospital, then transferred to Kaarakin Black Cockatoo Conservation Centre or Native Animal Rescue to start their rewilding journey. For some birds, it can take years before they are fit and healthy enough to be safely returned to the wild.

Once they're ready for release, Department of Biodiversity, Conservation and Attractions (DBCA) conservation scientists place a unique ID band on each bird so they can be tracked and monitored if they're spotted in the wild.

This conservation achievement was made possible thanks to collaboration between Perth Zoo, DBCA, Kaarakin, Native Animal Rescue, Murdoch University and countless volunteers.

Above left Franklin Doogsie settling in at Yanchep National Park.

Photo – Miles Brotherson/DBCA

Right Carnaby's black cockatoo (*Zanda latirostris*).

Photo – Samille Mitchell/DBCA



Guest column

Robert Taylor
CEO, WAITOC



WAITOC is the peak industry body representing more than 180 Aboriginal owned and operated tourism businesses throughout WA.

Recently, 110 of these businesses were launched, creating more than 300 jobs for Aboriginal people in the industry that, in turn, supports their families and communities—often in the most remote parts of WA.

A cornerstone of our funding comes from a \$20 million election commitment from the WA Government, which is delivered through *Jina*, the *Western Australian Aboriginal Tourism Action Plan 2021-2025*. Working closely with Tourism WA, the State tourism body, we share the aim of positioning WA as Australia's premier destination for authentic Aboriginal tourism. We are also fortunate to have the support of philanthropic partners to help make our goals a reality.

I'm particularly proud of the recent opening of our Aboriginal Bushfood Business Base, in Mandurah. The first centre of its kind in the State, it will deliver a specialist support program to grow new and existing Aboriginal-led bushfood businesses in this very exciting, emerging sector. We envision that the hub will include a commercial kitchen, for bushfood product development, and a commercial lab for developing cosmetics and traditional medicines.

WA is uniquely positioned for growth in the natural health products sector for many reasons, not least of all because of the existence of our amazing native plants or superfoods that have thrived in geographic isolation.

For instance, gubinge (Kakadu plum), is hailed in the wellness industry as the world's highest source of vitamin C. This fruit is well known among the Bardi people of the West Kimberley coast, where it grows in abundance, and has been wild harvested and hand processed by them for its health benefits for tens of thousands of years.

The reality is that First Nations businesses are grossly under-represented, comprising less than one per cent of growers, farm managers and exporters, and generating only one per cent of industry produce and dollar value.

This is something that we are working hard to change, while continuing to foster economic empowerment, cultural preservation, and cross-cultural understanding.



Emperor penguin safely returned back to sea

After 20 days of dedicated care, an emperor penguin (*Aptenodytes forsteri*) that made an extraordinary stopover at Ocean Beach, Denmark, has been successfully released back into the Southern Ocean.

Thanks to the incredible efforts of local wildlife carers Carol and Graham Biddulph, the Antarctic traveller regained strength and health, putting on 3.5 kilograms during its recovery. With warmer weather approaching, it was critical to return the penguin to its natural environment, where it can thrive and thermoregulate.

Under the watchful eyes of a vet, wildlife officer, and its devoted carers, the penguin was released from a Parks and Wildlife Service vessel off the southern coast of WA on 20 November 2024.

Emperor penguins are known to travel up to 1600 kilometres on foraging trips, and animal scientists are optimistic this remarkable bird is ready to continue its epic voyage.

Above Gus the emperor penguin.
Photo – Carol Biddulph

.....

New River Journeys interpretation nodes now complete



In October 2024, two new interpretation nodes were officially opened—one at the Burswood foreshore and one at Warndoolier (Banks Reserve) as part of the River Journeys project.

The vision of the River Journeys project is to create a continuous recreation trail network with approximately 25 nodes through the Swan Canning Riverpark from Fremantle to Guildford, on both the northern and southern shores of the rivers.

Each node is an opportunity for visitors to learn about the rich culture, history, and ecology of the Derbarl Yerrigan (Swan River), and new artwork by Whadjuk artists.

This project was made possible through a collaboration between DBCA and the Burswood Park Board, with contributions from local Aboriginal-owned businesses to create an immersive and meaningful space.

Visitors are invited to explore these new spaces, learn something new, and connect with stories of the river.

Above Traditional Owners enjoying the interpretive nodes.

Photo – Sean Renner/DBCA



South Coast Marine Park

Everyone is welcome in the new South Coast Marine Park, which protects southern right whale nurseries, kelp forests, vulnerable seal and sea lion colonies, precious reefs, while maintaining opportunities for recreational and commercial fishing.

The traditional Sea Country of the Wagyl Kaip South Noongar, Wudjari, Ngadju and Western Australian Mirning Traditional Owners on the south coast of WA has a rich biodiversity found nowhere else in the world (see 'Ancient ancestral beauty' *LANDSCOPE*, Spring 2023). Southern coastal waters include spectacular granite reefs, sponge gardens, limestone reefs, seagrass meadows, kelp gardens and communities of filter feeders in deeper waters.

In November 2024, four adjacent marine parks over Wudjari, Ngadju and Mirning

native title determination areas and the eastern section of the Wagyl Kaip Southern Noongar portion of the South West Native Title Settlement were gazetted to collectively form the South Coast Marine Park.

The Mamang Maambakoort, Wudjari and Mirning marine parks are jointly managed with Wagyl Kaip Southern Noongar, Wudjari and WA Mirning Traditional Owners respectively, alongside the Department of Biodiversity, Conservation and Attractions (DBCA). The Western Bight Marine Park Management Plan enables future joint management of the park with Ngadju Traditional Owners.

The marine parks protect interconnected Aboriginal cultural places.

Significant Sea Country sites include fish traps, middens, fishing and hunting grounds, seascape features, shell sites, breeding areas and culturally important habitats such as reefs or beaches. Intangible values include stories and song lines, traditional knowledge and relationships with specific plants and animals, and enjoyment of Country and customary activities.

There are excellent recreational fishing opportunities from a boat in about 80 per cent of the parks (areas outside sanctuary zones), and along 85 per cent of the parks shoreline lines also provide these opportunities.

Southern right whales (*Eubalaena australis*) use the sheltered bays close to shore between June and November each

Above Black-headed puller (*Chromis klunzingeri*) and sea sponges.
Photo – Ann Storrie



“The most striking landforms are the 100-metre-high limestone coastal cliffs that plummet to the sea below.”

year (see ‘Migration mysteries’, *LANDSCOPE* Summer 2022–23), and long-nosed fur seals (*Arctocephalus forsteri*) and Australian sea lions (*Neophoca cinerea*) breed and forage in the area. These breeding colonies include the largest in WA for both species.

MIRNING MARINE PARK

The Mirning Marine Park is the first reserve to be jointly managed with WA Mirning Traditional Owners and protects the outstanding cultural and ecological values of Mirning Sea Country.

The most striking landforms are the 100-metre-high limestone coastal cliffs that plummet to the sea below. While visitors to this area are few, there are opportunities to fish off the beach by traversing offroad tracks.

WESTERN BIGHT MARINE PARK

In Ngadju Sea Country, the Western Bight Marine Park is a place of exceptional beauty and cultural value.

The main land-based visitor site is at Point Culver in the Nuytsland Nature Reserve. Access to Point Culver is by four-wheel drive (experienced drivers only) from Israelite Bay to the west a long the beach and the Telegraph Track or via tracks from the Eyre Highway to the north.

WUDJARI MARINE PARK

Wudjari Marine Park is in Wudjari Sea Country from Jerdacuttup (Mason Bay) in the west to Euradup (Point Malcolm) in the east and is jointly managed with the Esperance Tjaltjraak Native Title Aboriginal Corporation.

The magnificent Recherche Archipelago off Esperance (which has more than 100 islands and 1500 islets) includes Woody Island, which is a major tourism drawcard. There are daily boat trips to the island from Esperance and it offers excellent snorkelling and wildlife viewing.



Discover more about WA's south coast

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



Clockwise (from top left) Baxter Cliffs, Mirning Marine Park. *Photo – Tourism WA; Australian sea lion (Neophoca cinerea). Photo – Jiri Lochman; whale watching platform at Point Ann, Mamang Maambakoort Marine Park. Photo – Colin Ingram; Indo-Pacific bottlenose dolphins. Photo – Dave and Fiona Harvey; Four-wheel driving. Photo – L-A Shibish; Bremer Bay corals. Photo – Claire Ross*

Parks for people South Coast Marine Park



MAMANG MAAMBAKOORT MARINE PARK

Mamang Maambakoort Marine Park stretches from Point Hood near Bremer Bay to Mason Bay in the east in Wagyl Kaip Southern Noongar Sea Country.

Point Ann has a whale watching platform in the adjacent Fitzgerald River National Park and is one of the best locations for shore-based whale watching in Western Australia. Here, and elsewhere along the coast, numerous southern right whales give birth in the shallow waters of the marine park and spend time in the area nursing their young. Elsewhere in the park there are several popular dive and snorkel sites.

SANCTUARY ZONES

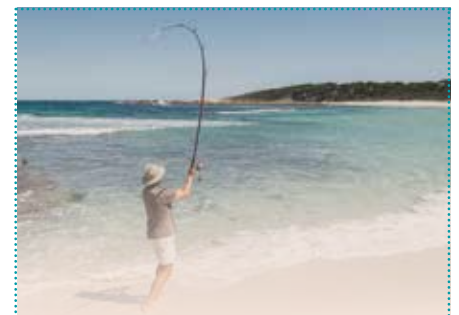
Sanctuary zones in the marine park are 'look but don't take' areas managed solely for nature conservation and low impact recreation and tourism. They

provide the highest level of protection for marine wildlife and important habitats, as extractive activities like recreational fishing, commercial fishing and collecting are excluded.

Sanctuary zones are fantastic places to enjoy snorkelling or diving, as they are often placed in areas with the most spectacular marine wildlife and underwater landscapes. They are often adjacent to islands where seabirds, sea lions and penguins go ashore to breed. Sanctuary zones and are also important for scientists to be able to monitor relatively undisturbed marine environments, which they can compare to adjacent areas where activities like fishing are allowed.

Above right Beach fishing.

Below Wudjari Country.
Photos – Dan Paris



Do it yourself

Where are they? The four new parks stretch from east of Bremer Bay east to the South Australian border.

Total area 1.3 million hectares.

Things to do Fishing (outside sanctuary zones), diving, snorkelling, boating, kayaking and other water sports.

Nearest Parks and Wildlife office

Esperance District office, 92 Dempster Street, Esperance WA 6450 (08) 9083 2100

iFUNGI AU

Looking to up your 'fun guy at parties' game by adding some cool mushroom trivia to your repartee? Have we got the app for you!

Seriously though, wild mushrooms can be fun to find in your backyard or while out exploring, and the *iFungiAU* mushroom identification app can help you identify what you're looking at.

The app features almost 500 mushrooms, and while it won't identify them from a photo, it does help you to narrow down what you might be looking at.

You can input morphological characteristics, colour features, and cap size and the app will give you photos of mushrooms that match the criteria. You can then click on the pictures to access more information. Alternatively, you can browse images or search for a mushroom by scientific or common name.

Always remember, some fungi are highly poisonous, even fatal. No matter how confident you think you are about identifying a fungus that you find, you should never eat it as mistakes may prove deadly.

The iFungiAU app is available for \$4.99 from the App Store and Google Play.



GOGO – WA MUSEUM BOOLA BARDIP



WA Museum Boola Bardip's *Gogo* app, named after the State's fossil emblem the gogo fish, lets visitors access extra content on select items in the museum's eight permanent galleries on top of the fabulous interpretive signage and audio options already available.

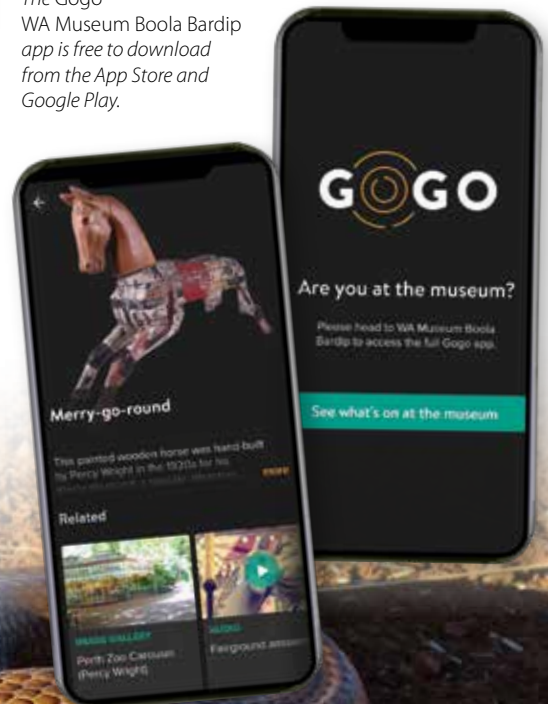
The app gives museum visitors access to a wide range of background and related content through links to audio recordings, videos, historic photographs and related news items.

Visitors can choose from guided immersive audio tours of each permanent gallery by selecting 'Let us guide you', or can 'Choose your own way' and use location awareness to select nearby items and access extra content.

On my most recent visit (I'm a regular!), I took the 26-minute guided tour of my favourite exhibit—Reflections. It included 9 stops as well as an introduction.

The app also includes a museum map and details about current and upcoming temporary exhibits and special events.

The Gogo – WA Museum Boola Bardip app is free to download from the App Store and Google Play.



A COMPLETE GUIDE TO REPTILES OF AUSTRALIA



This sixth and most recent edition of this extremely thorough reptile guidebook is so comprehensive that it covers every named reptile species, 1109 in total, from continental Australia and the Indian Ocean Territories as at 30 June 2020.

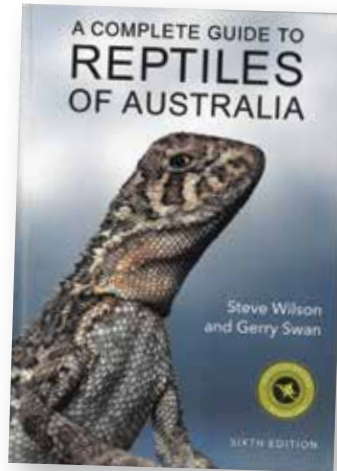
Species in *A Complete Guide to Reptiles of Australia* are grouped by family, and the book features colour photographs of each reptile in its natural habitat, detailed descriptions, distribution maps and conservation status.

