

WA'S PARKS, WILDLIFE AND CONSERVATION MAGAZINE

LANDSCOPE

Volume 39 Number 2
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WONDERFUL WALPOLE

Walk amongst the giants



Heart of the Bibbulmun

For the love of
the Track

Match(stick) made in heaven

Eye-catching banksia

Making tracks

Following southern
right whales

Nature's pin-ups

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ON THE COVER

Front cover Male splendid fairy-wren (*Malurus splendens*) feasts on an insect.
Photo – Keith Lightbody

Back cover Frankland River in Walpole-Nornalup National Park.
Photo – Bron Anderson/DBCA

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.

It is exciting that the appetite for immersion in the natural environment in national parks, trails and campgrounds in Western Australia's south-west seems to be here to stay, which in turn has fostered a greater appreciation and value for these areas.

This edition of LANDSCOPE showcases what is on offer at two very different but special locations—Walpole-Nornalup National Park (see 'Parks for people: Walpole-Nornalup National Park' on page 8) and Dwellingup (see 'Adventuring Dwellingup' on page 42). The investment being made in areas such as these recognises and facilitates the increased demand for opportunities to explore and utilise the outstanding natural areas of the south-west.

I have wonderful memories of Dwellingup, having lived and worked there for 12 months in the 1990s while undertaking training as a field officer. I'm not surprised that this stunning area has become such a drawcard for outdoor enthusiasts. You can read about how the Dwellingup Adventure Trails project and new Dwellingup Trails and Visitor Centre are providing the opportunity for visitors to create their own special memories.

Nature can be one of the most powerful sources of wonder and awe. A great example of this are the discoveries being made by an international research project into the vast journeys undertaken by southern right whales that visit Western Australia's southern coastal waters (see 'Making tracks in warming waters' on page 37). It is also a great example of how research outcomes are being utilised to inform practical changes and enhancements to on-ground management being delivered by staff from the Department of Biodiversity, Conservation and Attractions and other agencies.

Citizen science is a tangible way for anyone to participate in scientific research and contribute to new discoveries. The Saving Our Snake-Necked Turtle project is an ambitious initiative aimed at protecting the southwestern snake-necked turtle and calls on volunteers to collect valuable information and data about the species (see 'Saving the southwestern snake-necked turtle' on page 48).

Whether it be the development and management of trail networks, citizen science or international research, these important projects can't happen without partnerships and collaborations.

I hope the stories in this edition spark your curiosity and inspire you to find your own moments of awe and create new memories somewhere in the natural environment.

Aminya Ennis, Regional Manager, South West

Parks and Wildlife Service, Department of Biodiversity, Conservation and Attractions



Contributing

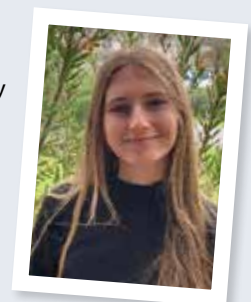
Dr Shelley James is a botanist with more than 15 years' experience in the digitisation and curation of botanical collections at herbaria located across the globe. She is currently the Herbarium Collections Manager at the Western Australian Herbarium and has a passion for biodiversity data management, data repatriation and mobilisation for scientific research, and collections care.



Dr Anthony Santoro is the lead turtle ecologist and project manager for Saving Our Snake-Necked Turtle (SOSNT). Based at Murdoch University, he has been researching the southwestern snake-necked turtle for eight years with a focus on the ecology of the species and how threats such as urbanisation, predation and climate change are affecting it.



Naomi Adamczyk is a passionate environmental educator with a background in conservation biology and environmental science. She currently leads and delivers the *River Guardians* school and community education program, teaching kids of all ages about how to protect the Swan Canning Riverpark and all its wonderful wildlife.





Features

- 8 Parks for People: Walpole-Nornalup National Park**
Walk amongst the giants in the forest of rare tingle trees
- 12 People of the Bibbulmun Track**
Many hands, heads and hearts that have made the Bibbulmun Track possible
- 19 Adventure out: Commemorative walk on the Bibbulmun Track**
Celebrating 25 years in true Bibbulmun style
- 24 Toad tracking technology**
Environmental DNA used to trace cane toads
- 28 A match(stick) made in heaven**
Translocation of the eye-catching matchstick banksia
- 37 Making tracks in warming waters**
Researchers make progress tracking southern right whales
- 42 Adventuring Dwellingup**
Trail enthusiasts flood to the popular south-west
- 48 Saving the southwestern snake-necked turtle**
Citizen scientists rally behind the beloved reptile

Regulars

- 3 From the desk of Aminya Ennis**
A foreword from the Regional Manager, South West, Parks and Wildlife Service.
- 6 Bush telegraph**
Short stories from around the State, reader's pic and a guest word.
- 47 In review**
A collection of books and applications.
- 34 Discovered**
Discovering collections.
- 53 Kaleidoscope**
Connecting kids with nature.
- 54 Nature's pin-up**
Matchstick banksia (*Banksia cuneata*).

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This page Southwestern snake-necked turtle (*Chelodina oblonga*).

Photo – Sue Harper



Department of Biodiversity, Conservation and Attractions

**Snap
shot**



READER'S PIC

Jackson's sun orchid *(Thelymitra jacksonii)*

Photo and words by Andrew Brown

"Jackson's sun orchid (*Thelymitra jacksonii*) is rarely encountered in the wild. With its large flowers up to 50 millimetres across, and rich brown and orange colouration, it is without a doubt one of the most attractive Western Australian sun orchids. In early 2023, I made a random stop on the way to Walpole and to my surprise found a small group of these stunning plants in full flower."

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.

Heritage etched in time on a coin

The Royal Australian Mint has designed a new special edition \$5 coin to celebrate Australia's World Heritage wonders and features three of Western Australia's World Heritage sites.

WA's Ningaloo Coast, Purnululu National Park and Shark Bay are included in a montage of Australia's 20 sites ranging from prehistoric rainforest wilderness and ancient Aboriginal settlements to unique landscapes and natural attractions, as well as convict sites and iconic 20th century buildings.

Fremantle Prison also appears on the coin, as one of 11 locations representing the Australian Convict Sites World Heritage Area.

For the full UNESCO World Heritage List, visit whc.unesco.org/en/list/



Bunuba declared a national park

A new national park has been created in the Kimberley. Bunuba National Park covers more than 220,000 hectares and extends the existing Dangggu (Geikie Gorge) National Park along the Fitzroy River, north to Dimond Gorge.

The Fitzroy River is a sacred place for the Bunuba people and holds spiritual ties to their ancestral history.

Bunuba Dawangarri Aboriginal Corporation and the Department of Biodiversity, Conservation and Attractions will jointly manage Bunuba National Park and the addition means 2.5 million hectares has now been added to Western Australia's conservation estate under the Plan for Our Parks initiative.

Five million hectares of national and marine parks and reserves are being created under the initiative, increasing the State's conservation estate by 20 per cent. This is on target for completion in 2024.

It's a special achievement not only for the Plan for Our Parks initiative, but for the Traditional Owners who hold strong connections to Bunuba Country.

Above Environment Minister Hon Reece Whitby MLA and DBCA Director General Stuart Smith with Traditional Owners on Bunuba Country.

Photo – Shem Bisluk/DBCA

Right Aboriginal rangers.

Photo – DBCA

Riverwise gardening

Our Gardens with Josh Byrne is brand new event series delivered as part of the River Guardians program addressing the latest megatrends in gardening, while providing Perth residents with an understanding of how they can support the health of the iconic Swan and Canning rivers.

Delivered by ABC TV Gardening Australia presenter and environmental scientist Josh Byrne, participants will discover how climate change, shrinking lot sizes and affordability is influencing our gardens and gardening behaviours. He'll demonstrate approaches to successful gardening that contribute to biodiversity and the health of our waterways.

Dates and venues for the series of workshops are available at riverguardians.com/education/gardening-workshops

Right Josh Byrne at the Kings Park Festival.
Photo – DBCA



Aboriginal Ranger Program Round 6 recipients announced

More than \$11 million will be shared amongst a dozen Aboriginal organisations across Western Australia in the latest round of funding for the Aboriginal Ranger Program.

Grants from the sixth round have been awarded to 12 projects that explore innovative ways to maximise benefits of the program.

The successful projects under the Innovation Fund include a native seed facility, cultural-

contemporary burning, fauna sanctuary planning and wetland management.

The Innovation Fund was launched in April 2023.

The Aboriginal Ranger Program has created more than 650 ranger jobs on Country since 2017. It has also supported the management of nearly 500 significant cultural sites, 2000 kilometres of tracks and weed management across 2000 hectares of land.

Following an initial \$20 million investment, a further \$83 million has been allocated to support the development, expansion and innovation of Aboriginal ranger groups across the State focusing on remote and regional locations.

For more information and to view the grant recipients, visit dbca.wa.gov.au/aboriginalrangerprogram



Guest column

Christine Townsend
Farmers for Fauna
Co-ordinator, Peel-Harvey Catchment Council



I've always loved numbats. I saw them regularly as I grew up on a farm near Dryandra

Woodland National Park and we would drive through the woodland on our way to Narrogin.

Fast forward to 2023, and I now coordinate the Peel-Harvey Catchment Council (PHCC)'s Numbat Neighbourhood project. This project builds upon the successful Farmers for Fauna project established through partnerships with DBCA and Project Numbat.

Numbat Neighbourhood takes a local, collaborative approach to improve conservation outcomes for the Endangered numbat. Partnerships in regional areas are incredibly important in achieving conservation outcomes. The PHCC partnered with DBCA's Parks and Wildlife Service, Perth Zoo, researchers, Numbat Taskforce, Wiilman Traditional Owners, declared species groups, local government and local communities to work toward increasing numbat numbers, addressing threats, improving genetic viability, and building community capacity.

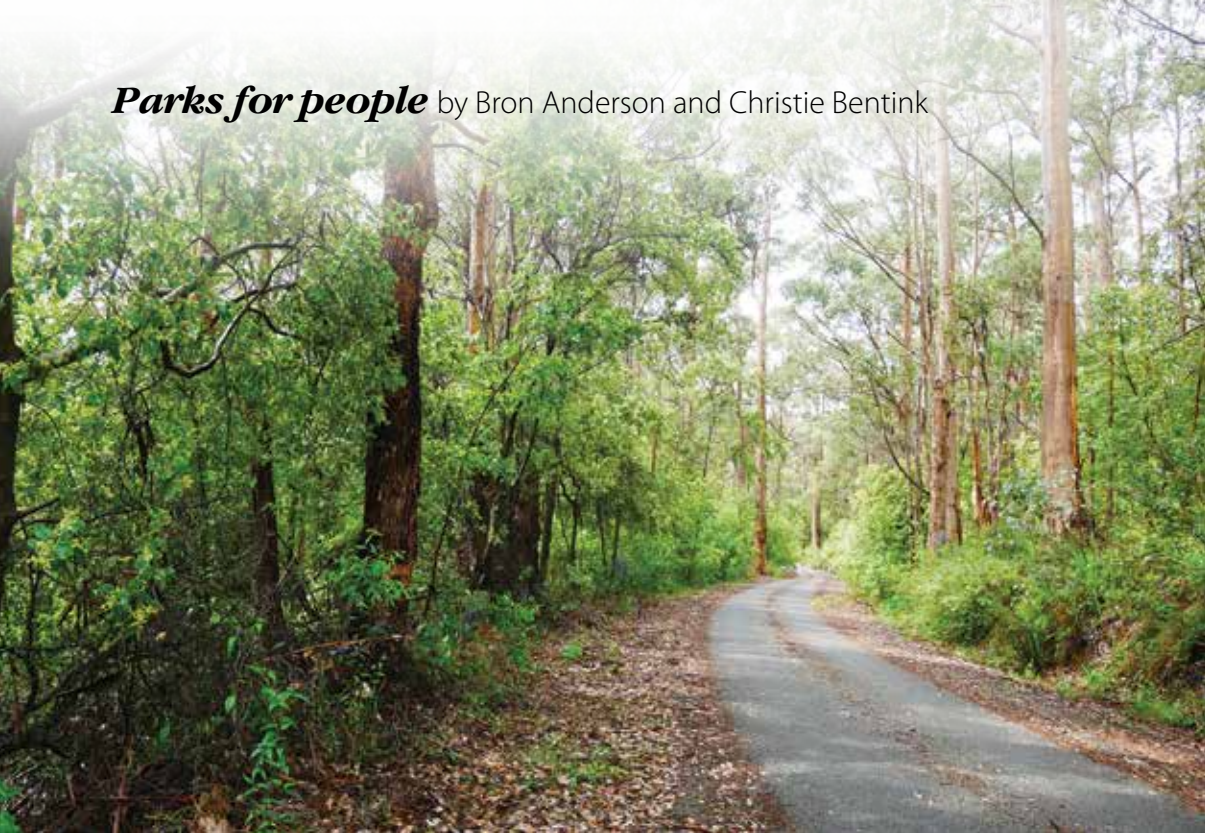
Farmers and local communities play a significant role in the conservation of threatened species and, with support, landholders protected and restored habitat through PHCC's Community Environment Grants program that funded 50 grants, enabling 60 kilometres of fencing, protection of 687 hectares of habitat and corridors, 34 hectares of revegetation and more than 50,000 hectares of feral animal control, helping prevent predators entering Dryandra and complementing on-reserve actions.

I was privileged to work with Wiilman Elders and community. More than 900 people attended 20 events to raise awareness about numbats and their threats, and how the community can help protect them.

The project has been an incredible success. Numbat numbers have been increasing and sightings reported beyond their recent extent.

The project's strengths lie in collaboration and building relationships, and I am proud of what we have achieved.





Walpole-Nornalup National Park

Walpole–Nornalup National Park is 430 kilometres south of Perth, surrounding the town of Walpole on Western Australia’s south coast. An iconic area in the Walpole Wilderness, it is renowned for its forest of rare red tingle trees, known as the Valley of the Giants. These ‘giants’, the most massive of all eucalypts and unique to the Walpole area, can be seen from the breathtaking heights of the Tree Top Walk.

Well before European settlement in Australia, the tall forests, coastal heathlands, rivers, inlets and ocean in the Walpole-Nornalup National Park were home to the Murrum Nyoongar Aboriginal people. The area provided all the natural resources they needed to live.

Main Knoll Drive in Walpole-Nornalup National Park.

Photo – Bron Anderson/DBCA

Top right Splendid fairy-wren (*Malurus splendens*).

Photo – Simon Cherriman

Above right Red-flowering gum (*Corymbia ficifolia*).

Photo – Bron Anderson/DBCA

The Murrum people hunted and collected an extensive variety of plants and animals to be used as food or medicine and to make tools, clothes and shelter.

Nyoongar people have long referred to the Walpole and districts area as Nor-Nor-Nup, the place of the norne, or black snake, which explains how the Nornalup settlement and Nornalup Inlet got their names.

NATURAL BEAUTY

The area is known for its giant red tingle trees (*Eucalyptus jacksonii*), and bull banksia (*Banksia grandis*) are a common sight. The park is home to mainland quokkas (*Setonix brachyurus*), western grey kangaroo (*Macropus fuliginosus*) and western rosella (*Platycercus icterotis*).

As is characteristic of the south-west of Western Australia, Walpole-Nornalup

National Park comes to life with colour during the springtime as wildflowers bloom across the park.

Between August and November, visitors can enjoy a number of orchids, bottlebrush, triggerplants as well as tree hovea (*Hovea elliptica*) and coral vine (*Kennedia coccinea*).

EARLY TOURISM

It is believed the first European sighting of the area was by those aboard a Dutch East India ship called Gulden Zeepaert (Golden Seahorse) in 1627, followed by a number of French and British explorers.

Sometime around 1914, the Minister for Lands and Agriculture, James Mitchell, was so impressed by the beauty of the Frankland River that he set aside the area for conservation. An area of 370 hectares adjacent to the river was gazetted as a class ‘A’ reserve—the highest level of protection



Discover more about
Walpole-Nornalup
National Park

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

land could be given. The area was named Nornalup National Park and would later grow to become what is known today as Walpole-Nornalup National Park.

Tourism really took off in the area in the late 1920s, with more and more people coming to experience the magnificent forests and the beautiful scenery of the inlet and coastline.

The large karri (*Eucalyptus diversicolor*) and tingle trees found within the region were a major drawcard, as well as the equally beautiful red-flowering gum with its spectacular red blossoms.

Old majestic jarrah (*Eucalyptus marginata*), tingle and karri forests surround imposing granite peaks, peaceful rivers, wetlands and tranquil inlets, and overlook picturesque sandy beaches, sheer coastal cliffs and the Southern Ocean.

Tourism took over as Walpole's main source of income in 1995 with the closure of the timber mill and the downturn of the logging industry in the area. The lure of the big trees was strong and more and more tourists visiting the area came to see the majesty of the karris and tingles.

Walpole-Nornalup National Park is home to three types of tingle tree—red tingle (*Eucalyptus jacksonii*), yellow tingle (*Eucalyptus guilfoylei*) and rate's tingle (*Eucalyptus brevistylis*).

Walpole was thrust into the international limelight with the construction of the Tree Top Walk at the Valley of the Giants in 1996. This popular attraction provides visitors with the opportunity to immerse themselves in the forest canopy and get a completely different perspective of these giant trees.

ANCIENT EMPIRE WALK TRAIL

Located within the Valley of the Giants, the Ancient Empire Walk meanders across the forest floor between the tingle trees. The walk trail takes visitors around and through some of the giant trees including the popular 400-year-old Grandma Tingle.

In July 2023, significant works were initiated in consultation with Traditional Owners to extend the Ancient Empire, creating over 400 metres of new accessible trail. Alongside this expansion, existing timber decking structures were revitalised

and levelled, removing stairs and ensuring a safe and comfortable journey for visitors.

The redesigned trail has resulted in a fully accessible loop, giving visitors a unique nature experience from ground level. The trail is now also accessible to individuals using wheelchairs or strollers.

The magnificent beauty and tranquility of Walpole-Nornalup National Park has inspired many people over the years and will continue to do so into the future.

Top left Tourist walking along Beach Trail to Shelly Beach.