Australia is blessed with rich and unique reptile fauna. Since it was first published in 2003, this book has been considered the most extensive field guide available on Australian reptiles.

If you're planning to take it into the field, the book has a protective plastic cover and 19 centimetre ruler on the front and back inside covers. But be warned that at almost 800 pages, it isn't light!

The guidebook would be a great resource for any reptile professional or amateur reptile enthusiast.

A Complete Guide to Reptiles of Australia is available in bookstores and online with RRP \$59.99.



Mulga snake (*Pseudechis australis*).
Photo – Keith Lightbody

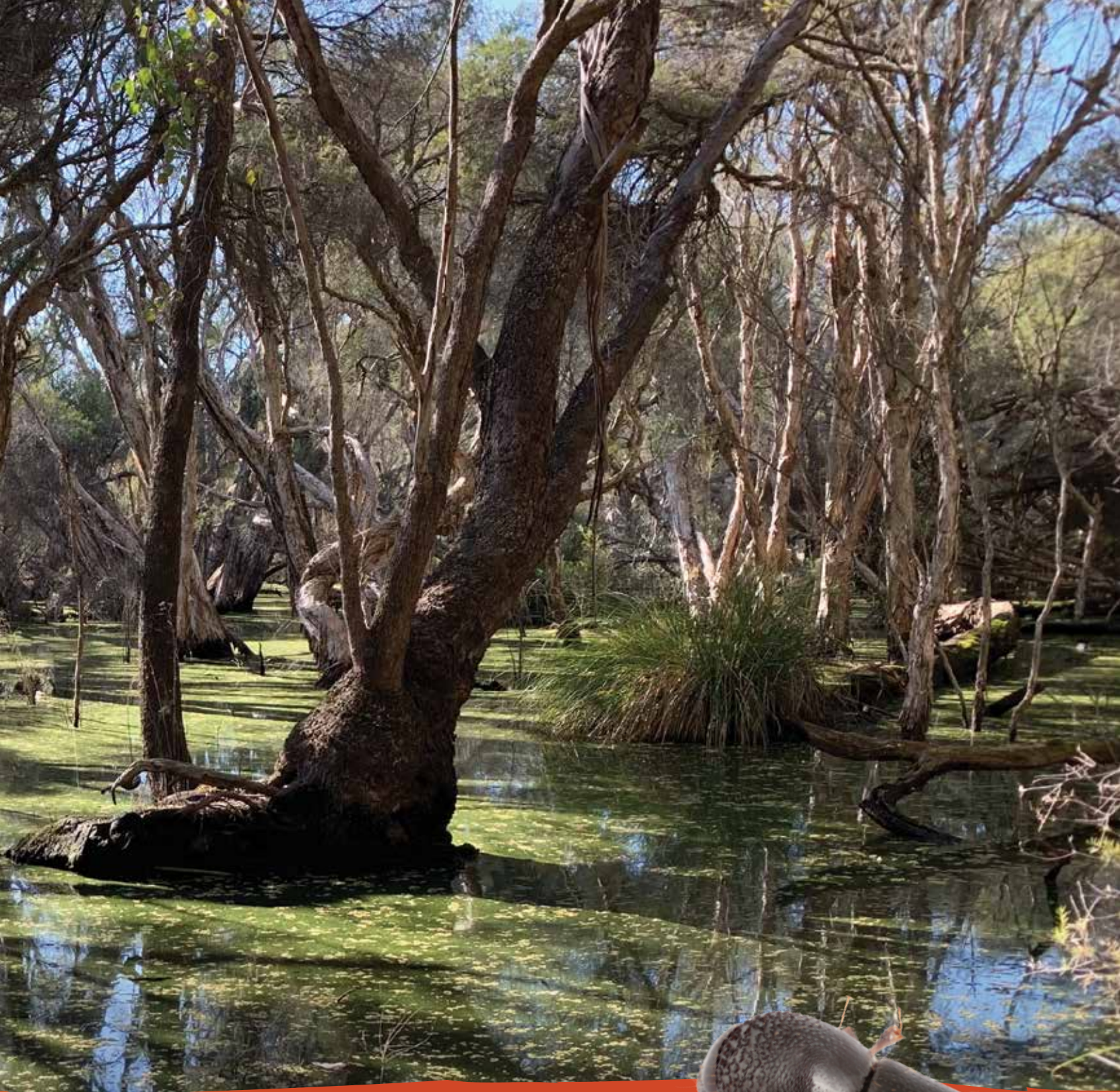


Small beetle,

BIG

PROBLEM

by Dominic Castledine



It may be tiny, but the polyphagous shot-hole borer (*Euwallacea fornicatus*) is having a big impact on Perth's urban tree canopy. First detected in a suburban backyard in East Fremantle, this wood-boring beetle has since infested more than 3700 trees.





Originally from south-east Asia, polyphagous shot-hole borer (PSHB) is an invasive beetle about two millimetres in length that bores into the trunks and branches of certain trees. It has a symbiotic relationship with a fusarium fungus, which causes dieback in susceptible trees.

Female beetles carry the fungus from tree to tree in specialised pouches called oral mycangia, which are positioned on the sides of their mouth. The beetle farms the fungus as a food source.

As the beetle burrows into host plants, it constructs galleries, or tunnels, while

Previous page

Main Scientists are concerned that native swamp paperbark (*Melaleuca raphiophylla*) may be susceptible to polyphagous shot-hole borer damage.

Photo – Colin Ingram/DBCA

Inset left The invasive polyphagous shot-hole borer (*Euwallacea fornicatus*) in castor oil plant (*Ricinus communis*).

Photo – Akif Eskalen

Inset right The polyphagous shot-hole borer.

Above left DPIRD officers inspect infected areas.

Above centre Quarantine restrictions are in place across Perth.

Above right Arborists work to remove infected trees.

Photos – DPIRD

simultaneously inoculating the host tissue with the fungus. This disrupts the vascular system of the plant and stops the flow of water and nutrients, leading to dieback, and eventually, death in susceptible plants.

SIGNS AND SYMPTOMS

The hallmark signs of PSHB include tiny ‘shot holes’ the size of a ballpoint pen tip in trunks and branches, as well as intricate networks of tunnels or galleries that are stained black by the fusarium fungus.

Some trees such as the London planetree (*Platanus x hispanica*) may display staining from the fungus, while other trees including figs will try to push the beetles out by producing sap, also known as gumming.

Another symptom that may be seen in avocado trees is the presence of crystallised mounds known as sugar volcanoes, which are caused by the tree’s response to the fungus and disruption to its vascular system.

Symptoms can vary greatly from tree to tree, depending on the level of infestation, host status and plant species.

UNPRECEDENTED BIOSECURITY RESPONSE

East Fremantle resident Joanne Taggart, first noticed symptoms of the invasive beetle on her box elder maple tree (*Acer negundo*) in August 2021. The tree was displaying signs of dieback and

dropping limbs that had unusual markings inside the branches.

Within hours of submitting photos via the MyPestGuide Reporter app, biosecurity staff and entomologists from the Department of Primary Industries and Regional Development (DPIRD) rushed out to inspect what would soon be the first case of PSHB in Australia.

An unprecedented biosecurity response is now underway in Western Australia to eradicate the pest.

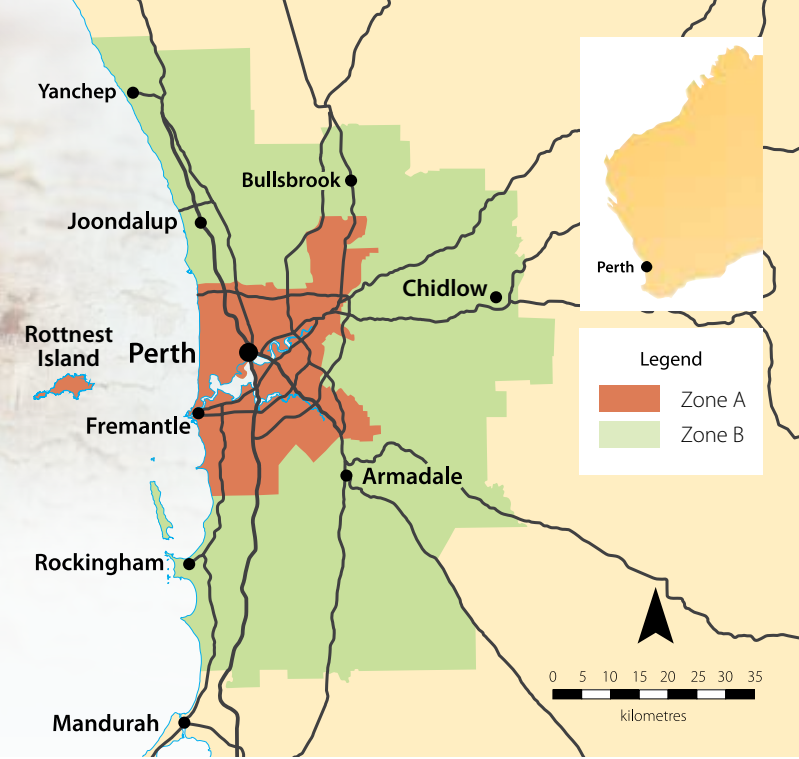
DPIRD is leading the \$44 million response and has inspected more than two million trees during the past three years. More than 3700 of these trees have been confirmed as positive for PSHB, cut down and chipped, to stem the spread of the beetle.

While this is the first time that PSHB has been detected in Australia, the beetle has spread from south-east Asia to several other countries, including Israel, South Africa and the United States of America.

LEARNINGS FROM OVERSEAS

PSHB is considered both an agricultural and environmental pest and has caused substantial economic damage in other countries.

Dr Trudy Paap, a leading researcher from South Africa, is a research fellow at the University of Pretoria’s Forestry Agriculture and Biodiversity Institute and has been



Perth PSHB quarantine zones

Zone A covers an area with high numbers of infested trees and where intensive control activities such as tree removal are underway. This zone has more restrictions on the movement of high-risk materials.

Zone B covers an area with fewer or no infested trees and where heightened surveillance is underway to identify and control new infestations. This zone helps create a buffer between areas of high infestations and the rest of WA, further protecting WA's growing areas.

involved in PSHB research since the pest was first detected in South Africa in 2017.

“There has been up to 100 per cent mortality caused by PSHB to some tree species that are commonly used in landscape design and residential gardens.” Dr Paap said.

“Unfortunately, we haven’t found a chemical treatment that is safe and efficient against PSHB.

“Tree pruning and removal of heavily infested trees is currently the most effective way to protect surrounding vegetation.”

Chief Plant Biosecurity Officer at DPIRD Dr Vincent Lanoiselet said the department was engaged in trials to test the efficacy of certain chemicals on early infestations of PSHB in Perth.

“We are engaging with local scientists to research alternative solutions under Western Australian conditions,” Dr Lanoiselet said.

Dr Shannon Lynch, an Assistant Professor from the University of California, shared her unique knowledge about the invasive beetle with DBCA and DPIRD at a public lecture at Murdoch University. Scientists in Southern California have been dealing with the pest for more than a decade, causing devastation in river valleys, where it has killed hundreds of thousands of willow trees.

Among the lecture attendees were scientists, horticulturalists, arborists,

gardeners, program managers and natural area managers across local and state government, academia, community and the private sector.

QUARANTINE RESTRICTIONS

Quarantine restrictions are currently in place for the entire Perth metropolitan area to prevent the pest from spreading and to safeguard WA's native forests and agricultural industries.

Unseasoned wood cannot be moved outside of the Perth metropolitan area unless it is chipped to less than 2.5 centimetres. Likewise, living plants with stems greater than two centimetres in diameter cannot be moved outside the quarantine area and any machinery used to handle wood or plant material must be cleaned.

Fortunately, PSHB does not live, breed in or otherwise affect lawn clippings and grasses, so these can be disposed of as normal and with no restrictions.

HOST RANGE

The PSHB pest complex has a wide host range, affecting more than 500 plant species globally.

Polyphagous means ‘feeding on many types of food.’ In WA, the beetle has been found reproducing in 100 different plants and trees, with a clear preference for exotic species.

Listen to more about polyphagous shot-hole borers

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

In reproductive hosts, PSHB can successfully establish the fungus, complete its lifecycle and reproduce within the plant. Reproductive host species are more susceptible to dieback and can be killed by the pest.

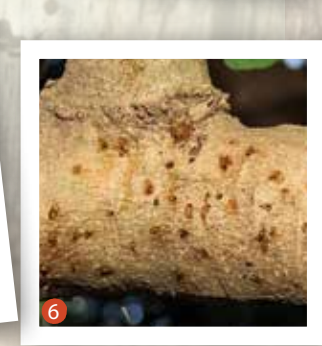
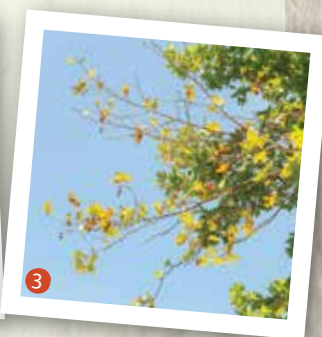
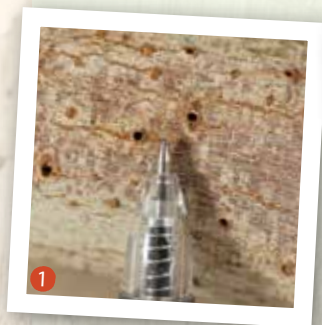
In WA, the top reproductive host trees for PSHB are all exotic species and include the box elder maple (*Acer negundo*), black locust or Robinia (*Robinia pseudoacacia*), coral trees (*Erythrina x sykesii*), poinciana (*Delonix regia*), Moreton Bay fig (*Ficus macrophylla*), Port Jackson fig (*Ficus rubiginosa*), London planetree (*Platanus acerifolia*), white mulberry (*Morus alba*), mirror bush (*Coprosma repens*) and castor oil plant (*Ricinus communis*).