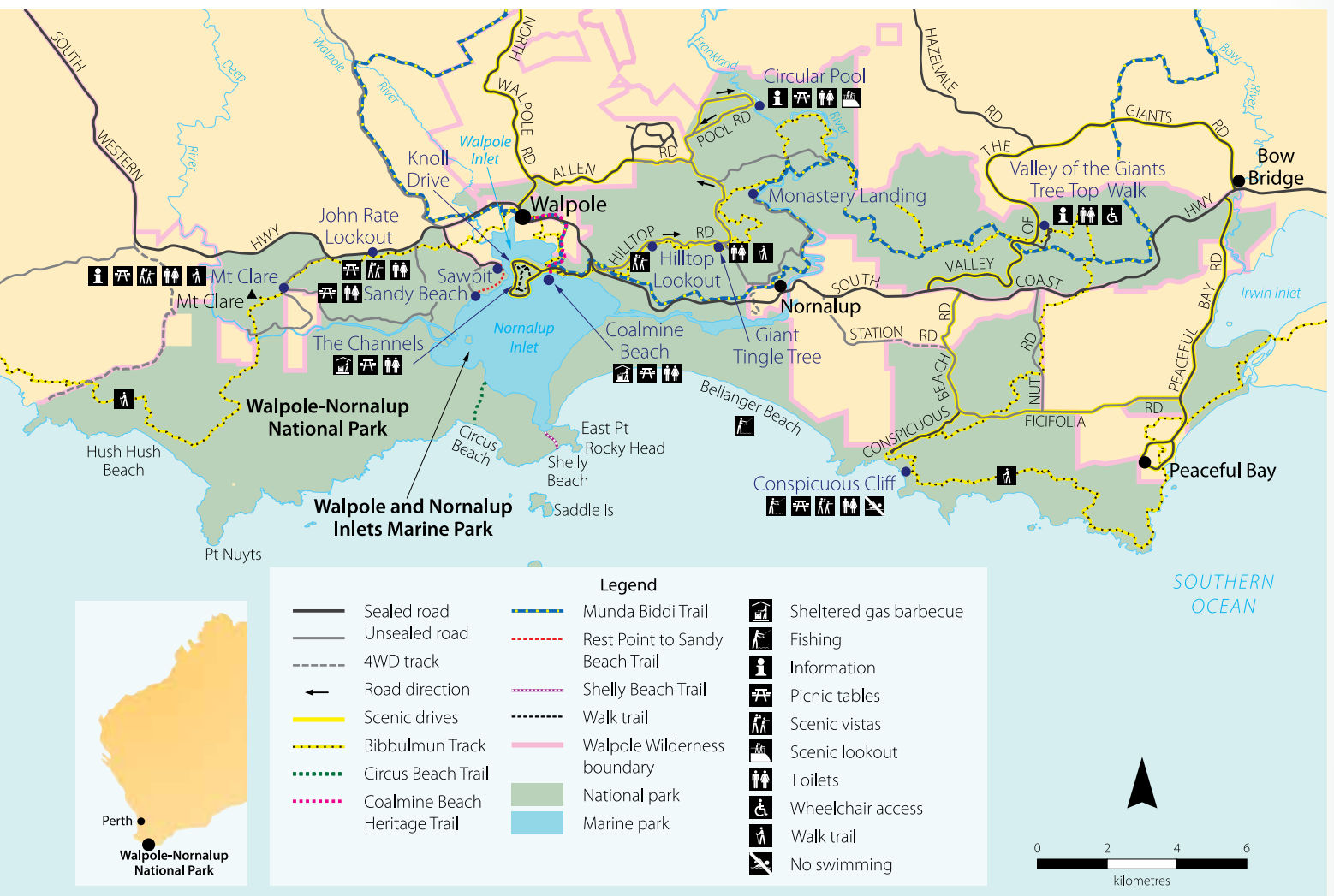
Photo – Andrew Burbidge

Above left Walking through the treetops.

Photo – Marie Lochman

Above Slender parasol (*Macrolepiota clelandii*).

Photo – Bron Anderson/DBCA



PARK HIGHLIGHTS

Conspicuous Cliff

The spectacular limestone cliffs are a photographer's delight, as is the large surf that pounds the shore at this pristine beach. Easily accessible by two-wheel drive, the walk trails and lookouts provide remarkable views and a chance to witness the antics of migrating whales in season.

Monastery Landing

Enjoy a picnic in the serene surroundings of the historic Monastery Landing, the birthplace of the Walpole-Nornalup National Park. Access it by car in the drier months of the year and via the Frankland River all year round in a small boat or canoe launched at Nornalup.

John Rate Lookout

Named after the first forester in the Walpole district, this is one of the most scenic places in the area for picnics

and views over the pristine Walpole and Nornalup Inlets Marine Park. In recognition of John Rate's dedication to the preservation of the forests, the Rate's tingle was named after him.

Valley of the Giants Tree Top Walk

The Valley of the Giants is home to the famous Tree Top Walk, which reaches a height of 40 metres above the forest floor. This 600-metre walk has a gentle gradient which is suitable for children and wheelchairs. You can also enjoy the forest at ground level along the Ancient Empire Walk through some of the giant tingle trees. Activity programs are run during school holidays for a deeper insight into the forest and surrounds.

Right Conspicuous Cliff.
Photo – Bron Anderson/DBCA



Do it yourself

Where is it? 430 kilometres south of Perth
Total area 15,865 hectares
What to do Bushwalking, mountain biking, fishing, surfing, canoeing, paddling
Must see sights Conspicuous Cliff, Monastery Landing, John Rate Lookout, Valley of the Giants Tree Top Walk
Nearest Parks and Wildlife Service office Frankland District Office, South Coast Highway, Walpole WA 6398 (08) 9840 0400

Bushwalking in Walpole-Nornalup National Park

Mount Clare Summit Trail

Class 3, 2.4km return. Allow 40 minutes.

A gradual uphill walk takes you through magnificent tingle and karri forest to the summit of Mount Clare. You will be rewarded with views to the coast and across the Walpole Wilderness.

A good level of fitness is recommended.

Deep River Loop Walk

Class 4, 4.2km return. Allow 1.5 hours.

Follow the Bibbulmun Track down a steep valley to the Deep River. Stand on the suspension bridge and take in the river's intense reflections. This trail skirts around to the east of Mount Clare along Tinglewood Drive back to the start point. This walk has limited directional signage and a good level of fitness is recommended.

Knolls Walk Trail

Class 2, 2km loop. Allow 45 minutes.

This pretty walk trail gives you a snapshot of the best the Walpole Wilderness has to offer. Karri, jarrah, tingle, marri, peppermint and sheoak all grow in this small area surrounded by the Walpole and Nornalup inlets. This easy trail can be walked in shorter sections.

Rest Point to Sandy Beach

Class 4, 1.2km one way. Allow 1 hour.

This path guides you around the edge of the western knoll and provides glimpses of the Nornalup Inlet through the undergrowth of the karri forest. This is a narrow trail with steep drops to the side and it can be slippery.

Horseyard Hill

Class 2, 2.5km loop. Allow 45 minutes.

This delightful interpretive trail, illustrated by two local artists, takes you through karri, yellow tingle and marri forest. It has a medium gradient and is wheelchair accessible (with assistance) for the first 120 metres.

Main Ancient Empire Walk.

Photo – Ryan Smith/DBCA

Inset below Western grey kangaroo (*Macropus fuliginosus*).

Photo – Bron Anderson/DBCA

Inset far below Giant tingle tree.

Photo – Cliff Winfield

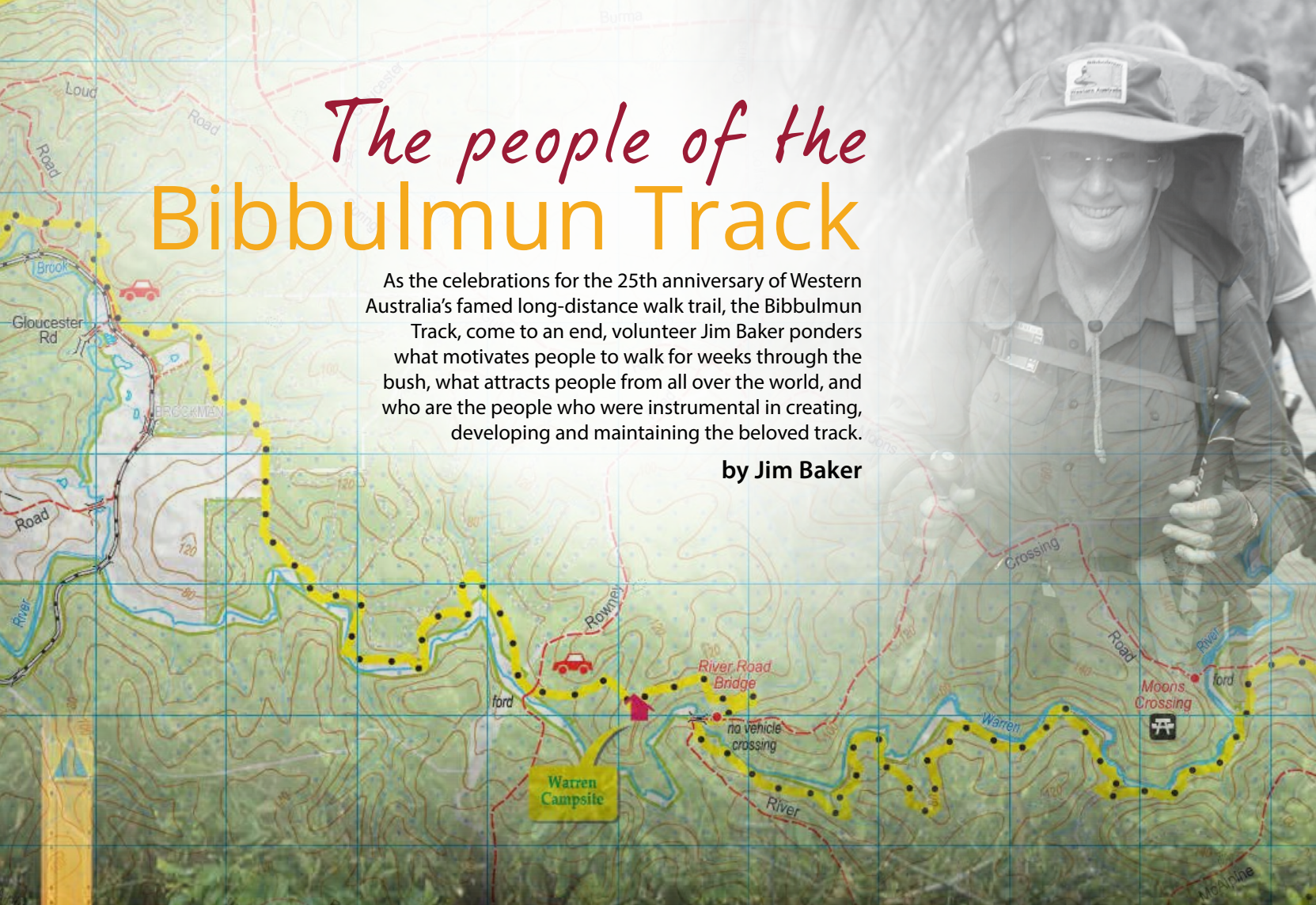




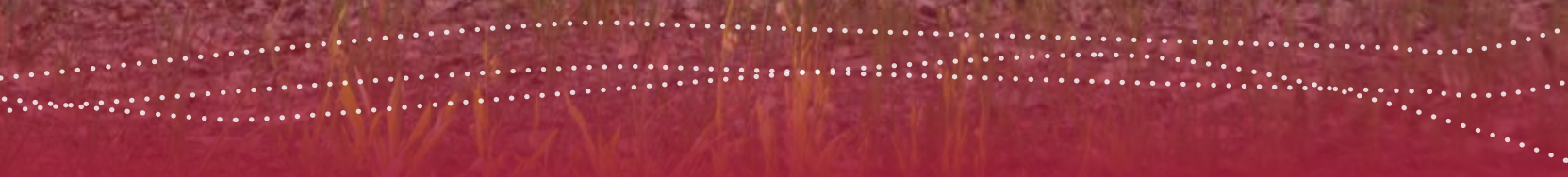
The people of the Bibbulmun Track

As the celebrations for the 25th anniversary of Western Australia's famed long-distance walk trail, the Bibbulmun Track, come to an end, volunteer Jim Baker ponders what motivates people to walk for weeks through the bush, what attracts people from all over the world, and who are the people who were instrumental in creating, developing and maintaining the beloved track.

by Jim Baker



BIBBULMUN TRACK



The spirit of the Bibbulmun Track is alive in the people that enjoy it, love it and freely give up their time to support it, which begs the question—what is it about the Bibbulmun Track that attracts such a staunch following?

It has been 25 years since the Bibbulmun Track was realigned and extended to stretch from Kalamunda to Albany, and commemorative events throughout this year have brought together followers from around the State, the country and the world to celebrate.

It seems the 1000-kilometre long-distance trail affects all those who experience it in some way or other, which cultivates a loyalty and affection that stays with them long after they've left the bush. Walkers are people of all ages, from all walks of life, from all over Australia and the far reaches of the globe.

We remember the original walkers after whom the track is named—the Bibbulmun people—who walked in the forest for thousands of years before Europeans arrived in Australia and continue to care deeply for the land.

Most walkers are there to enjoy the beauty of the bush—the flowers, trees, birds and other animals and the fantastic scenery of the forests and the coast.

.....
Previous page

Main The track near Pemberton.

Photo – Peter Nicholas/DBCA

Inset Volunteer guide, Charmaine Harris on the 25th anniversary walk.

Photo – Justin Macatangay

Above Volunteers on a maintenance work day at Beraking Campsite.

Right The 1998 walkers at the Southern Terminus.

Photos – Bibbulmun Track Foundation



For many, a walk in the bush is an escape from the stress and strain of everyday life:

“We never expected each day to be filled with such adventure, wonder, beauty and spiritual enlightenment. Life as we knew it was thousands of miles away from the simple existence we lived on the Bibbulmun Track.”—Extract from a walker’s note written in the campsite register on the Bibbulmun Track.

For others it is a sense of competitiveness—to walk, or even run more quickly than anyone else for 1000 kilometres—or to prove to themselves that they are physically capable of walking long distances carrying a heavy pack.

There are those for whom the track is an escape route from a powerful emotional event in their lives, the opportunity to use the solitude of the bush to think calmly and regain their hold on life. And many who use it as a teaching aid.

“Bliss—showing my son that there are joys in life that don’t require the use of a power point or the close proximity of a McDonalds.”—Extract from a walker’s note written in the campsite register on the Bibbulmun Track.

Most people who set out to complete an end-to-end enjoy the camaraderie of other walkers and the relish of simple pleasures after weeks of deprivation.

PEOPLE OF THE TRACK

It’s not only the walkers who are the ‘People of the Track’, but also those who made and continue to make their journey possible.

Six people who were instrumental in the development and ongoing enjoyment of the Bibbulmun Track are profiled on pages 16–18, but there are a huge number of others, past and present, including Bob Dixon and Denzell McCotter from Ministry of Justice and the many prisoners who worked, and those that





Discover more about
the people of
the track



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



continue to work, on the track including park rangers and officers in the regions.

It is also important to acknowledge Peter Bidwell from the original project team, Annie Keating, Trail Coordinator with the department as well as Raelene Hicks and Noel Davenport, and those long-serving members of the Board of the Bibbulmun Track Foundation such as Simon Holthouse and Bruce Manning.

The track is managed by the Parks and Wildlife Service at the Department of Biodiversity, Conservation and Attractions in partnership with the Bibbulmun Track Foundation, which is primarily a volunteer organisation utilising some 450 volunteers.

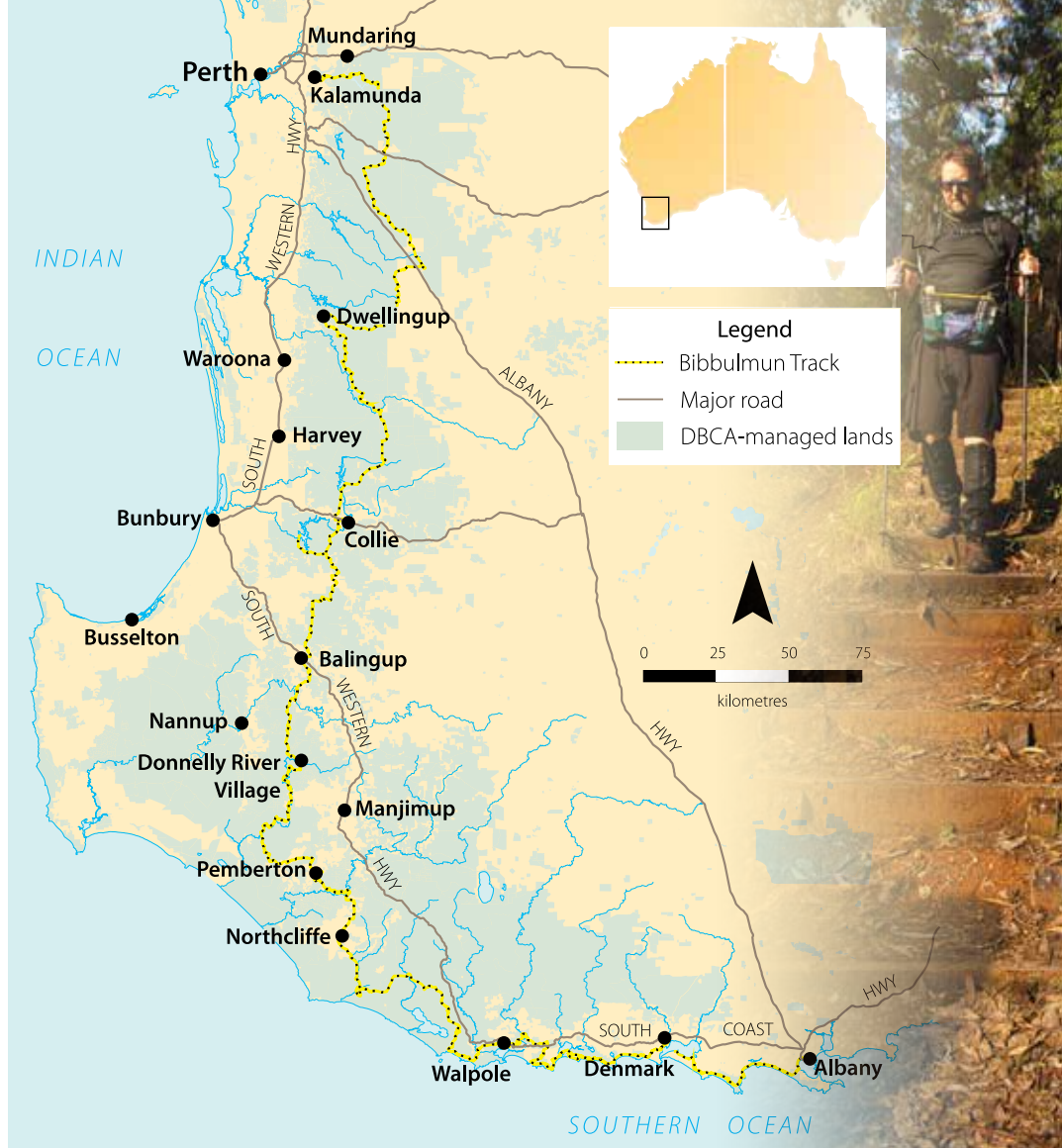
The majority of volunteers perform maintenance work along the track, keeping it in good, walkable condition. Volunteers also work in the Perth Bibbulmun Track Foundation office and from home, providing many services to walkers.

“Giving back” is the reason most volunteers give when asked why they are volunteering. They have enjoyed so much of what the track has to offer and want to offer something in thanks. Others see it as a worthwhile retirement activity.

But perhaps volunteering is more than that:

“I volunteer because of my absolute certainty that the Bibbulmun track fills a very important function in peoples’ lives.”—a volunteer.

“I believe that volunteering is very important for a well-rounded lifestyle. It is good for the soul and the psyche.”
—Steve Sertis.



The anniversary celebrations commenced on 14 July 2023 when eleven walkers set off from Kalamunda to complete the entire track. Other walkers joined them along various sections of the track enabling more than 70 people to take part in the journey. A community celebration was held in each town along the way as the walkers arrived, with the final event in Albany held on 13 September, the official anniversary date. Emotions ran high as the end-to-enders paraded up York Street to the Southern Terminus accompanied by the Albany Pipe Band and cheered by the crowd of well-wishers.

People of the track came from all over to celebrate, online and in person, and all have contributed in some way to the Bibbulmun Track becoming a huge asset and a source of pride for Western Australia.



Above left Volunteers Carol and Jim in the Bibbulmun Track Foundation office.
Photo – Bibbulmun Track Foundation

Top The track near Pemberton.
Photo – Peter Nicholas/DBCA

Above Celebrating completion of the commemorative walk in Albany.
Photo – Justin Macatangay

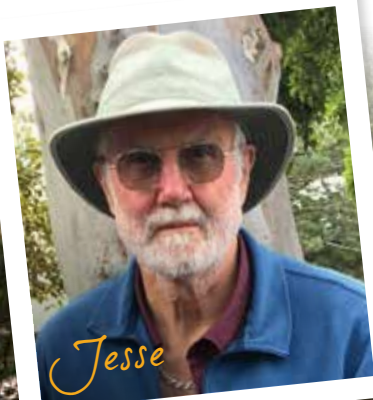
People of the Track

A selection of some key people who were instrumental in the development of the track and the formation and continued operation of the Bibbulmun Track Foundation.

JESSE BRAMPTON

Jesse took up bushwalking in the early 1980s, and in 1987–8 walked the 3450-kilometre Appalachian Trail in the USA. Highlights of this remarkable experience included the open-fronted shelters along the way and the extraordinary volunteer organisation that maintained the trail. On his return to Australia, he end-to-ended the 'old' Bibbulmun Track and was shaken by the comparison—in particular, the extensive road-walking, the lack of facilities and signage and the absence of a genuine connection to the bush.