Above left Polyphagous shot-hole borer infects a tree.
Photo – DPIRD

Above Map showing the quarantine zones covering the entire Perth metropolitan area.
Source date – September 2024

Symptoms to look for:

- 1 **Shot holes:** the round entrance holes of PSHB are approximately the size of a ballpoint pen tip (1mm).
- 2 **Galleries:** dark tunnels form where the beetle is cultivating the fungus. May be visible when pruning a tree or a branch has broken off.
- 3 **Dieback:** often the first visible symptom. The fusarium fungus cuts off water and nutrient supply causing branch dieback.
- 4 **Staining/lesions:** the fusarium fungus cultivated by the beetle can cause dark discolouration around the shot holes.
- 5 **Frass:** the wood pushed out during the beetles tunnelling. This is a sign of an active infestation.
- 6 **Gumming:** thick resin or sap may form as the trees' response to damage, attempting to push the beetles out of the tunnels.



Above Shot holes inside an infected eucalyptus tree at Lake Claremont.

Insets

1) Placing a ballpoint pen next to a bore hole assists DPIRD in assessing the size of the holes. 2) Tunnels bored into a tree branch. 3) The fusarium fungus cultivated by the beetle cuts off water supply, causing dieback. 4) Tree branch showing staining from fusarium fungus. 5) Frass created by *Euwallacea fornicatus*. 6) Infected trees try to push the beetles out by excreting sap.

Top right Workers examine galleries or tunnels in wood from an infected tree.

Above right Polyphagous shot-hole borer on tree bark.

Right Sticky traps are installed in areas of concern to attract and trap the insects.

Photos – DPIRD



Dr Vincent Lanoiselet said the box elder maple was an amplifier species in which PSHB can breed prolifically, allowing the build-up of large populations of beetles.

“All box elder maple trees in Perth should be regularly inspected for symptoms of PSHB as they amplify the PSHB population and increase the risk to surrounding trees,” Dr Lanoiselet said.

Non-reproductive hosts can be attacked by PSHB, but the fungus does not establish, which means the beetle is unable to create breeding galleries and cannot reproduce.

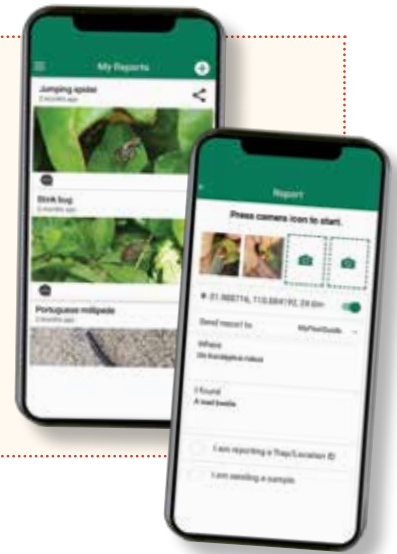
Some Western Australian native tree species have been attacked by PSHB, however they appear to be less susceptible to the beetle and its fungus, with many species listed as non-reproductive hosts.

Of concern, is the detection of the PSHB pest complex in the swamp paperbark (*Melaleuca raphiophylla*), a species that is endemic to the south-west



Protect your garden from PSHB

- Monitor plants for signs and symptoms of PSHB (see list on page 16).
- Photograph suspected PSHB signs using a ruler or pen for scale.
- Report signs using the **MyPestGuide™ Reporter** app or online at **mypestguide.agric.wa.gov.au**
- Check your local quarantine zone requirements before moving plants or wood.
- Do not take living plants or wood outside your quarantine zone.



“Up to three trees will be planted to replace every one lost on public lands.”

Above left Small cards with a ruler edge and a clear window are photographed and uploaded to the MyPestGuide Reporter website or app.

Photo – DPIRD

Left Removal of large infested Moreton Bay fig trees (*Ficus macrophylla*) at Kings Park.
Photo – C. Payne

of WA. The swamp paperbark grows along the banks of rivers and within wetlands, providing food and habitat for a range of native animals and reducing erosion along watercourses.

RESTORATION

Like many of Perth’s inner city historic parklands, Kings Park has not been spared from PSHB infestation. Plantings in the Parklands and Botanic Garden have been impacted, including infestations of iconic Moreton Bay and Port Jackson figs.

“The most significant area of infestation is centred on the Mount Eliza escarpment with 26 infested trees removed by DPIRD from the scarp this year,” Chelsea Payne, Curator, Arboriculture, Botanic Gardens and Parks Authority (BGPA) said.

“We had to act quickly to protect the Western Australian Botanic Garden at Kings Park, and the many rare and endangered flora in our collection.”

“The removal of these trees has resulted in a significant landscape change to the Mount Eliza escarpment. However, these works are only a chapter in the long history of changes on the scarp.”

Restoration of the scarp is underway with almost 18,000 plants from 16 species native to the area included as part of the first planting. These were chosen as species that were known to be endemic to the scarp, perform in tough conditions, with a number being known as species that thrive after disaster.

BGPA is working closely with Traditional Owners throughout the project to preserve and honour the cultural significance of the area, with consultation emphasising the importance of cultural sensitivity and environmental stewardship.

TREE REPLACEMENT PACKAGE

The State Government has announced a \$7.2 million investment to

improve Perth’s canopy cover and replace trees affected by PSHB.

The funding will allow more than 16,000 trees to be planted at iconic sites including Perth Zoo and Hyde Park. Local governments and residential landholders will also be eligible to apply for and receive funds.

Up to three trees will be planted to replace every one lost on public lands. The replacement trees will be selected with consideration to their resilience to PSHB and climate change.

The tree replacement program is scheduled to commence in 2025 and is being managed by the Department of Water and Environmental Regulation.

Dominic Castledine is a Public Information Manager with DPIRD’s polyphagous shot-hole borer response team. He can be contacted at dominic.castledine@dpird.wa.gov.au



Wander with the wild in mountain country

Nestled between the amazing Southern Ocean, the rich karri forests around Denmark and Pemberton, and the vibrant Golden Outback, 'Mountain Country' is one of Western Australia's unique wilderness hotspots. Visitors can wander in the wild of Mountain Country through the rugged Stirling Range National Park, the ancient Porongurup National Park, and the vibrant surrounding towns in the Great Southern region of WA.

by Kathryn MacNeil





Mountain Country, located in the Great Southern region of Western Australia, features two remarkable ancient mountain range national parks – Porongurup and Stirling Range (Koi Kyeunu-ruff). This area also includes the surrounding towns and villages. Spanning from Gnowangerup, west to Cranbrook, south to Mount Barker and east to Porongurup, this scenic region is easily accessible from the city precinct of Albany and only four hours south of Perth.

Home to the Mineng, Goreng and Kaneang Noongar peoples, these two unique and contrasting mountain ranges are within close proximity—an unusual phenomenon in geology. They reside in a very old continent, rich in spiritual and ecological significance.



Pwakkenbak

PWAKKENBAK

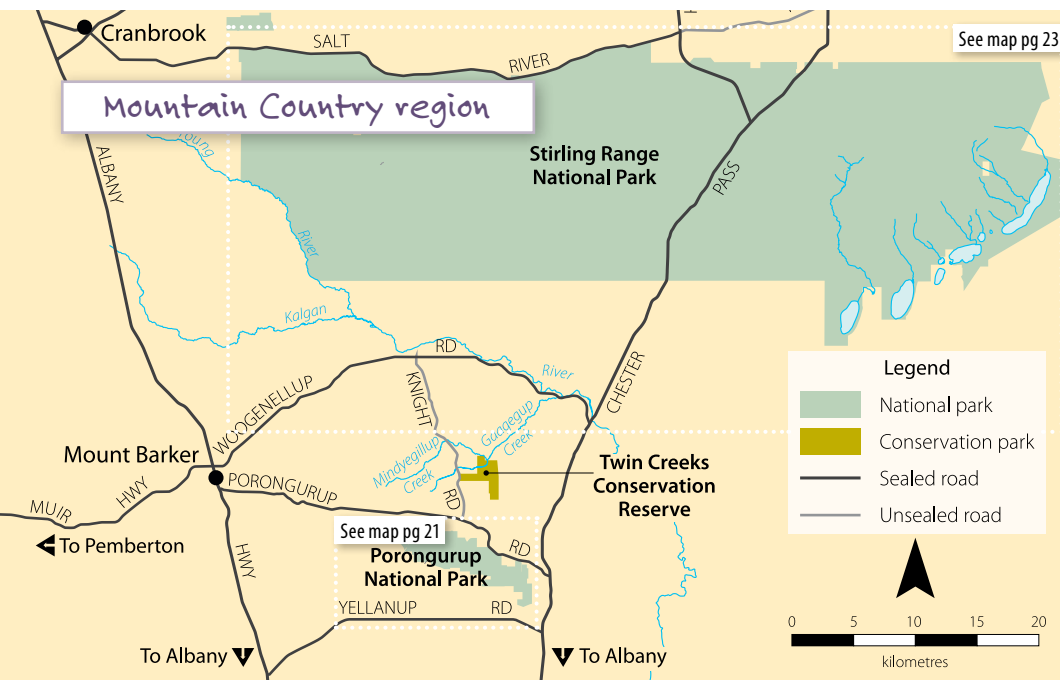
Pwakkenbak, or Mount Barker Hill, was once a lookout for the Menang people—a place to locate family, to observe the land and to hunt. It is one of the most spectacular outlooks in the south-west

of Western Australia, with views across the Stirling Range (Koi Kyeunu-ruff), Porongurup and as far south as Albany (Kinjarling).

Only a short drive from the vibrant town of Mount Barker, Pwakkenbak is the perfect starting point for all Mountain Country adventures.

Atop the hill is a short, accessible nature walk and boardwalk, as well as fantastic interpretive signage telling the stories of the region. Apart from the stunning daytime views, the hilltop is also a mecca for dark sky astronomy. Moonrises and sunrises, as well as star gazing, and planet gazing are ‘must do’s’ when in the region on a clear night. Some visitors are even fortunate to witness the Southern Lights, Aurora Australis, from the lookout.

Pwakkenbak is also the site of a state-of-the-art mountain bike trail network. Along with a thrilling new adventure playground and pump track in the nearby Wilson Park, the Pwakkenbak mountain bike trails are due to be opened in 2025.



Previous page

Main The mountains of Stirling Range.

Photo – Remi Bremont

Inset left Atop Bluff Knoll, Stirling Range National Park.

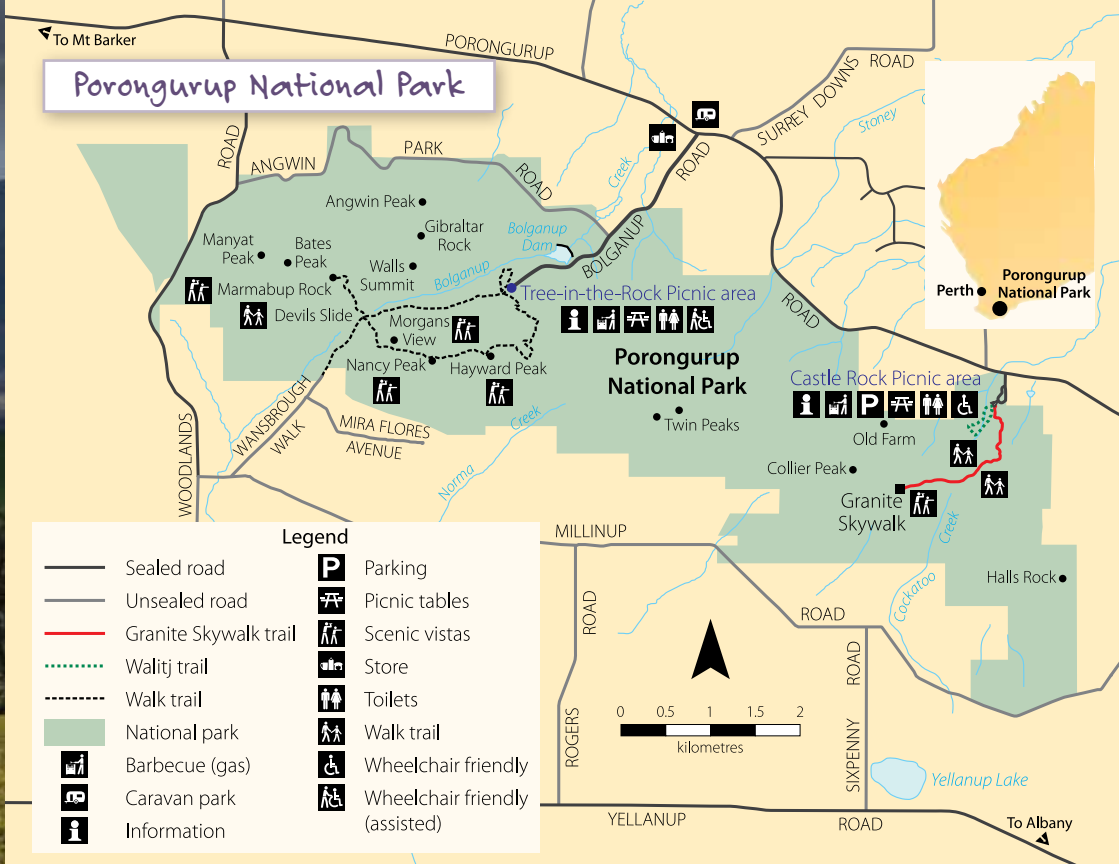
Photo – Samille Mitchell/DBCA

Inset right Looking out across Porongurup National Park.

Photo – Peter Nicholas/DBCA

Above Stirling Range is known as Koi Kyeunu-ruff by the local Mineng and Goreng Noongar peoples.

Photo – Lex Porebski



“Pwakkenbak is the perfect starting point for all Mountain Country adventures...”

The town of Mount Barker is home to a burgeoning art scene, with a collection of historic and colourful wall murals, community and commercial art galleries and public art works. The town can be easily explored on foot with self-guided and bookable tours available from the local visitor centre.

The town is also the centre point for the internationally recognised Mount Barker wine region, known particularly for its riesling and shiraz production, but also boasting several unique family-owned and operated vineyards and wineries.

On the outskirts of the town, a little known 500-hectare Class A Bush Reserve is home to one of the richest collections of native orchids in Western Australia. With



41 species of native orchids identified, the bushland is an enthralling natural environment to discover.

Porongurup National Park

ANCIENT SACRED PORONGURUP

Porongurup originates from the Noongar words ‘Borongur’ and ‘up’ meaning ‘place of totem spirits’ and is viewed by many as one of the most sacred places in the south-west. It is revered as the spiritual home of Noongar ancestors and represents a connection with nature and Country, which is central

to their beliefs. Hunting is forbidden and many local Noongar people still avoid the mountain peaks, out of respect to the home of wagyl, the snake spirit. Mummari, elusive and mischievous spirits, also roam the mountains after dark, warding off nocturnal activities.