This led him to submit a detailed proposal to the Department of Conservation and Land Management (CALM) that would see the track upgraded, extended and remodelled, based on the Appalachian Trail. In September 1993, funding from South West Development Commission enabled Jesse to become the Project Coordinator of the Building a Better Bibbulmun Track project.



For the next four years, he was at the centre of the action, working on all aspects of the project—the alignment of the track, the positioning and design of the campsites, the construction of the infrastructure—together with building awareness through the media, creating partnerships with a wide range of organisations and raising funds. Throughout these years, Jesse actively promoted the concept of a community-based association to support management and maintenance of the track, and when the Friends of the Bibbulmun Track was created, northern half of the new track was opened in August. Jesse elected to stand down as Project Coordinator, to become its first Executive Officer.

JIM SHARP

Jim, inspired by landscape architect Wayne Schmidt PM's commitment and desire to upgrade the track, established and headed up a steering committee within CALM in 1993, to redevelop the track through the Building a Better Bibbulmun Track project. Under Jim's guidance the concept became a reality,

producing the fantastic track that we have today. Jim became an inaugural member of the board of the Bibbulmun Track Foundation in 1997, as a representative of the government department responsible for the Bibbulmun Track, firstly representing CALM, then Department of Environment and Conservation and finally Department of Parks and Wildlife. Having Jim (who eventually became the Director General of Department of Parks and Wildlife) on the Board gave the Bibbulmun Track Foundation the confidence of government interest and support and ensured that any concerns and advocacy have been taken seriously. Jim's energy, vitality and enthusiasm for the track and the foundation have been highly instrumental in its success. On his retirement from the board in 2017 he was made the first honorary life member of the Bibbulmun Track Foundation.



Above Conspicuous Cliff near Walpole.
Photo – Marie Lochman

Left Campsites near Pemberton are deep in the forest.

Photo – Peter Nicholas/DBCA



MIKE WOOD

Mike's involvement with the track began in 1993 when he joined the steering committee that oversaw the Building a Better Bibbulmun Track project. Prior to that he had been involved in guiding treks and white-water rafting in Nepal between 1981 and 1986. On his return to Perth, he bought the Mountain Designs store in Hay Street in 1992. Mike was instrumental in establishing the Bibbulmun Track Foundation, recruited all its founding board members and chaired the board from 1997 to 2019. He negotiated the first memorandum of understanding (MOU) between CALM and the Bibbulmun Track Foundation and was instrumental in dividing up the work and responsibilities of the two organisations. He believes that the success of the track comes down to the successful relationship between the department and the foundation.

Mike has been extremely generous in sponsoring and supporting the foundation. For more than 20 years he provided free office space and donated hiking equipment for hire to walkers, as rewards for volunteers and as prizes

for fundraising. He also sponsored the building of the track's Northern Terminus. He became the second person to be awarded honorary life membership of the Bibbulmun Track Foundation and continues as a board member and a volunteer guide. In 2020, Mike was made a Member of the Order of Australia for his work on the Bibbulmun Track, as well as his work in advocating for trail development in WA.

GWEN PLUNKETT

Gwen held down the role of Office Manager for the foundation for 16 years between 2002 and 2018. She and husband Chris developed a passion for walking after a visit to the UK, where friends introduced them to the wonders of the outdoors. They first walked on the Bibbulmun Track in 1996, joined as members of the foundation (then known as the Friends of the Bibbulmun Track) in 1997 and worked as maintenance volunteers in the Perth Hills.

Gwen offered her services in the office in March 1999 to work for one day a week but as the organisation grew exponentially,

Above left Wading through the Pingerup Plains in winter.

Photo – Chris Lee

Above Volunteers upgrade the Tom Road Campsite.

Photo – Bibbulmun Track Foundation

she rapidly became Office Manager, then Volunteer and Maintenance Co-ordinator, working five days a week. She loved her time in the office, meeting so many walkers from all over Australia and the rest of the world, finding that being able to offer advice and see people on their way to a wonderful experience was very rewarding. After many years Gwen began to work fewer days and concentrated her efforts on her work with volunteers, her favourite role. On retirement from the Bibbulmun Track Foundation, Gwen was deservedly made an honorary life member and she still continues as a maintenance volunteer.



Mike



Gwen

“Giving back’ is the reason most volunteers give when asked why they are volunteering. They have enjoyed so much of what the track has to offer and want to offer something in thanks...”



STEVE SERTIS

Steve is the Bibbulmun Track Foundation's Events Manager and Lead Guide. He has been with the foundation since 1997, firstly as a member and then as a maintenance volunteer. He began leading walks and became a member of the staff in 1999. As well as organising the extensive number of events held every year, and leading a number of them himself, Steve is responsible for recruiting, training and assessing the other guides that work as foundation volunteers. He has an extensive knowledge of the track and has walked it end-to-end nine times, including leading the anniversary walks in 2008 and 2023. He made an epic journey in the winter of 2013 when he and another walker undertook a detailed survey of the whole track to update the walk notes for the new version of the guidebooks. Steve continues to work as a Maintenance Volunteer, looking after the Nerang campsite.

LINDA DANIELS

Linda was appointed Executive Director of the Bibbulmun Track Foundation in 2003 taking over from

Becky Shrimpton who had held the role since 1998.

Her first priority was to establish financial support through corporate partnerships and to consolidate the work already started to build up the events calendar, tourism offerings and membership.

One of the first major projects was the development of a new website that was rich in useful information including interactive maps, distance calculators and service providers. This made trip planning far easier for walkers and provided a system to manage memberships, event bookings and other administrative tasks.

Promoting the track outside of WA was a challenging task, so she instigated the Trails WA marketing project to identify the top trails in WA and promote them collectively. This led to her involvement in the broader trails industry, contributing to the development of State trail strategies. Linda's efforts had a great influence on the recognition of the positive impact of trails on both health and regional tourism in Western Australia and in the establishment of Trails WA as a not-for-profit organisation.

Above left Through thick coastal heath, the Walpole to Denmark section.

Photo – Janine Guenther

Top The Northern Terminus in Kalamunda.

Photo – Chris Tate.

Above Bibbulmun Track website.

Below The Bibbulmun Track.

Photo – Peter Nicholas/DBCA



Jim Baker is a volunteer with the Bibbulmun Track Foundation and an avid bushwalker, having completed an end-to-end of the track four times. He can be contacted at jim_baker@bigpond.com

The important work of the Bibbulmun Track Foundation is made possible thanks to the generosity of its major sponsors, Lotterywest and Newmont.

Commemorative walk on the Bibbulmun Track

Bushwalking novice and eternal optimist Ivy James tried her hand at walking nearly 70 kilometres from Brookton Highway to North Bannister along the Bibbulmun Track as part of its 25th anniversary celebrations. With minimal training and an open mind, Ivy embraced the experience and was enveloped by the track and the warmth of her fellow walkers.

by Ivy James





Discover more about the commemorative walk

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



Try something new, they said—and try something new, I did.

I took my family by surprise when I told them I was swapping the pings and dings of my screens to hike the Bibbulmun Track over five days.

I had heard walking multi-day hiking was a test of mental and physical endurance with many experiencing spiritual breakthroughs along the way, so I was curious.

Given the Bibbulmun Track was marking its 25th anniversary this year, there was no better time to give it a go.

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Previous page

Main Section Two walkers at the starting point on Brookton Highway.
Photo – Chris Lee

Above Alyi-wa Miya Campsite.
Photo – Steve Sertis

Left Ivy feeling strong.
Photo – Joe Keh

Inset Gilled mushroom (*Gymnopilus*).
Photo – Mike Wood/DBCA

Hiking and camping in the thick of winter in the Perth Hills...honestly how hard could it be?

In true Ivy fashion, I convinced myself I could totally 'wing it'. Little did I know what was in store for me.

OFF WE GO

As part of a group of five walkers, the task was to walk a section of the track from Brookton Highway to North Bannister. A total of nearly 70 kilometres, I would meet up with the official group of eleven who were completing the track from start to finish over the course of several weeks.

After signing a medical form, watching a briefing and ticking off a checklist provided by Bibbulmun Track Foundation's lead guide, Steve Sertis, I was ready to go.

Feeling nervous but excited, my partner dropped me off at Murdoch Train Station where I met 'Section Two' guide Mike Wood and fellow hikers sisters Julie and Di, and Jade.

Only twenty minutes into the five-day hike, I did not find carrying 15 kilograms of gear and food on my hips very pleasant.

Maybe I should have trained. I became acutely aware of my haversack biting into my shoulders and gnawing at my love handles as we walked towards the



Above Joe and Ivy at Mt Cuthbert.
Photo – Karen Gurry

Below Hikers enjoyed taking in diverse landscapes along the track.
Photo – Stewart Carter

Canning campsite. Chatting with my guardian angels Di and Julie helped me not think about the pain.

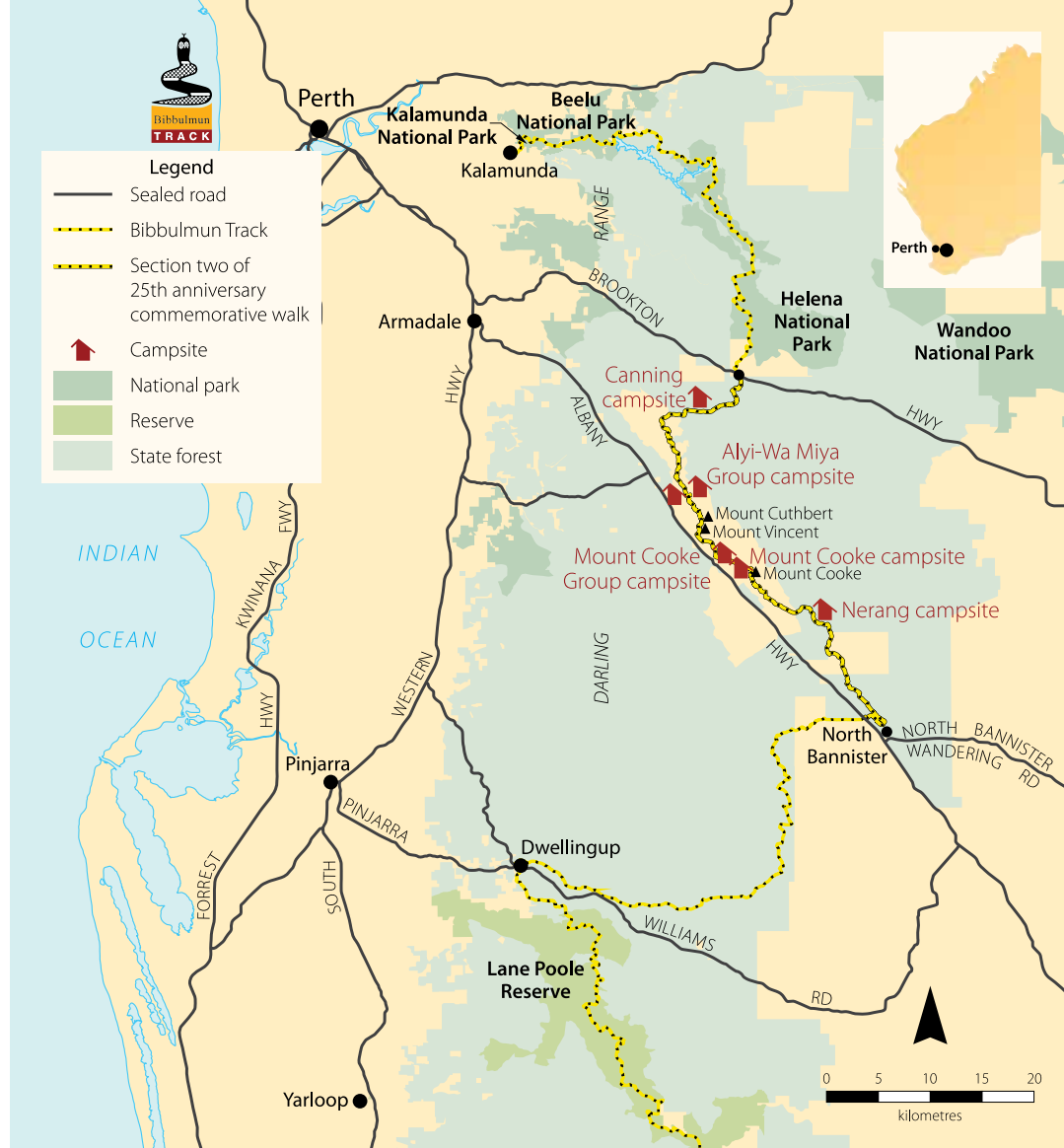
Oh boy, what have I got myself into! I was glad to have hiking poles on-hand to help distribute the weight.

Mastering the art of hand-eye-feet coordination while using my hiking poles took some getting used to. After a day or two of practice, it became rhythmic and effortless.

MEETING UP

After walking 25 kilometres the first two days, we met up with the end-to-end walkers at Alyi-wa Miya Campsite campsite, where we went from a group of five to 16 and hiked the remaining 44 kilometres together towards North Bannister.

Each day, we would wake at 6am, pack down, have breakfast and the countdown for take-off would begin. We'd



walk up to 16 kilometres each day before arriving at our next pit-stop to set up camp, only to do it all over again.

Of course, the section I chose involved hiking three peaks—Mount Cuthbert, Mount Vincent and Mount Cooke.

When I wasn't gasping for air or holding on to my hiking poles for dear life, I thoroughly enjoyed getting to know everyone and conversation flowed easily.

While on flat terrain, it was quite soothing to take in the dominant green,

brown and blue colors of the forest while inhaling fresh air.

I especially loved dinner time. The banter was delightful, and it was amusing to watch everyone barter snacks and discuss their dehydrated meals with such passion. Injuries, blisters, aches and pains were also attended to during this time.

It became apparent how much planning and preparation the end-to-end walkers had undertaken.



“When you’re out in the wilderness with only what you have on your back and the people you’re with, you learn to have each other’s backs. It’s all about cooperation, not competition.”



WHEN NATURE CALLS

Some nights, as the bitter cold wind and rain howled, whipped and lashed my tent, I directed fervent instructions to my bladder to hang tight and hold till the morning light. Luckily, I didn’t have to use the shovel at all.

Instead, I became acquainted with the long drops at camp and would look up

to find a strategically positioned poster detailing what to do in the event of a bushfire and headlined with a simple but effective key message: ‘Your safety is our concern but your responsibility’.

I felt grateful and safe being with two highly experienced guides.

Every evening, Steve would brief the group on the history of the campground we were at, where to next and the terrain we would encounter.

It gave me goosebumps to hear how bushfires had ravaged or left their mark on the campground or nearby bushland in the past.

Looking out at the luscious greenery, you’d never be able to tell a bushfire had come through. There is so much beauty in the recovery.

VISITOR IN THE NIGHT

In the bush, there’s a ‘Leave No Trace’ principle where you carry every single

piece of rubbish with you, which was starting to smell by the third day.

At the Mount Cooke campsite, I’d left my sealed bag of rubbish outside my tent and had an unexpected visitor.

There was plenty of rustling and shuffling. A boxing kangaroo perhaps? My imagination ran wild.

I didn’t dare unzip my tent to see for myself, so I made low growling noises like I was an angry bear. Thankfully, I had reception and was able to call Mike who was by the fireplace with the others.

He came to my rescue with a torchlight and reassured me it was probably just a quenda.

I was the talk of the camp.

A FULL HEART

I’m embarrassed to admit, I didn’t realise sleeping bags are graded.

After suffering for the first three nights despite layering on clothes, I came

.....
Main above Clear night sky, of WA’s southwest.

Photo – Frances Andrijich

Inset (left to right) Group photo, braving the rain. *Photo – Annie Smith; Southern brown bandicoot or quenda (Isodon fusciventer).*

Photo – Jiri Lochman; Break around the campfire. Photo – Mike Wood/DBCA

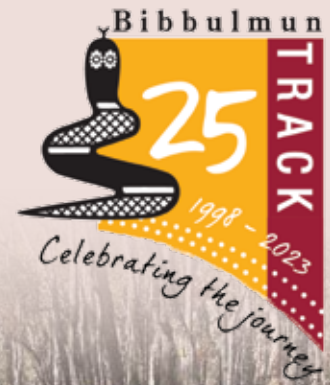


DO IT YOURSELF

Where is it? On the Bibbulmun Track, where it crosses Brookton Highway, about 21 kilometres south-east from Karragullen. From Perth about one-hour drive.

Facilities: Walk trail, parking.

Tours: Bibbulmun Track Foundation, visit bibbulmuntrack.org.au/walk-the-track/events-calendar/



to learn the sleeping bag I had borrowed was graded +14 degrees, not -8 like the checklist had listed.

Red-faced even for a brown-skinned person, I finally told a few people about my troubles who immediately sprang into action.

That night, tears were shed as I lay in my tent, warm and protected by Sue's space blanket, Stewart's puffer jacket, Jade's comforting words, Terry's spare quilt and everyone's collective kindness.

When you're out in the wilderness with only what you have on your back and the people you're with, you learn to have each other's backs. It's all about cooperation, not competition. A key lesson I will carry with me out of the bush.

COMING HOME

Soon enough, we emerged out of the forest at North Bannister to find the next round of section walkers and the shuttle

bus that would take us back to Murdoch train station.

Having not showered for five days, I felt lucky and loved knowing my person was on the way as I waited in the 'kiss n ride' looking and no doubt smelling like a rakali.

When I got home, I had the best shower of my life.

Was it an intense experience? Yes. Would I do it again? For the stars, the serenity and for my soul—most definitely count me in!

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Clockwise (from top left) Camping. Photo – Karen Gurry; Abbey Road, Bibbulmun style. Photo – Stewart Carter; Mangles kangaroo paw (*Anigozanthos manglesii*). Photo – Andrew Brown/DBCA; Getting used to the hiking poles. Photo – Bibbulmun Track Foundation; Taking a break along the track. Photo – Karen Gurry

Ivy James is a Communications Officer with DBCA and has previously worked as a regional journalist and media coordinator. Ivy can be contacted at (08) 9219 9924 or ivy.james@dbca.wa.gov.au

Toad tracking TECHNOLOGY

by Sara McAllister

Environmental DNA is a new innovative technology being used to trace invasive cane toads in the Kimberley environment. Several Aboriginal ranger groups have been trained in the new sampling method and are detecting toads in previously undiscovered areas, including an offshore island.





For more than a year, the cane toad team at the Department of Biodiversity, Conservation and Attractions (DBCA) has worked with DBCA's Biodiversity and Conservation Science staff to develop a technique to use eDNA technology for early detection of cane toads (*Rhinella marina*) in the remote Kimberley environment.

The eDNA approach has now been rolled out in partnership with Kimberley Aboriginal ranger groups to assist with mapping the 'cane toad frontline' as well as surveying some Kimberley islands for toads—and so far, the results have been promising.

WHAT IS eDNA

eDNA is a sampling technique that involves analysing soil and water samples for the DNA of specific animals, such as cane toads.

Cane toads can hide really well in small cracks and crevices and can be hard to detect, particularly when they are in low numbers. This new tool is a practical and efficient way to detect cane toads in the environment without having to physically see the animals. It helps with early detection of toads, especially on isolated islands in the Kimberley, as well as helping to map the movement of toads.

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Opposite page

Main Bunuba ranger, Kristen Andrews, using eDNA technology.

Photo – Samille Mitchell/DBCA

Far left Cane toad (*Rhinella marina*).

Photo – Janine Guenther

Left Samples being tested in the lab.