Porongurup is a small, yet ancient range spanning 12 kilometres in length and running from east to west, with its highest peak, Devil’s Slide, reaching 670 metres above sea level.

The lush Porongurup Range National Park features a wonderful array of hiking trails and nature experiences—tall karri forest, dense understory, towering granite peaks with masses of lichen, moss and

Above right Porongurup Range.
Photo – Marie Lochman



fungi, tiny insects observing the world and an array of birds, singing their native songs.

There are six classified trails in the national park, including the Class 2 Bolganup Trail, suitable for all levels of hiking experience, and the very popular Class 5 Granite Skywalk Trail—a trail not for the faint-hearted! All trails in the range offer a combination of open spaces and woodland areas, and hikers can enjoy the comforts of the peaceful picnic areas, public toilets and shared barbeques at the two main carparks—Castle Rock and Karri Boya-k (Tree in the Rock).

Stirling Range National Park

RUGGED WILDERNESS OF KOI KYEUNU-RUFF

The Noongar name for the Stirling Range, Koi Kyeunu-ruff, which means ‘a place of ever-moving mist’ is also steeped in significance to Noongar people. A place of powerful natural forces, it is held in awe and respected to the present day. The malevolent spirit, Noatch, is believed to be the visible form of the mist which moves through the mountains and gullies.

Koi Kyeunu-ruff (Stirling Range) spans 65 kilometres from east to west and is only 40 kilometres north of the

Porongurup. The range rises 1095 metres above sea level at its highest peak, Bular Mial (Bluff Knoll), which receives over 100,000 visitors each year. The mountain range is popular with avid hikers and explorers, seeking that coveted prize of a selfie atop the mountain at sunrise. But this adventure hotspot is not for the faint-hearted.

More than a billion years ago, the area was covered by a shallow sea, with minerals, dead plants and sea animals forming a layer of sediment. As the Australian continent grinded and shifted against the Antarctic continent, the tectonic plate shifted, forming the mountain range we see today.

There are six classified trails in the Stirling Range National Park, ranging from the Class 4 trails at Bluff Knoll, Mount Trio and Mount Hassell, to Class 5 at Toolbrunup Peak, Mount Magog and Talyuberlup. Hikers are recommended to carefully prepare for hikes in these mountains—all walks are steep and have uneven surfaces, and the weather can change very quickly.

Koi Kyeunu-Ruff is also recognised as one of the floristically richest areas in one of the world’s top 35 hotspots for biodiversity and is now on the Australian National Heritage List. The park is particularly rich in banksias, eucalypts, orchids and verticordia (feather flowers).

Left Castle Rock at Porongurup National Park. Photo – Jiri Lochman

Top Mount Barker Visitor Centre is the starting point of many Great Southern adventures. Photo – Kathryn MacNeil

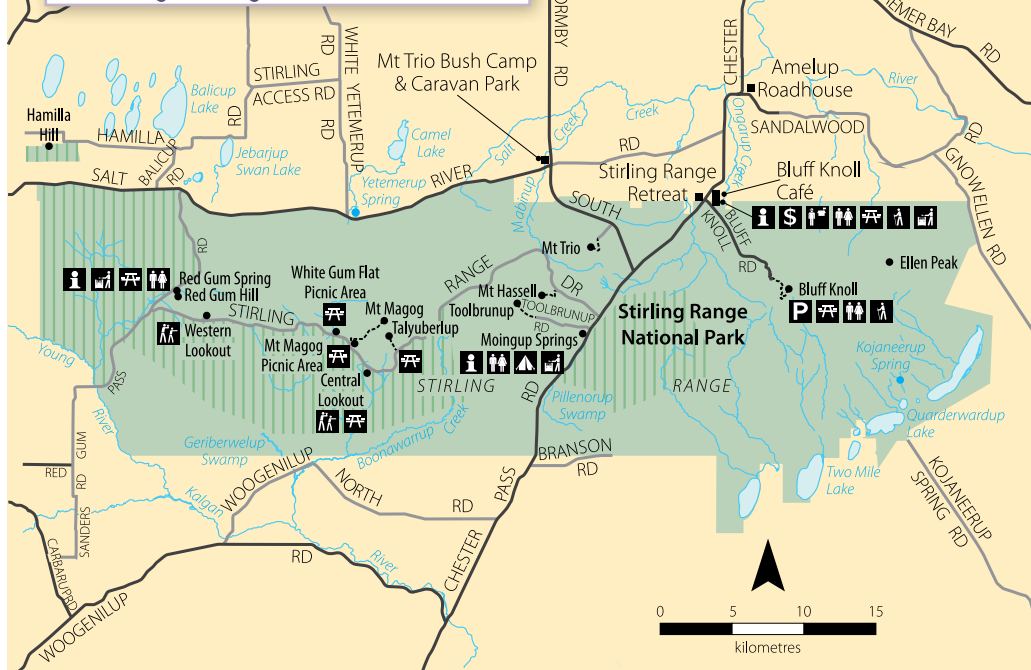
Above Queen of Sheba (*Thelymitra speciosa*). Photo – Ann Storr

1500 different flowering species can be found in the park, with more than 87 species endemic to the area. Find these treasures on foot or on a guided tour offered by one of the Stirling Range tourism businesses.

To the east of the range, is the agricultural town of Cranbrook, which is also home to a spectacular lookout, Binjellup (Sukey Hill, named after William Sukey, a local grazier), with views to the western end of the Stirling Range. It was predicted in the 1990s that much of the land to the north of Binjellup, and even around the town of Cranbrook, would turn salty because of farming practices that cleared native vegetation, leading to a rising water table. Local Landcare groups have championed the restoration of many properties. However, the vibrant Pink Lake, northeast of Cranbrook is a popular photo stop for visitors.

To the east of the range is the friendly town of Gnowangerup, named after a

Stirling Range National Park



Legend

National park	Barbecue (gas)	Picnic facilities
Special conservation area	Camping	Ranger
Sealed road	Information	Toilets
Unsealed road	Lookout	Walkers/climbers registration
Walk track	Park fee	
	Parking	



local bird, the ‘gnow’ meaning malleefowl. The town is also part of the entertaining Horsepower Highway—a trail of vintage and quirky tractors leading to the Stirling Range National Park. The length of the trail is 75 kilometres but offers beautiful country scenery as well as some great photo opportunities along the way.

TWIN CREEKS CONSERVATION RESERVE

Nestled between the two Mountain Country ranges is Twin Creeks Conservation Reserve, operated by a local conservation group with the purpose of showcasing and protecting local flora and fauna. The reserve offers an extensive range of trails throughout, but the green trail is most accessible and popular with visitors.

Alongside the reserve is a captivating Aboriginal sculpture, Genestreams, which makes visible the shared ancestry of local species and culture. The 3.5-metre-high evolutionary tree is a collaboration between Indigenous and non-Indigenous artists and conservation groups.

PAVING THE PATH FORWARD

Mountain Country Tourism, an association of businesses in Plantagenet, Cranbrook and Gnowangerup, and operators of the Mount Barker Visitor Centre, is forging a path forward to recognise and celebrate this significant part of the Australia’s south-west.

Collaborating with local leaders, tourism visionaries and funding partners, the association is not only promoting Mountain Country as a must-see destination but is also working with stakeholders to build the capacity of the tourism industry and facilitate greater visitor numbers to the region. A brand-new Mountain Country Visitor Guide has been released, showcasing the places to visit, where to stay and eat, and the memorable events that are held each year in the region.

As a ‘for purpose’ organisation, Mountain Country Tourism relies on the support of community and partners to ensure that this spectacular part of Australia is showcased and celebrated to the world.

Top Horsepower Highway is a trail of vintage tractors leading to Stirling Range National Park. Photo – Mountain Country Tourism

Above Astro tourism is an increasingly popular activity for visitors.

Below Pwackenbak mountain bike trails are due to open in 2025. Photos – Lex Porebski



Kathryn MacNeil leads Mountain Country Tourism, a not-for-profit association based in Mount Barker. She can be contacted at tourism@mountbarkerwa.com.au.
For more information about Mountain Country Tourism, visit www.mountaincountrywa.com.au or drop by the Mount Barker Visitor Centre, open daily from 9am – 1pm (extended trading long weekends and special events).



Full BOTTLE

Celebrating
the iconic
bottlebrush

by Leah Seabourne and Lauren Cabrera



With more than 40 species and an array of cultivars, the bottlebrushes are an iconic captivating plant with distinctive bottlebrush-shaped flowers. Bottlebrushes belong to the genus *Callistemon*, derived from two ancient Greek words; *calli* and *stemon*, which translates to beautiful stamens, referring to the soft, colourful, pollen-tipped filaments arranged in a cylindrical spike.

Among the most iconic of Australian flowers is the bottlebrush. As recognisable as the golden wattle, banksia or kangaroo paw, bottlebrushes grow in every state of the country and these beautiful native shrubs are a special part of the east and west coast landscapes.

The common name ‘bottlebrush’ refers to their elongated, brush-like flowers and they encompass a diverse range of shrubs and small trees.

There are about 40 *Callistemon* species native to Australia with only two of these native to Western Australia—Albany bottlebrush (*Callistemon glaucus*) and lesser bottlebrush (*Callistemon phoeniceus*). Both Western Australian bottlebrushes are geographically widespread and neither is listed as threatened under the *Biodiversity Conservation Act 2016*. *Callistemon citrinus* also occurs in WA, but is an introduced species, native to New South Wales and Victoria.

SWEET NECTAR

Flowers of *Callistemon* have a sweet, delicious nectar that bees, butterflies and birds drink up with purpose and pleasure.

Native bottlebrushes are extremely attractive to nectar-feeding birds,

Opposite page

Left Albany bottlebrush (*Callistemon glaucus*) showing its colourful pollen-tipped filaments.
Right A mature Albany bottlebrush tree in bloom.

Photos – Marie Lochman



Top left Black and yellow jewel beetle on *Callistemon phoeniceus*.

Photo – Eddy Wajon/Sallyanne Cousans Photography

Top right *Callistemon phoeniceus* showing bright red brush-like flowers.

Photo – Jean and Fred Hort

Above right Beautiful stamens, ready to blossom.

Photo – Jiri Lochman

Above Bottlebrush wood was used by Aboriginal peoples to create spears and other tools.

Photo – Alex Gore

especially honeyeaters including wattlebirds, because they produce plenty of nectar and pollen. The Western Australian *Callistemon* have bright red flowers which serve to attract birds, as birds respond strongly to visual cues. Even some typically seed-eating birds, like black cockatoos, enjoy feeding on *Callistemon* flowers. A range of primarily insectivorous birds, such as fairy-wrens and thornbills also use *Callistemon* for their dense cover and to feed on insects attracted to the flowers.

To be effective pollinators, birds and other flower visitors must brush past the long stamens, collecting pollen, while getting to the nectar in the cup-like base of each flower, and then moving, carrying pollen, to another flower (from the plant's perspective preferably on another individual, thus achieving cross-pollination).

CULTURALLY SIGNIFICANT

The bottlebrush carries a wealth of cultural symbolism and practical uses for Aboriginal peoples. For thousands of years, indigenous Australians have found

diverse applications for the resilient tree, ranging from nourishment to medicinal remedies to weapons.

Callistemon phoeniceus is known as birdak or tubada by Noongar Traditional Owners of south-west Australia who obtained the ngongyang (nectar) either by simply licking the flower or making a sweet drink by mixing the flower with water. The sweet flower drinks were consumed at ceremonial occasions and the leaves and bark were steeped to create a healing tea with medicinal benefits.

The sturdy wood from larger bushes and trees was used to craft spears and digging sticks. The durable wood also lent itself to the creation of didgeridoos.

In contemporary Aboriginal art, the bottlebrush continues to be a symbol of the bond between nature and the human spirit.

HARDY BEAUTY

If there's one thing that bottlebrushes are known for is that they are extremely tough and long-lived, and thankfully for many aspiring gardeners, almost impossible to kill.

Facts about Callistemon

	<i>Callistemon glaucus</i>	<i>Callistemon phoeniceus</i>
Habitat	Occurs in swamps and drainage lines in low-lying jarrah forest or Banksia heath, on peat or sandy clay over laterite.	Occurs in shrubland and open woodland on flood plains, adjacent to streams, creeks or rivers, on brown to white sand.
Synonyms	<i>Melaleuca glauca</i>	<i>Melaleuca phoenicea</i>
Distribution	Endemic to the south-west of WA, a range of approximately 350 kilometres, from Wellington National Park near Worsley in the north to Torndirrup National Park near Albany in the south.	Endemic to WA, a range of approximately 1000 kilometres, from Kalbarri National Park in the north to Cape Arid National Park near Esperance in the south.
Physical features	Shrub 1–3.5 metres tall, fibrous bark, dark greyish green narrowly elliptic to narrowly obovate leaves, flowers in deep red cylindrical spike, 90–150 millimetres long, held close to the end of the branches consisting of 20–120 flowers with red staminal filaments, with hirsute or pubescent (hairy) calyx tubes.	Shrub or tree 1–6.5 metres tall, linear-obovate to linear-elliptic leaves, flowers in red cylindrical spikes, 35–100 millimetres long, held along the branches consisting of 15–55 flowers with red staminal filaments, with glabrous (without hairs) wrinkled calyx-tubes.
Flowering periods	Flowers from October to December (spring and summer).	Flowers from October to January (spring and summer).



What makes them truly captivating are their distinctive bottlebrush-shaped flowers, with their long, cylindrical clusters of stamens that bloom red, pink, and cream commonly. There are also some bottlebrush plants that bloom in shades of purple, orange, and yellow.

Some botanists argue *Callistemon* should be included in the genus *Melaleuca* due to the morphological similarities. However, this taxonomic revision was not adopted by the WA Herbarium for the two WA species, nor at the current time by the Australian Plant Census.

European botanists and collectors of the late 18th century showed considerable interest in the plants of Australia. *Callistemon phoeniceus* was introduced to English horticulture in 1843 from seed supplied by James Drummond from the area around the Swan River colony.

Whether *Callistemon* or *Melaleuca*, they belong to the Myrtaceae family and tribe Melaleuceae, which also includes the genera *Beaufortia*, *Calothamnus*, *Eremaea*, *Phymatocarpus* and *Regelia*.



Top right Bottlebrushes are a popular food source for bird pollinators, including Carnaby's black-cockatoos (*Zanda latirostris*).