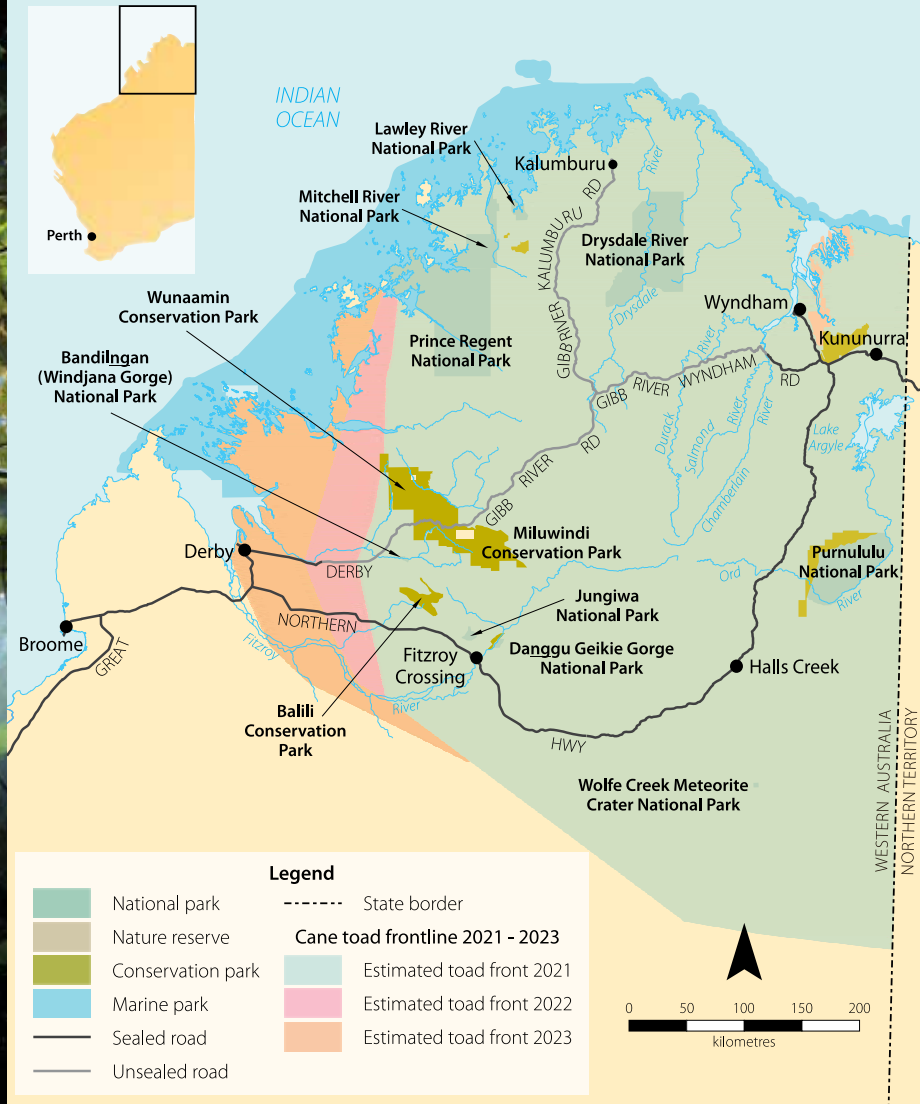
Photo – DBCA



Hear more about the cane toad situation in WA

Scan this QR code or visit Parks and Wildlife Service's podcast.





The eDNA samples are collected remotely and analysed in a DBCA laboratory in Perth. It has taken some trial and error in the field and the lab to find the best method to collect eDNA samples from water in remote locations.

TRANSPORTING SAMPLES

eDNA sample kits for use in the remote and rugged northern WA environments need to be easy to use, practical and light to take out in the field. It's important they are also cost-efficient and have a reasonable shelf life while still being accurate.

Environmental considerations formed a large part of the design process when developing the eDNA testing kits. Single use plastics and hazardous chemicals were out, and the team opted for reusable filter casings and drill pumps instead of disposable syringes.

This has culminated in the development of a 3D printed electric drill powered water pump, which pumps up

Cane toads in WA

Cane toads are a declared pest and arrived in Western Australia in 2009, causing the decline of several key native predator species, including goannas, blue-tongued skinks, freshwater crocodiles, northern quolls and some snakes. The naturally occurring bufotoxin, located in the paratid gland of the cane toad, is toxic to native species when ingested. Cane toads are steadily making their way across the West Kimberley, recently spotted in and around Derby and expected to reach Broome during the 2025–26 wet season.

Cane toads can journey up to 50 kilometres in a year during the wet season, invading new areas and prefer areas with access to fresh water.

The Department of Biodiversity, Conservation and Attractions' cane toad team uses a combination of methods to locate cane toads (see 'Tackling Toads', *LANDSCOPE*, Winter 2014), including night-time searches and testing water bodies for cane toad DNA. As there is currently no effective methods to stop or slow the cane toad invasion, the team has been focusing on strategies to mitigate the impact of cane toads on at-risk native animals such as goannas, northern quoll and freshwater crocodiles.

Above Nyikina Mangala rangers taking eDNA samples.
Photo – DBCA

Above left Jirndawurrunha Pool, Millstream Chichester National Park.
Photo – Peter Nicholas/DBCA

Left Cane toad tracks, Purnululu National Park.
Photo – Janine Guenther



to two litres of water through a portable lightweight filter. There is no use of hazardous chemicals, unlike some eDNA testing kits, and results still attain a high level of accuracy.

ON COUNTRY SAMPLING

Dambimangari, Bunuba and Nyikina Mangala (Walalakoo) rangers recently sampled water bodies in the West Kimberley and surrounding islands, which detected cane toads at several locations where they were not previously found, including a newly detected population at St Andrew Island.

St Andrew Island is Dambeemangarddee Country, approximately two kilometres offshore from the mainland, in St George Basin at the mouth of Prince Regent River. Being close to the mainland means cane toads are able to raft to the island on flood debris easily during flood events.

Nyikina Mangala (Walalakoo) rangers recently worked with DBCA's cane toad team to undertake eDNA testing to map

the cane toad invasion frontline and track the movement of cane toads across their country. Mapping the invasion frontline assists in delivering effective on-ground mitigation strategies. Rangers also used traditional survey techniques to map the cane toad invasion including nighttime spotlighting and daytime searches.

From this information, and that gathered from other sources, a cane toad frontline is developed annually. The 2023 map showed that the cane toads have advanced approximately 50 kilometres in the last 12 months, maintaining their momentum as expected.

The collaboration between the DBCA cane toad team and Indigenous rangers provides training and capacity building for the rangers. Rangers also deliver important monitoring of native species for cane toad mitigation projects. The partnership fosters two-way learning, where knowledge of culture and environment assist in protecting native wildlife from the impact of cane toads.

This collaboration is an ongoing commitment included in the *Cane Toad Strategy for Western Australia 2021-2026*.

“The partnership fosters two-way learning, where knowledge of culture and environment assist in protecting native wildlife from the impact of cane toads.”

Above left On-Country sampling.
Photo – Samille Mitchell/DBCA

Above Lab work in Kensington.
Photo – DBCA

Below Cane toads hiding during dry conditions.
Photo – Janine Guenther



Sara McAllister is a Project Officer within DBCA's Parks and Wildlife Service Invasive Animals Program. She can be contacted at sara.mcallister@dbca.wa.gov.au

Funding to support ranger engagement and the logistics of setting up eDNA testing at the DBCA laboratory over the past two years has been supported by Rangelands NRM and Mt Gibson Iron.

A MATCH
(STICK)

made in heaven



by Leonie Monks, Christine Townsend,
Andrew Crawford, Rachel Binks and
Greg Durell

Looking remarkably like matchsticks are the eye-catching flowers of *Banksia cuneata* or the matchstick banksia. Concern was raised about the decline of matchstick banksia in the early 1980s and since being listed as threatened, a large amount of work has been undertaken by the species' recovery team.





Confined to the central wheatbelt of Western Australia around the localities of Quairading, Brookton and Popanyinning, matchstick banksia grows as a shrub or small tree, to about four metres in height with small prickly cuneate (wedge-shaped) dark green leaves. When the spectacular pink and green flowers open in spring they attract birds, such as honeyeaters, which pollinate the flowers in exchange for a nectar reward.

Like many Australian plant species, fire plays an important role (see 'Live fast, die young', *LANDSCOPE* spring 2023) in the life cycle of the matchstick banksia. The seeds are held in woody follicles in the canopy of the plant and can remain there for many years.

A small proportion of this seed may be released without a trigger, but the likelihood of those going on to produce new plants is slim as they compete with

other more mature plants for space, nutrients and water.

In contrast, after fire, which kills the parent plant, seed is released en masse from the follicles, and the post-fire environment, where other competing species are of similar young age or small size, is highly suitable for seedling establishment. As such, the interval between fires is critical to the ongoing survival of the matchstick banksia.

If fire occurs too frequently, the adult plants will die but there may not be enough seed built up in the canopy for the species to successfully regenerate. However, if fire occurs too infrequently, aging adult plants will eventually die and as few seedlings are likely to survive in unburnt vegetation, overall plant numbers decline.

STABILISING POPULATIONS

The species had first been collected east of Quairading in 1971 and named in 1981, but by 1982 was one of the first plant species listed as threatened in Western Australia. The species was assigned a ranking of endangered because of a continued decrease in plant numbers caused by a lack of available habitat.

Habitat loss was due to past land clearing and a range of threatening processes such as altered fire regimes, poor seedling recruitment, drought, damage during maintenance of road verges, small population size and deteriorating habitat quality because of weed invasion, grazing by rabbits, increasing soil salinity,

and herbicide and fertiliser drift from adjoining farms.

In the two decades after being listed as being threatened, a large amount of work has been undertaken by the species' recovery team and the Department of Biodiversity, Conservation and Attractions (DBCA).

This work saw the reservation of land where one of the matchstick banksia populations occurred; surveys undertaken for new populations; seed collections made and banked at the Western Australian Seed Centre; and augmentation (the growing and planting of seedlings to boost plant numbers at known locations of matchstick banksia) also known as reinforcement.

It was planned to use prescribed fire in these augmented populations in future years, when sufficient seed set had occurred, to renew the population again. As a result of this 20-year effort, 12 populations with around 780 plants of matchstick banksia were located, from which seed collections were made from ten.

Whilst some of this seed was used to produce seedlings that were planted at four of the smallest populations, the bulk of the seed was dried and frozen for safekeeping in the seed centre. This early effort made significant progress towards stabilising populations.

FIRING UP GROWTH

The matchstick banksia was listed as one of 30 plant species identified for

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Previous page

Main *Banksia cuneata* flowers.