Photo – Rachel Walmsley

Above A healthy *Callistemon phoeniceus* shrub.

Photo – Jean and Fred Hort

Leab Seabourne is a Herbarium Botanist with the Botanic Gardens and Parks Authority. She can be contacted at enquiries@bgpa.wa.gov.au

Lauren Cabrera is the *LANDSCOPE* editor. She can be contacted at (08) 9219 9919 or lauren.cabrera@dbca.wa.gov.au



A large, ancient tree trunk with deeply textured, weathered bark dominates the left side of the frame. The forest floor is covered in dry leaves and green undergrowth. In the background, a person wearing a helmet and a light-colored long-sleeved shirt is riding a bicycle on a dirt path. The lighting is bright, suggesting a sunny day, with sunlight filtering through the trees.

Gateway

TO AN ANCIENT WORLD

Dwarfed by the towering tingle and karri trees, visitors to the Walpole Wilderness can't help but feel the undeniable magic of the place. While the famous Tree Top Walk and Ancient Empire have been drawing people to the area for decades, a new mountain biking and walking trail network will soon lure adventurers to experience the majesty of the ancient forest from a whole new perspective.

by Lauren Cabrera and Bron Anderson





The karri and tingle forests of the Walpole Wilderness have an ancient, mystical feel. Towering above the lush, green undergrowth, karri trees dominate the sky but it's often the gnarled old red tingles (*Eucalyptus jacksonii*) that catch the attention of passers-by.

The trees are the stars of the Giants Trails, with the new mountain biking and walking trails leading visitors deep into the forest and up close to some of these giant natural wonders.

.....
Previous page

The Giants Trails are suitable for all skill levels.

Top Cyclists can design their own adventure on the trails.

Photos – Nic Quinn/Ride On

Above Ruby bonnet (*Cruentomyces viscidocruenta*) and other fungi can be seen in the wetter months.

Above right Holly flame pea (*Chorizema ilicifolium*) put on a colourful display.

Photos – Bron Anderson/DFCA

Above far right Walking amongst the giant trees.

Photo – Nic Quinn/Ride On

This new trail network will offer a mountain biking experience different from anywhere else in the State, weaving amongst the famous forest. Between 40 and 65 kilometres of single-track riding trails are expected to be ready by early 2025. As well as mountain bike trails, there are several dual use trails designed for riders and walkers and a dedicated walk trail through the heart of the tingle forest.

The trails are designed in such a way that there are endless possibilities for riding and walking loops. Visitors can create their own adventure based on their experience, time frame and interests whether it be a short stroll through the tingle forest or setting out for the day on cross country mountain bike trails, riding through the Walpole Wilderness.

CONSIDERATE COLLABORATION

The local community are used to the sights of mountain bikers as the 1000-kilometre Munda Bidli Trail runs through Walpole. A section of the popular mountain bike trail was realigned by WA trail builders Magic Dirt Trailworx to accommodate the new trail network, which provided an opportunity for learning about how to navigate the forest and how

best to ensure the giant trees were not harmed.

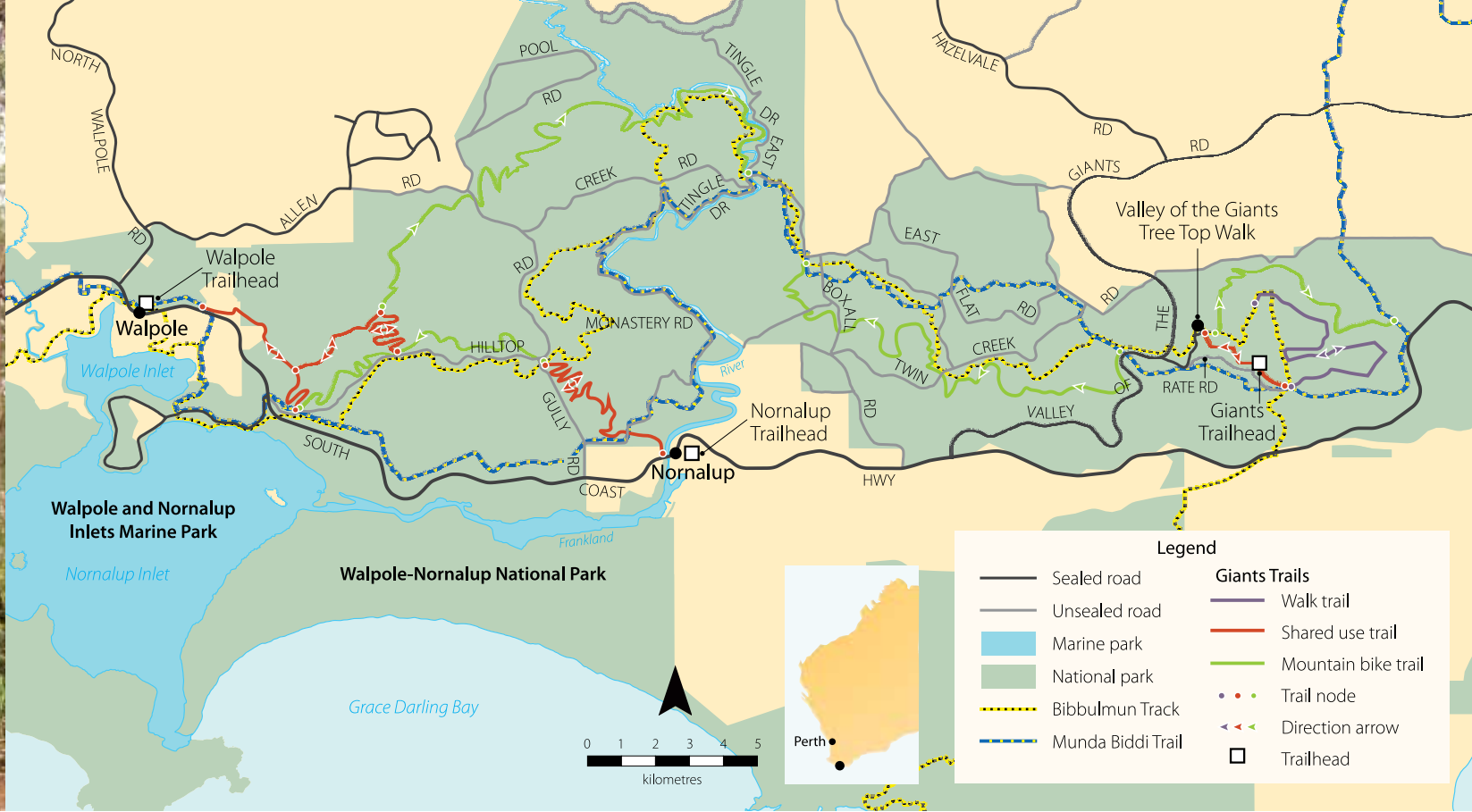
Common Ground Trails are also engaged in the design and build of the network around the rare trees, taking into account the fragility of the area. The tingle trees present a unique challenge for the trail builders as they have a broad base and a shallow root system that spreads wide.

As a result, building methods have been adjusted to protect the trees and care taken to avoid and protect the fragile root system. In such a high rainfall area, drainage is also an important consideration in the design of the trails. As a result, the trails are more leisurely 'green trails' that strike a balance between keeping a reasonable distance from the trees and being close enough to experience them.

BIODIVERSITY ABOUNDS

The Walpole Wilderness is renowned for its biodiversity and the Giants Trails take you through the best of it. Tall karri and tingle forests and whispery sheoak groves give way to open jarrah woodland, stands of kingia's and granite outcrops.

A myriad of beautiful and bizarre fungi can be found during the wetter months of the year and spring brings a blaze of



“The trees are the stars of the Giants Trails, with the new mountain biking and walking trails leading visitors deep into the forest and up close to some of these giant natural wonders.”

Right Marvelling at the size of the ‘Pleated Lady’ tree.

Photo – Nic Quinn/Ride On

wildflowers to the forest. Holly flame pea (*Chorizema ilicifolium*), tree hovea (*Hovea elliptica*) and karri dampiera (*Dampiera hederacea*) put on a colourful display.

Growing only in this high rainfall corner of south-west WA, red tingle trees (*Eucalyptus jacksonii*) have a shallow root system that spreads as they age, causing them to buttress. These buttresses can be over 20 metres in circumference and are often hollowed out by a combination of insect and fungal attack, and then fire.





“It’s a really iconic landscape along the Frankland River,” David Wilcox from Common Ground Trails said. “You’re talking about some of the biggest trees in the world—the tingle trees only grow here and are absolutely towering—right next to these beautiful waterfalls.

“It’s quite an incised landscape, so it’s about 200-plus-metres of vertical, most of it this big deep cut, exposed granite outcrops through the valley. It’s just an idyllic place for mountain biking.”

RIDE AMONGST THE GIANTS

Riders will want to take their time on the trails as every corner opens up a new vista such as the view of the Southern Ocean at Hilltop Lookout, or curves alongside another gnarled old tingle tree through deep river valleys.

Several of the trails give riders and walkers the opportunity to get up close and personal with the trees and bikes can be ridden through the middle of one tree, on a platform specially designed to protect its fragile roots.

A standout trail is one that takes riders deep into the valley of Kwakoorillup Beela (Frankland River).

“It’s not going to be your gravity enduro, jumpy kind of trails for the 18–30 [year old] crowd,” Rod Annear, Assistant Director of Parks and Visitor Services said. “It’s more of the mass market leisure riders that want to get out and go for longer rides. And the gravel scene as well, you’ll be able to ride your gravel bike on all of these trails.”

While the giant trees are a defining feature of this new project near the Valley of the Giants, there is no shortage of awe-inspiring moments for people of all abilities and expectations.

“When I had the Indigenous group come through with me after we built the first trail, they were just so stoked going, ‘We need this in here. People need to be able to see this forest. We need these

trails, so people can come through and actually see it,” John Dingey from Magic Dirt Trailworx.

With trailheads in Walpole, Nornalup and near the Valley of the Giants Tree Top Walk (see ‘Walking with the giants’, *LANDSCOPE*, Autumn 2017), the Giants Trails will be easily accessible from the South Coast Highway once completed in early 2025.

.....
Above left The ‘Ride Through Tree’ is an iconic experience on the trails.

Above The trails offer more leisurely riding adventures, suitable for all abilities.

Below A contemplation spot in the forest.
Photos – Nic Quinn/Ride On



Bron Anderson is a Visitor Services and Interpretation Officer with DBCA’s Parks and Wildlife Service based in Manjimup. She can be contacted at bron.anderson@dbca.wa.gov.au

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



Rapturous raptors

AUSTRALIA'S BIRDS OF PREY
by Lauren Cabrera

Birds of prey, or raptors, have a unique place in Australian culture and mythology. They are a symbol of power, vision, speed and audacity, fascinating us from the ground as they soar high above, with their impressive wingspans and hunting accuracy.



Birds of prey have long captured people's imagination. These magnificent hunters actively catch and feed on live prey, with keen eyesight for detecting a range of animals, mainly mammals, reptiles and other small birds from high in the air.

In addition to speed and strength, they have strong feet with sharp talons for grasping and killing prey, and powerful curved beaks for tearing off flesh.

Although the term 'bird of prey' could theoretically apply to all birds that actively hunt and eat other animals, ornithologists use a narrower definition. Hunting live vertebrates with their feet, rather than their beak, has been largely accepted as an ecological trait of raptorial birds, yet not all species are considered raptors.



A strongly curved bill, and sharp talons are the most commonly used morphological characters for identifying raptors. Although predatory birds primarily hunt live prey, many species also scavenge and eat carrion.

Australian raptors are species that include hawks, falcons, kites, harriers, buzzards and eagles within the Accipitridae and Falconidae families, owls within the Tytonidae and Strigidae families and the osprey, from the Pandionidae family.

CULTURAL TOTEM

Australia's native birds feature prominently in stories of First Nations peoples. Birds feature in Songlines and play an important role socially, ceremonially and ecologically.

Aboriginal peoples in northern Australia believe birds of prey intentionally starting fires in order to lure their prey into the open.

Raptors can see smoke from far away and will capitalise on hunting opportunities created by (particularly grassland) fires that flush an abundance of prey animals (including native rodents and small birds), making them easy targets to swoop down and snatch with their talons.

FAST AND FURIOUS

Australian raptors are efficient, capable hunters. The wedge-tailed

Previous page

Main Australian kestrel (*Falco cenchroides*).
Photo – Mark Davidson

Above left and above Wedge-tailed eagle (*Aquila audax*) and its natural habitat.
Photos – Simon Cherriman

Below left Collared sparrowhawk (*Tachyspiza cirrocephala*).
Photo – Keith Lightbody

eagle (*Aquila audax*), Australia's largest aerial predator, which dominates open landscapes with its impressive wingspan. In contrast, the agile brown goshawk (*Tachyspiza fasciata*) navigates dense forests with remarkable precision.

Because of their need to spot slight movement of their prey, the ability to discern detail sharply may be as much as eight times keener in the larger birds of prey than in man.

Nocturnal hunters like the barn owl complement their diurnal counterparts, utilising acute senses to capture prey under the cover of darkness. These avian predators play a crucial role in maintaining ecological balance by controlling populations of rodents and small mammals throughout their varied habitats.

In diurnal raptors, females are always larger than their male counterparts. There are 24 species of raptor that breed in Australia, and all but one species—the




Above Brown falcon (*Falco berigora*).
Photo – Keith Lightbody

Above right Osprey (*Pandion haliaetus*).
Photo – Allan Burbidge

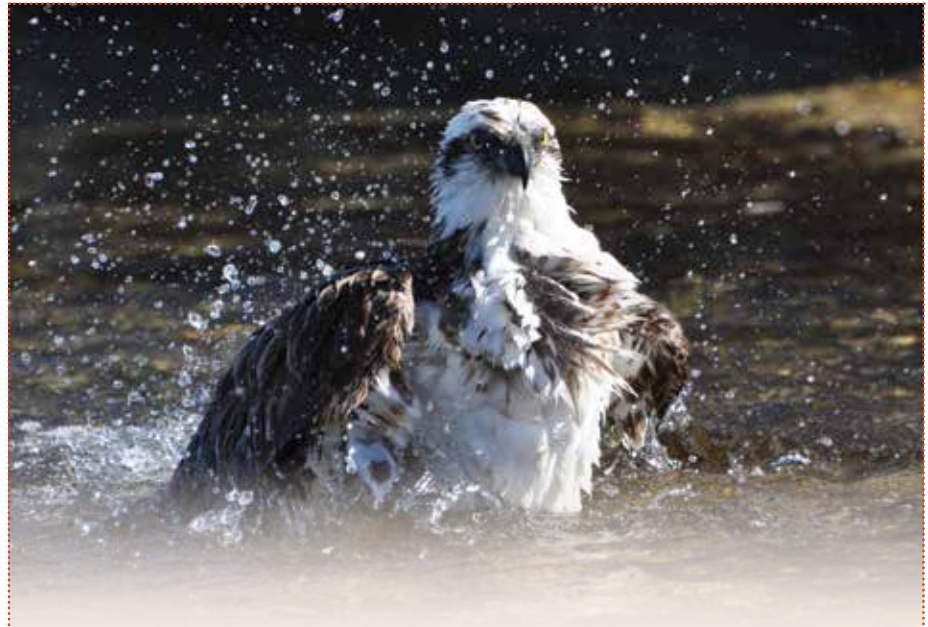
Below right Australian kestrel.
Photo – Keith Lightbody

rare letter-winged kite—are regularly found in WA.

The red goshawk (*Erythrotriorchis radiatus*) and the grey falcon (*Falco hypoleucos*) are officially declared as threatened species, and the letter-winged kite (*Elanus scriptus*) is on the Department of Biodiversity, Conservation and Attractions' priority list as a possible threatened species.



Lauren Cabrera is the LANDSCOPE editor. She can be contacted at (08) 9219 9919 or lauren.cabrera@dbca.wa.gov.au. WA's beloved Bush Book series features a publication about Australian birds of prey. You can purchase one for \$6.95 from shop.dbca.wa.gov.au



Meet the raptors

There are a variety of raptors in Australia with different characteristics.

Accipitridae family

The Accipitridae family includes a variety of raptors such as kites, harriers, goshawks, eagles and buzzards. These birds are known for their keen eyesight, powerful talons and hooked beaks, which they use to hunt and consume their prey. Notable members of this family found in Australia include:

- Wedge-tailed eagle (*Aquila audax*): The largest bird of prey in Australia, recognised by its long, wedge-shaped tail and broad wings.
- Pacific baza (*Aviceda subcristata*): A distinctive bird with a prominent crest and striking plumage.
- Brown goshawk (*Tachyspiza fasciata*): A medium-sized raptor known for its agility and hunting prowess in dense forests and open landscapes.

Falconidae family

The Falconidae family is composed of falcons and kestrels, known for their incredible speed and precision during flight. These birds have long, pointed wings and strong, hooked beaks. Key members in Australia include:

- Australian kestrel (*Falco cenchroides*): A small, agile raptor often seen hovering while hunting for insects and small mammals.

- Peregrine falcon (*Falco peregrinus*): Renowned for its diving speed, making it one of the fastest birds in the world.

Tytonidae family

The Tytonidae family, also known as barn owls, includes species that are primarily nocturnal and known for their distinctive heart-shaped faces. In Australia, this family includes:

- Barn owls: Recognisable by their white face and underparts and known for their eerie screeching call.
- Masked owls: Larger owls with darker fascial discs and a robust build.

Strigidae family

The Strigidae family, often referred to as 'true owls', includes a variety of nocturnal hunters with rounded faces and large eyes. In Australia, all 'true owls' belong to the genus *Ninox*, commonly known as hawk-owls. Key species include:

- Barking owl (*Ninox connivens*): Known for its dog-like barking call and robust appearance.
- Boobook owls (*Ninox boobook*): The smallest and most common owl in Australia





A person wearing a helmet and cycling gear is riding a mountain bike on a dirt trail. The trail is set in a scenic area with tall grass, trees, and a view of a lake and a city in the distance. The image has a purple overlay with a leaf pattern.

URBAN MOUNTAIN BIKING

IN PERTH'S NORTH

At the northern end of Yellagonga Regional Park, overlooking Lake Joondalup, a new family-friendly urban mountain bike trail network weaves through the trees. It's the jewel in the crown of this newly developed, family-friendly area.

by **Conor Doherty and
Sarah Clapham**

Yellagonga Regional Park covers 1400 hectares of lakes, wetlands and green space stretching through parts of Joondalup, Wanneroo and Kingsley in Perth's northern suburbs (see 'Parks for People', *LANDSCOPE* Summer 2020–21).

In late 2024, a family-friendly urban mountain bike trail network opened in the northern end of the park on the western banks of Lake Joondalup, complemented by a new shaded picnic area and yarning circle, bike racks, water fountains, interpretive signage, toilets and a carpark with capacity for 100 vehicles.

The new gathering area is perfect for post-ride recovery or a picnic taking in the spectacular views of Lake Joondalup.

The seven-kilometre-long Yalbunullup mountain bike trails and accompanying infrastructure are part of an exciting, four-year project to preserve and improve visitor facilities and accessibility at several sites across Yellagonga Regional Park.

CULTURAL HISTORY

Yellagonga Regional Park was named in honour of Yellagonga—the regional Noongar leader during European settlement. Local Aboriginal people once used the area for shelter and food during seasonal camp movements and Pinjar Doondalup (Lake Joondalup) is considered a physical representation of the Noongar ancestral dreaming spirit known as the Charnock Woman.

The Country surrounding Yellagonga Regional Park is Mooro Country. The Mooro people moved across the land with the six Noongar seasons. Wetland areas



such as Yalbunullup were a place to camp during bunuru and kambarang seasons; when flourishing life in the wetlands provided plentiful food.

The name of the new urban mountain bike park, Yalbunullup, pronounced Yal-bun-a-lup, was chosen in consultation with Traditional Owners as it reflects the traditional name for the area, loosely translating to 'place where black swan is hunted from large lake'.

Recognising the importance of the land, a smoking ceremony was conducted in early 2024 by Whadjuk Noongar Elder Greg Ugle before construction work commenced on site.

Mr Ugle explained the purpose of the smoking ceremony was to clear the land of bad spirits.

"The [meaning of the] smoking ceremony to me, and what I've learned over the years, is that when we stand in the smoke at a smoking ceremony like this for land cleansing and for land works, the person who comes here, if they've got bad spirits, it goes away with the smoke, and that's our intention," Mr Ugle said.

PLANNING CONSIDERATIONS

The Yalbunullup mountain bike trails provide an important outdoor recreation opportunity for residents of the northern suburbs and several years of planning and community consultation went into their design.

Before any planning commenced on the trails themselves, a comprehensive site assessment carefully considered the natural and cultural values of the area.

Phytophthora (dieback) disease mapping was conducted, important ecological communities including banksia woodland were considered, and archaeological surveys were undertaken.

.....
Previous page

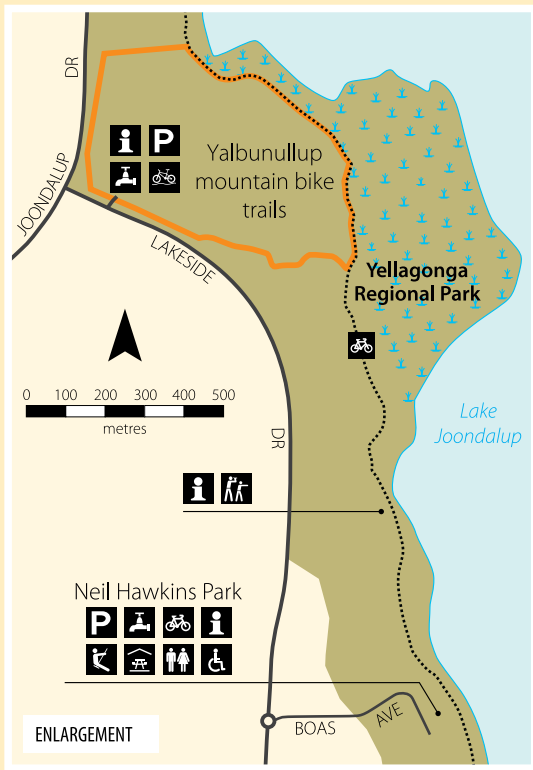
Main Yalbunullup mountain bike trails.
Inset Technical features on the Yalbunullup trails.

Top Interpretive signage guides the riders around the trails.

Above right The contours of Yalbunullup.

Above far right Improved visitor facilities.
Photos – Miles Brotherson/DBCA

- Legend**
-  Yalibunullup mountain bike trails
 -  Regional park
 -  Freeway
 -  Railway
 -  Road
 -  Lake Joondalup Circuit
 -  Wetland
 -  Information centre
 -  Parking
 -  Dual use path
 -  Mountain biking
 -  Sheltered picnic area
 -  Playground
 -  Scenic lookout
 -  Toilets
 -  Water - drinking
 -  Wheelchair access



“The family-friendly trail network is perfect for beginner and intermediate riders, offering a combination of technical and flow trails.”



Discover more about Yalibunullup mountain bike trails

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



Left The trails are perfect for beginners. Photo – Miles Brotherson/DBCA

In more recent history, the area served a variety of purposes with landscape modification occurring to allow for agricultural and recreational use. In areas of remaining native vegetation, prominent tree species include tuart (*Eucalyptus gomphocephala*) (see ‘Treasuring our tuarts’, *LANDSCOPE* Autumn 2020), jarrah (*Eucalyptus marginata*) and slender banksia (*Banksia attenuata*).

It was extremely important that the trails were designed to cause minimal disturbance to established native vegetation, preserve significant trees, and not disturb any areas or sites of cultural significance.

Guided by an eight-stage trail development process, the trails were carefully planned and designed to minimise impact and to ensure the long-term sustainability of the surrounding landscape.

RIDING THE TRAILS

The family-friendly trail network is perfect for beginner and intermediate riders, offering a combination of technical and flow trails.

Located in the sandy soils of the Swan Coastal Plain, the trails were surfaced with naturally occurring limestone to provide a durable riding surface.

The trails on the southern side of the network are more technical in nature and provide a good introduction to cornering, rock gardens and log overs. Climbs and descents weave through the tuarts towards the lake.

The trails on the northern side of the network are longer ‘flow’ trails designed to provide a smooth, enjoyable ride. These trails feature wide open berms, rollers and tabletop jumps and are a guaranteed fun ride!

The trail names were chosen to reflect some of the important values of the site including the abundant bird life the lake supports, the geology of the area, and some other local fauna.

Yellagonga Regional Park improvement project



The Yalbunullup mountain bike trail project is the first major outcome of the wider Yellagonga Regional Park improvement project, with more projects underway and planned in other areas.

Wanneroo

A new viewing platform is planned for the eastern bank of Lake Joondalup, promising extensive lake views. It will be wheelchair accessible and connect to the existing pathways.

New signage will help visitors identify some of the area's important plants and wildlife.

Kingsley

The heritage-listed former Luisini Winery site on the eastern shore of Lake Goollelal is being redeveloped into a multi-purpose dining and recreation precinct through a partnership with the National Trust of Western Australia and Be Our Guest Holdings Pty Ltd.

A nature play area and boardwalk will complement the new eatery, and interpretive signage around Lake Goollelal will highlight the significance of the wetland.

Woodvale

A new carpark off Ocean Reef Road will make Perry's Paddock in the northern part of Woodvale easier and safer for locals and visitors to access.

New interpretive signage at Perry's Paddock will explain the historical significance of the area, which was originally used for horse racing and community events in the 1920s.

Revegetation

Three new revegetation sites, one on the western side of Lake Goollelal and two on the western side of Lake Joondalup, have been established to improve water quality and provide habitat for native birds and wildlife.

DBCA staff are working closely with local community groups including the Friends of Yellagonga Regional Park and Friends of Beenyup Channel on revegetation projects.



COMMUNITY INVOLVEMENT

The Yalbunullup mountain bike trails are an example of the State Government working in partnership with a local community group, key community members, and trail designers and builders.

Member for Joondalup Emily Hamilton MLA was a strong advocate for the project, as was City of Joondalup Mayor Albert Jacob.

Northern Beaches Cycling Club (NBCC) had been advocating for the project since 2015 and members were excited to see it come to fruition.

NBCC Director of Mountain Biking Mark Papadopoff said the group was heavily involved with the design of the trails, with assistance from a 2018 City of Joondalup Sports Development Grant.

"This is the first cross-country-specific trail system built in the metro area," Mr Papadopoff said. "We think it will be extremely popular and a benchmark for future mountain bike trails in urban areas.

"We can see everyone from young families and school groups up to your elite riders using this trail to stay fit and gain new skills and a passion for off road cycling.

"NBCC will be advocating for cross country mountain bike events to be held on these race-ready trails, which we hope will attract riders from all over the State."

Mr Papadopoff acknowledged Three Chillies Design, Common Ground Trails and departmental staff for their commitment to the project.

WETLAND WONDERLAND

Lake Joondalup is part of an expansive north-south link of lakes, rivers and wetland systems on the Swan Coastal Plain.

Wetlands are enormously important as they reduce flooding risk and soil erosion, provide rich and diverse ecosystems for aquatic and land-based plants and animals, and are nature's filter system.

Migratory birds visit the wetlands seasonally, and wedge-tailed eagles (*Aquila audax*) and whistling kites (*Haliastur sphenurus*) can often be seen at Yellagonga soaring high in the sky looking for a meal.

The endangered Carnaby's black cockatoo (*Zanda latirostris*), oblong or southwestern snake-necked turtle (*Chelodina oblonga*), western tiger snake (*Notechis scutatus*) and quenda (*Isodon fusciventer*) are also sometimes spotted around Lake Joondalup.

Above The wetlands surrounding the trails are ecologically important.

Below The trails can be enjoyed by visitors of all abilities.

Photos – Miles Brotherson/DBCA

Conor Doherty is a Communications Officer with DBCA's Public Information and Corporate Affairs Branch. She can be contacted at (08) 9219 9919 or conor.doherty@dbca.wa.gov.au

Sarah Clapham is a Project Manager, Capital Works with DBCA's Parks and Wildlife Service. She can be contacted at (08) 9219 8574 or sarah.clapham@dbca.wa.gov.au





Purchase online at 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

ORDER FORM

	SUBSCRIBER'S PRICE	RRP	QTY
Bush Books:			
Plants of Rottneest Island	\$5.90	\$6.95	
Snakes of Western Australia	\$5.90	\$6.95	
Common Birds in the Backyard	\$5.90	\$6.95	
Wildflowers of the South Coast	\$5.90	\$6.95	
Art prints: See over page for details.			
Two Peoples Bay 300mm x 700mm	\$140.25	\$165	
Elephant Rocks 300mm x 690mm	\$140.25	\$165	
Greens Pool 297mm x 420mm (A3)	\$29.95	\$35	
Bottlenose dolphin – A3	\$29.95	\$35	
Bottlenose dolphin – A4	\$21.75	\$25	
Bottlenose dolphin – A5	\$12.75	\$15	
Australian sea lions – A3	\$29.95	\$35	
Australian sea lions – A4	\$21.75	\$25	
Australian sea lions – A5	\$12.75	\$15	
		PRODUCT TOTAL	\$
1–2 items...\$4.00	Shipping and handling		\$
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			\$
		ORDER TOTAL	\$

* Please complete your payment details on the reverse side.

Proceeds from your purchase are applied to managing Western Australia's natural environment.

Sights of Summer

Enjoy summer all-year-round with these stunning prints on your wall.



Two Peoples Bay



Elephant Rocks



Greens Pool



Bottlenose dolphin or Australian sea lions
art prints by Gooitzen van der Meer

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

Expiry date / Amount \$

Signature

Name as it appears on card

* Please complete your order details on the reverse side.



Purchase online at 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

From: "The Inquirer and Commercial News," March 30, 1870.

Mr. Editor,

I, as a citizen, felt extremely obliged to you last week for calling the attention of the Inspector of Nuisances to the fact of the existence of a large collection of seaweed in the river near Mill Street jetty, from which arose a most abominable stench, to the annoyance of the dwellers in the neighbourhood and even to many residing as far back as Murray Street.

'Perthite.'

As can be seen from the above, the seaweeds of the Swan-Canning Estuary have not always been viewed in a favourable light. Being relatively simple plants, many react to increased nutrient input, such as can often be found in waterways adjacent to suburban or industrial areas, by rapid growth, typically followed by accumulation on shorelines and the 'abominable stench' as it decomposes that so annoyed the correspondent. In 1922, options presented to ameliorate this problem included dredging the estuary to increase the depth, regular gathering and disposal of algae that has accumulated on the shoreline, and, rather drastically and thankfully only proposed as an emergency measure, to 'kill the algae growths throughout the shallow waters and to prevent them from prolific development by means of chemical treatment'. These beliefs prompted Bob Royce of the Western Australian Herbarium to come out in defence of algae in a 1955 report: 'It cannot be too strongly emphasised that algae are essential to the river, and without them life in the river would cease. The rotting of their organic remains is just as natural as is the decay of gum leaves in the forest.'

Thankfully education, better management of effluent, and awareness of the importance of algae has prevailed, and the Swan-Canning can be regarded as a relatively healthy waterway, certainly given its proximity to a major city.



On Perth's doorstep, seaweeds in the Swan-Canning Estuary

Over the years there have been several studies documenting the species that are found in the estuary, beginning with lists reporting seaweeds only incidentally, and the report by Royce in 1955 that listed 21 species. The most significant of works was that by Bruce Allender in 1981, who listed 63 species. Allender's study incorporated seasonal observations, and noted how the presence of some species waxed and waned as the winter rains diluted the estuary's water. Some of the species names used in the Allender study are no longer current, but fortunately his specimens were lodged with the WA Herbarium and can be re-examined and updated. Comparing the older specimens with more recent collections also gives an indication of how the estuary's flora might have changed over the decades.

One outcome concerns a species of the red algal genus *Gracilaria*. This species was described by Royce (1955) as '... the most abundant, and grows thickly over the river bed'. Initially the estuary's species was called *G. confervoides*, a European species, then a succession of

names, none entirely appropriate. Finally in 2023 a DNA sequence study revealed that the estuary's *Gracilaria* matched the New Zealand and eastern Australia species *Gracilaria transtasmanica*. There is no suggestion that this is an introduction, as the species is known from the Perth region based on reports dating back to 1855, and specimens in the Herbarium from the 1940s.

DBCA scientists are surveying the estuary's algal flora and re-assessing the earlier reports. We now have close to 90 species recorded, including new additions such as the introduced *Codium fragile* (originally described from Japan), and new records of common species such as *Caloglossa leprieurii*. Adding specimens to the WA Herbarium will also allow future workers to monitor changes and assess impacts of environmental variations.

.....
Above *Caloglossa leprieurii*, an inconspicuous red alga that shows its beauty under the microscope.

Photo – John Huisman/DBCA

Adventure out



Wangi Mia experience

Yanchep National Park

There's more to Yanchep National Park than kangaroos, koalas and kookaburras. At Wangi Mia, Alex Gore and his son, Luca, joined Derek Nannup for a unique Aboriginal cultural experience to learn about Noongar culture in Western Australia's south-west.

by Alex Gore





Learn more about cultural experiences in Yanchep

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



Beyond the freeway north of Perth, the winding Wanneroo Road gradually takes us from the urban fringe to the bush. The trees closely lining the route through the forest cast a shadow over the road. It's a beautiful early morning and the sunlight breaks between the branches catching the colour of the seasonal flowers.

As we turn off into Yanchep National Park, we drive up the long entrance and park up amongst a woodland of tall trees. It gives me a feeling of being small and insignificant but also part of a something bigger. There are kangaroos gently grazing, my son spots a Carnaby's cockatoo (*Zanda latirostris*), and we listen to the birds chatter. This is a special place.

We've come to discover more about Noongar culture from Aboriginal Cultural Experience host Derek Nannup. Noongar peoples have lived in the south-west of WA for thousands of years. Derek is a lively and charismatic guide with a strong connection to Country. He begins by welcoming us to Wangi Mia—or meeting place.

“A lot of people think our culture is a thing of the past but it's not. It's alive and it's all around us.”



● Yanchep National Park

“A lot of people think our culture is a thing of the past but it's not. It's alive and it's all around us,” Derek said.

Over the next hour, Derek intends to take us through the Noongar seasons, teach us Indigenous language and describe how ancient knowledge is passed from generation to generation. He will also show us tools such as spears and boomerangs, and demonstrate the didgeridoo.

ART IMITATING LIFE

The assembled group of around 20 patrons are gathered at Wangi Mia in front of a giant hanging Aboriginal artwork. Derek explains the colourful display is more than a traditional dot painting, it is a map of where we are standing.

At the centre of the painting is Yanchep National Park, or Yandjip, named after the bulrush reeds and lake which were thought to resemble the hairy mane of the dreamtime creature the Waugul/Wagyl, or rainbow serpent.

Previous page

Above left Derek draws animal tracks in the sand to illustrate a story.

Left Luca and Derek play musical instruments.

Photos—Alex Gore/DBCA

Main Aboriginal painting of Yanchep National Park.

Photo—DBCA

Inset A dried out banksia, traditionally used for carrying embers

Photo—Alex Gore/DBCA

The surrounding concentric circles and different colours represent birds and animals here at Yandjip, the different kinds of bush and the Country beyond. Derek explains how plants and animals bear great significance to Noongar people.

“Everything we've ever needed is provided by nature. We are a part of nature. And it is our responsibility to ensure the continuation of nature.”

PROTECTING MOTHER EARTH

Derek's totem is the emu (*Dromaius novaehollandiae*).

“That means I can't eat the emu. And if others want to take emu eggs, they need to ask me how they can do this responsibly. I might say 'take four eggs, leave ten'. That helps ensure the continuation of the species. In our culture, we all have a totem, or specific animal to protect. And together we protect mother earth.”

With such a special relationship with the environment, it is perhaps no wonder that Aboriginal Australians are recognised as the world's oldest continuous living culture.





Do it yourself

Where is it? In Yanchep, 50 kilometres north of Perth's CBD.

Facilities: Restaurant and café, caves, golf course, campground, rope climb adventure, toilets, picnic areas, visitor centre, walk trails (no dogs permitted).

Experience: The 'Aboriginal Cultural Experience' at Wangi Mia is available as a public tour on Sundays and public holidays at 2pm and 3pm only. Private or group bookings can be arranged for other times.

Children are classified as 6–15 years, family rate consists of two adults and two children.

Bookings: Can be made online at exploreparcs.dbca.wa.gov.au and search for Wangi Mia or Yanchep National Park or contact the park office on (08) 9303 7759 or email derek.nannup@dbca.wa.gov.au

Derek also occasionally hosts school vacation activity days at the WA Museum.



Derek explains how there is utility in nature and shows us a bag neatly created from western grey kangaroo (*Macropus fuliginosus*) skin. He demonstrates the miru—a spear-throwing device made from wood which can also be used for carrying things.

“Did you know Aboriginals invented the word ‘vegetarian’? It means ‘bad hunter’.” Derek injects subtle humour into the cultural experience, his eyes sparkling each time the audience gets one of his jokes.

“A boomerang is like a frisbee for someone with no friends,” he quips as he describes the serious survival business of hunting and cooking in the bush.

MAGICAL MOMENTS

For Luca, the most enjoyable part of the experience was watching how quickly Derek can create fire. No-one else who tries, can spin the fire stick with such speed and precision to produce hot embers. On Country, these embers could be carried in a dried-out banksia flower to the next campfire destination.

“By the fire, our Elders would draw a story in the sand or dust, passing on knowledge to the younger people to commit to memory,” Derek said, making shapes on the floor with his toes.

“At the end, they would dance over the story—the original Etch A Sketch!”

My personal highlight was listening to the didgeridoo. Derek has fantastic musical skill in recreating the sounds of nature—a dingo (*Canis familiaris*) howling or a kookaburra (*Dacelo novaeguineae*) laughing. As the deep tones reverberate around the park, a pair of willie wagtails (*Rhipidura leucophrys*) or djiti-djiti (pronounced chitti-chitti) in Noongar language suddenly swoop and dance with delight just above our heads, responding to the call. It is a magical moment.

At the end of this unique learning experience, it is time for reflection. Luca and I agree that we have both gained an improved understanding of Noongar and broader Aboriginal culture and that we are indeed part of a much bigger picture.

Far left Aboriginal tools showcased during the talk.

Above left Derek illustrates diversity of Aboriginal culture across Australia.

Photos – Alex Gore/DBCA

Below left Yorga Mia meeting place sign.

Top left Demonstrating how to make fire the traditional way.

Above left Yanchep National Park has some great trails.

Photos – Tourism WA

Above Luca handles a traditional wunda shield.

Photo – Alex Gore/DBCA

Alex Gore is a Senior Communications Officer with DBCA's Public Information and Corporate Affairs Branch. He is an award-winning print journalist and a former ABC TV News producer of Middy, NSW 7pm News and The World. He can be contacted at alex.gore@dbca.wa.gov.au or (08) 9219 9999.



A brown and white dog, possibly a Weimaraner, is walking on a leash in a grassy field. The dog is wearing an orange collar and a blue leash. The background shows a line of trees under a cloudy sky. The text 'Passing the SMELL TEST' is overlaid on the left side of the image.

Passing the **SMELL TEST**

Scent detection dogs have proven to be useful in many fields—sniffing out illegal substances and smuggled animals at airports, helping rescuers search for survivors among the rubble of an earthquake, assisting with medical research in detecting certain cancers, and even helping commercial pest controllers to find bed bugs. Now, following successful trials, dogs will be used in WA and Australia as part of an innovative Saving Native Species Program to detect a ‘biological bulldozer’—*Phytophthora cinnamomi*.

by **Alex Gore**



Western Australia is at the forefront of a new national program to help land managers better tackle invasive animals, weeds and diseases to protect threatened species.

The Federal Government's new \$11.4 million Threat Innovation Grants program is backing projects using innovative methods and technologies to better manage threats to our native plants and animals on a large scale and in remote places.

For example, modern drone technology is being used to detect and map invasive weeds, air sampling devices are being developed to detect invasive myrtle rust spores in botanical gardens (see 'Defending WA against myrtle rust', *LANDSCOPE* winter 2023), and artificial intelligence is being used in Felixer© traps

to identify native species so they're not treated as targets.

However, it is the natural ability of dogs to simply sniff out danger using their remarkable sense of smell that is of interest to plant scientists in Western Australia.

The Department of Biodiversity, Conservation and Attractions (DBCA) has been allocated \$1.3 million in funding from the Threat Innovation Grants program for the recruitment and training of scent detection dogs.

FINDING PHYTOPHTHORA

DBCA's Ecosystem Health Branch is leading the tri-state project in which these dogs will be used to identify the dieback-causing plant disease Phytophthora dieback, which threatens many native plants, in Tasmania, New South Wales and Western Australia.

Main Scent detection dog Alice at work at Lowlands Nature Reserve.
Photo – Shem Bisluk/DBCA

Left Dieback kills plants in forests, woodlands and heathlands.

Above Dieback-affected hakea plants on the south coast.
Photos – DBCA



See the dieback detector dogs in action



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



Phytophthora dieback is one of the greatest plant disease threats to Australia’s natural environment and natural heritage and is considered the second greatest risk to threatened flora species in Australia, after rabbits.

DBCA’s Parks and Wildlife Service Plant Diseases Program leader Dr Kylie Ireland described dieback as a “biological bulldozer” and said about 40 per cent of plant life in WA’s south-west is susceptible.

“The department engages or invests about \$1.3 million each year on mapping and management around stopping the spread of dieback,” Kylie said.

“It is a water mould, so it moves a lot in water, and infects the roots of plants, which can be fatal.”

Plant scientists in WA have completed several weeks of testing, which confirmed the ability of scent detection dogs to sniff out *Phytophthora*.

Two dogs—Echo, a three-year-old Brittany Spaniel, and Alice, a two-year-old English Springer Spaniel—were trained in New South Wales and were brought over to WA in late 2024 to demonstrate their skills.

Professional dog handler Ryan Tate said Alice and Echo performed well in their *Phytophthora* dieback detection trials.

“To get the dogs to where they are now has taken two years,” Ryan said. “But it only took a couple of months for the dogs to discriminate between pure soil and soil infected with *Phytophthora* in a clinical setting.

“The real challenge is getting out into the field, finding *Phytophthora* in the field and working with a variety of different soil samples from all around the country.

“At this stage, we’re just working on the *Phytophthora* genus, specifically *cinnamomi*. One of the dogs, Alice, has been generalising to other species within the genus, whereas Echo just seems to, at the moment, only ‘alert’ the *cinnamomi*.”

.....
Top left Echo detects *Phytophthora* soil samples in Kensington.

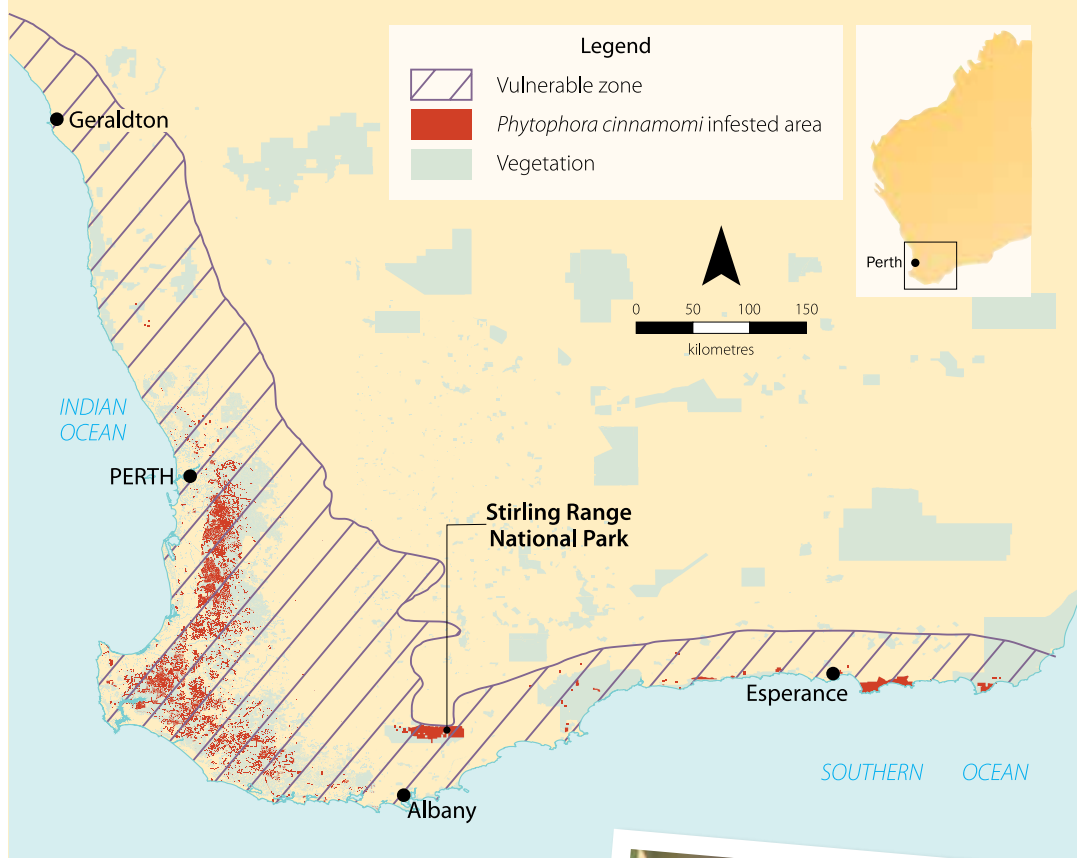
Photo – Alex Gore/DBCA

Above Dog handler Ryan Tate with Alice in Lowlands Nature Reserve.

Photo – Shem Bisluk/DBCA

Left Alice (left) and Echo (right) at DBCA’s Kensington HQ.

Photo – Alex Gore/DBCA



A SPECIAL BREED

Ryan said the spaniel breeds are particularly adapted for scent detection roles.

“The breeding of them is more around what we would call working line, or hunting line dogs that have been bred for hundreds of years to have a high desire to use their nose to find small things,” he said.

“So, we have a dog that likes using their nose. The next trait that we really select for is a very high reward drive. So, a dog that loves to play, loves treats, loves to engage with their handler so we can communicate to them, ‘hey, this really small boring thing is a good thing for you to find’.”

To date, detecting and confirming dieback has mainly involved identifying potential areas of risk by sight, and then collecting soil samples and testing them in a laboratory, which can take up to a fortnight.

The use of scent detection dogs could help to dramatically speed up this process and allow measures to be put in place more quickly to prevent dieback spread.

LOCAL TEAM

The aim is to have a WA-based detector dog team by the end of 2025.

What is dieback?

- Phytophthora dieback is a soil-borne plant disease caused by microscopic plant pathogens in the genus *Phytophthora*.
- The main cause of Phytophthora dieback in Western Australia is *Phytophthora cinnamomi*. It is known as a biological bulldozer.
- *Phytophthora cinnamomi* lives in the soil, where it attacks the roots of many native plants.
- Phytophthora dieback is the greatest disease threat to the flora of the south-west bioregion of Western Australia.
- There is no cure for dieback, but its spread can be controlled.
- Humans are the main source of dieback spread, with vehicles, boots and equipment all able to spread dieback by carrying spores in dirt or mud.
- Industries, government and landowners spend considerable time and money minimising the spread and mitigating the impacts of dieback.



“The use of scent detection dogs could help to dramatically speed up this process and allow measures to be put in place more quickly to prevent dieback spread.”

Top left Dieback affected forest.

Above left Signage for visitors to minimise spread of dieback at Mt Lindesay National Park.

Inset above *Banksia baxteri* impacted by dieback disease.
Photos – DBCA



What can you do to help?

- Ensure all soil or plant material is sourced from pits and nurseries that are certified to be free of *Phytophthora* dieback.
- Stay on established roads and tracks.
- Schedule activities for low rainfall months and avoid wet or muddy conditions.
- Inspect and clean vehicles, equipment and footwear of soil and plant material before entering bushland.
- Be aware of *Phytophthora* dieback signage and do not enter restricted areas.
- Seek up-to-date information and further advice at dieback.net.au
- Check with Parks and Wildlife Service about recent road closures and suitable areas for your activity.



“It’s so amazing to be working with these dogs. We’re excited about setting up our own program in WA and we’ve already had a lot of interest from local dog handlers,” Kylie said.

“It’s an absolute game changer in terms of the tools we have to try and identify where *Phytophthora* is and manage it in the field.

“In the short term, we’re just making sure the dogs can work effectively to determine where and how we can use them in the field.

“We can already see there’s potential to use the dogs after bushfire events and quickly detect *Phytophthora* without relying on lab results that can take up to two weeks.”

The project also aims to support recovery of threatened species and communities impacted by dieback, as well as using the dogs to assess the dieback status of established and proposed plant translocation sites.

Identifying samples at an early stage would have a direct benefit in the lab to help detect areas of concern, saving time and resources. Once identified, measures can be put in place to prevent spread of dieback.

“There’s so rarely innovation in this space. So having a tool like this buoys us a little bit because it’s not the easiest topic to discuss at times, and we really want to protect our natural spaces.”

TEAM EFFORT

The project is led by DBCA, with animal handling leadership from TATE Animals, NSW leadership from NSW National Parks and Wildlife Service, and Tasmanian leadership from Environmental Dynamics.

NSW-based dog handler Ryan Tate added that testing the dogs, Alice and Echo, in a different environment has been a beneficial experience for everyone involved.

“Working from NSW to WA has been a real game changer because the impacts of dieback in WA are so dramatic,” Ryan said.

“So going back further east or south, we’ll have a lot more confidence in the way the dogs work and alert, thanks to these experiences we’ve had out here.”

There is now much greater potential for new knowledge about dieback to be gained and disseminated.

“We’ve been managing dieback in WA since the 1970s and 1980s and it’s hard to keep people engaged,” Kylie said.

“The dogs are really helping us to start that engagement again. They give us an option to really be able to move a little quicker and smarter about how we tackle this issue. It’s a really exciting time to be doing dieback research.”

Top left Alice scents something in the air.
Photo – Shem Bisluk/DBCA

Inset top Boot cleaning stations are placed in parks that are under threat from dieback.
Photo – Peter Nicholas/DBCA

Inset above Vehicles need to be sprayed down and cleaned thoroughly before entering bushland to prevent the spread of dieback.
Photo – DBCA

Alex Gore is a Senior Communications Officer with DBCA’s Public Information and Corporate Affairs Branch. He is an award-winning print journalist and a former ABC TV News producer of *Midday*, *NSW 7pm News* and *The World*. He can be contacted at alex.gore@dbca.wa.gov.au or (08) 9219 9999.

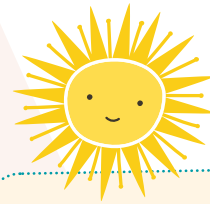
Do you know the **dolphin distances**?

Dolphin do's

- ✓ Maintain 100 metres distance if you are on the water in a vessel and spot a dolphin. Stop and SLOWLY move away. Put your motor into neutral.
- ✓ Stay 50 metres away if you are swimming. Slowly move away from the dolphin.
- ✓ Keep your dog 50 metres away.
- ✓ Reel in your fishing line if a dolphin is nearby.

Dolphin don'ts

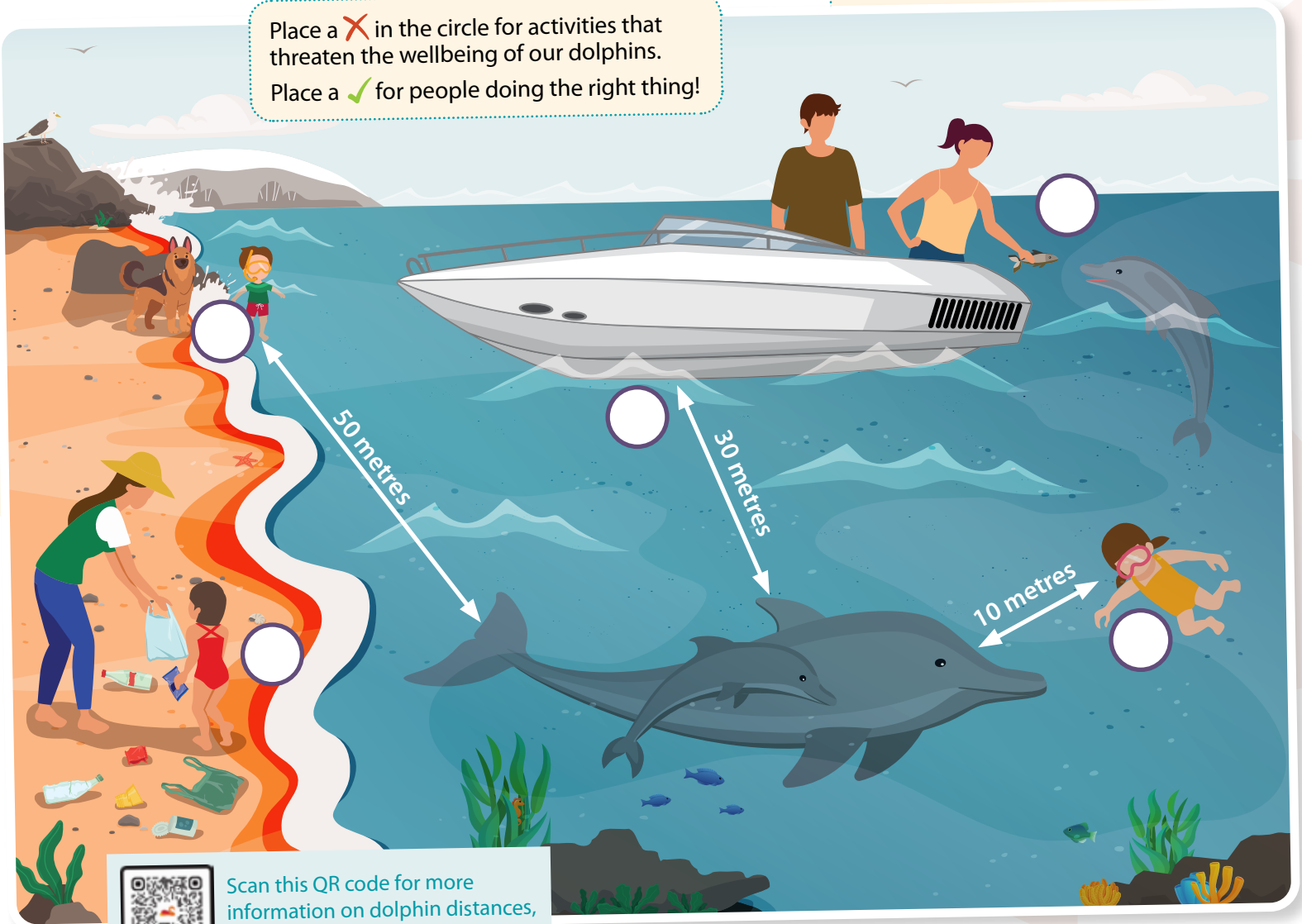
- ✗ Do not chase after dolphins. It can cause stress, and disrupt important behaviours such as feeding and resting.
- ✗ Never feed dolphins. Feeding dolphins can make them sick, and change their behaviour, making them more at risk of boat strikes and fishing line entanglements.



Safe dolphin distances

water vessels	=	100 metres
drones	=	60 metres
swimming	=	50 metres
dogs	=	50 metres

Place a ✗ in the circle for activities that threaten the wellbeing of our dolphins.
Place a ✓ for people doing the right thing!



Scan this QR code for more information on dolphin distances, or visit riverguardians.com



Leafy seadragon (*Phycodurus eques*)

Seadragons belong to the family Syngnathidae. There are just three species of seadragon (weedy, leafy and ruby) and they only occur in the temperate waters of the Great Southern Reef, which spans Australia's southern coasts from New South Wales to Western Australia. Adult leafy seadragons have an average length of 35 centimetres. All seadragons feed on small, shrimp-like crustaceans that swim in swarms, including the mysids, or sea lice. Leafy seadragons begin pairing up in September and lay their eggs by October or November.

Illustration by Philippa Nikulinsky

Illustration first appeared on the cover of *LANDSCOPE* Winter 2002

Meet the *Wambenger*



Hang a Wambenger on your wall
– no trees required!

This stunning print captures the cheeky charm of this tiny, tree-dwelling marsupial, also known as the brush-tailed phascogale (*Phascogale tapoatafa*).

Watercolour art print by artist Gooitzen van der Meer.
Printed on high quality art paper.
Available in: A3 \$35 A4 \$25 or A5 \$15

Wambenger Trails Cycle Guide

Named after the little Aussie marsupial, the Wambenger Trails in and around Collie are perfect for biking enthusiasts. Grab the guide, grab a mate and get on your bike!
Available for \$12.95





2023_684

ISSN 0815-4465 02



9 770815 446003



shop.dbca.wa.gov.au

wa naturally