Photo – Leonie Monks/DBCA

Inset Planting matchstick banksia seedlings.

Photo – Karen Bettink/PHCC

Above Translocated plants are tagged so that plant survival and health can be monitored.

Photo – Leonie Monks/DBCA

Above right Seeds are held in grey woody follicles.

Photo – Karen Bettink/PHCC



Learn more about
matchstick
banksia

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



● Known distribution of
matchstick banksia



Banksia cuneata

Wedge-shaped leaf



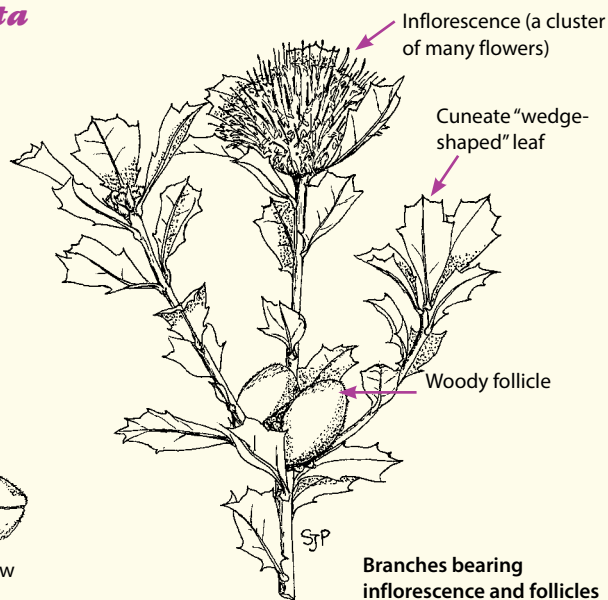
Follicle



Front view



Side view



Branches bearing
inflorescence and follicles

Above left DBCA staff collecting seed of
matchstick banksia.

Above Collected follicles being prepared for
storage at the seed centre.

Photos – Andrew Crawford/DBCA

Left and below Parts of the *Banksia cuneata*.

Illustration – Sue Patrick





“A research plan was developed to see whether seedling survival could be improved by planting after fire.”

targeted recovery action as part of the Australian Government’s *Threatened Species Strategy 2015–2020*. This renewed focus, with significant investment of funds from a variety of sources, has led to an increase in efforts to conserve the matchstick banksia.

In 2017, a new translocation (planting) strategy was developed for the species with the goal of augmenting some of the existing populations with seedlings. The first planting involved re-establishing a population south-east of Quairading where plants no longer existed, likely due to the natural death of all mature plants, and the lack of fire to stimulate seedlings.

Seed from populations in the Quairading area were taken out of long-term storage and germinated for this planting. Guided by knowledge of the species’ ecology, a research plan was developed to see whether seedling survival could be improved by planting after fire. This idea was tested by burning a small patch of vegetation at the site and planting seedlings into the burnt area and adjacent unburnt vegetation.

Each area was fenced to protect seedlings from grazing by animals like kangaroos and rabbits, and all the seedlings were watered over the first two summers following planting. Seedlings were tagged with a unique number so the fate of each individual could be monitored.

Four years after planting, the results were clear; 64 per cent of seedlings planted into the burnt area survived in stark contrast to the just five per cent survival in the unburnt vegetation. This encouraging result of improved translocation outcomes following fire provides valuable direction for the use of fire for future plantings.

IMPROVING NUMBERS

Additional actions that have been implemented to safeguard the future of the matchstick banksia include further seed collections and a genetic study. These seed collections were necessary to bolster seed numbers and ensure that all populations have seed safely conserved at the seed centre.

As a part of seed storage protocols, the viability (whether the seed is alive) of each collection is tested before the seed is stored and then periodically during storage. This periodic testing of the old collections from the seed centre showed that the viability was the same as it had been when the seed had been collected, in some cases over 30 years ago.

This confirmed that the storage conditions utilised in the centre to maintain seed viability are working for this species. It also provided seedlings that could be used in the genetic study and for planting at translocation sites.

HEALTH ASSESSMENT

The genetic study was needed to assess the general health of populations and assist with management decisions about the mixing of seed from different populations in translocation efforts.

Two previous genetic studies had been undertaken earlier for this purpose, but only included a few populations and reached contrasting conclusions. As a result, a more comprehensive study that includes all existing populations and new high-resolution genomic markers is currently underway to provide much needed data to inform the



species' conservation status and future translocations.

An additional aim of this recent genetic work was to compare the genetic diversity of the seed collections held in the seed centre, some of which are more than 30 years old and come from populations that are now extinct, with the living genetic diversity remaining in the wild. The findings will assess the utility of those early seed collections and inform best practices.

GUIDING THE FUTURE

Analysis of the genetic study is still in progress, however preliminary findings indicate that genetically, plants from the broad localities where the matchstick banksia occurs are quite different and shouldn't be mixed at translocation sites.

To make use of seedlings generated as part of this genetic research, a new translocation was planned in a collaboration between DBCA, the Peel-Harvey Catchment Council (PHCC) and private property owners.

After the new site was confirmed to be free from dieback disease (*Phytophthora cinnamomi*), the area was fenced to exclude herbivores and an irrigation system was set up to provide water over

the dry summer months. In June 2023, DBCA and PHCC staff, the property owners and volunteers worked together to plant 194 seedlings.

Over the coming years the plants will continue to be monitored to check that they not only survive but flourish and produce enough seed for the next generation. The genetic work will be used to guide future seed collections and plantings of this stunning species and ensure its persistence well into the future.

Opposite page

Far left Branches bearing inflorescences.

Left Preparing the translocation site for planting in 2023.

Photos – Karen Bettink/PHCC

Top left The team planted 194 seedlings.

Photo – Christine Townsend

Above left The 2023 planting team.

Photo – Karen Bettink/PHCC

Above Spectacular pink and green flowers open in spring.

Photo – Sallyanne Cousans

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Andrew Crawford is a Research Scientist in DBCA's Biodiversity and Conservation Science and Manager of the Western Australian Seed Centre at Kensington. He can be contacted at (08) 9219 9063 or andrew.crawford@dbca.wa.gov.au

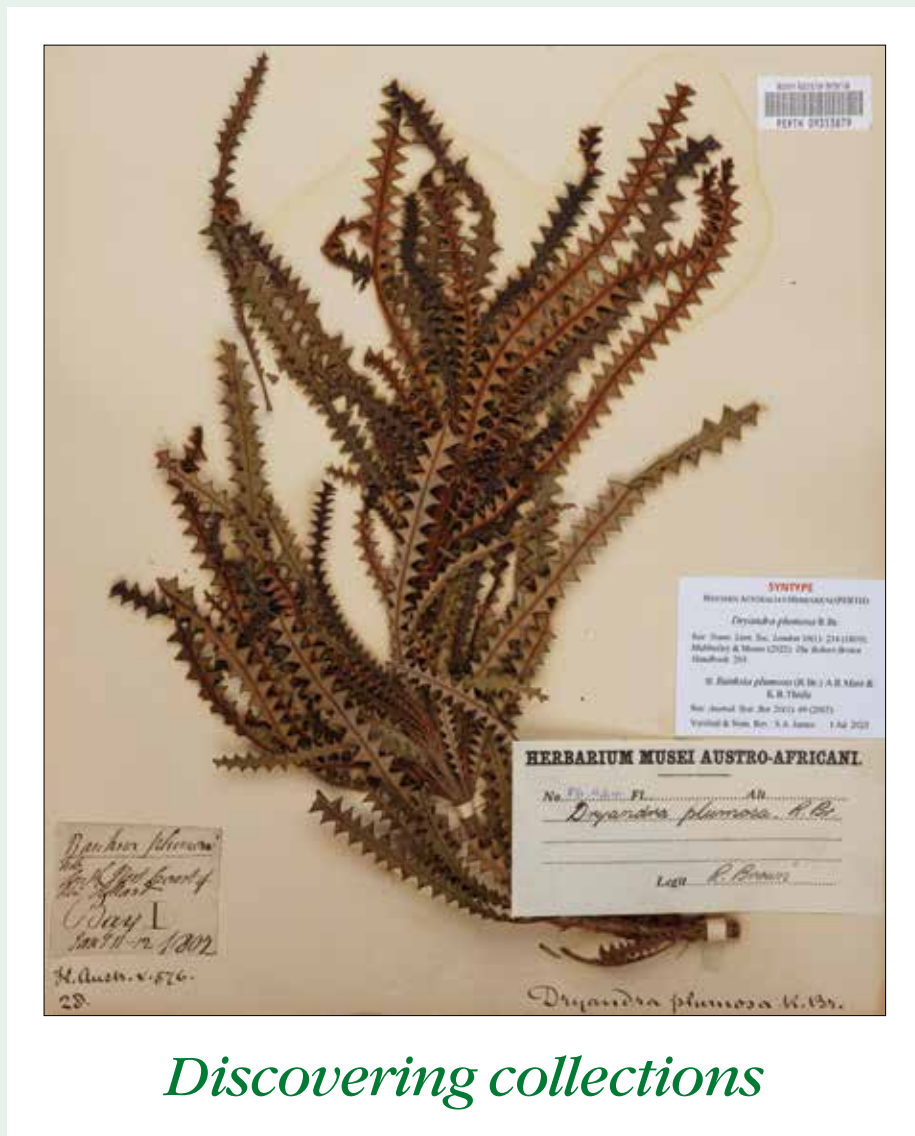
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Greg Durell is the Regional Manager of DBCA's Wheatbelt Region. He can be contacted at (08) 9881 9200 or greg.durell@dbca.wa.gov.au

Thank you to the private landholders who generously allowed these translocation plantings to take place on their property. DBCA and PHCC gratefully acknowledge funding to support conservation and recovery efforts for the matchstick banksia including from: Australian Government through its Threatened Species Strategy, Australian Government's National Landcare Program through Numbat Neighbourhood Project, and the Australian Seed Bank Partnership through the Rare Bloom Project. The Threatened Species Initiative funded the genetic study.

The Western Australian Herbarium, the State's official collection of dried plant specimens, is always a hive of activity, processing the 10,000 or so specimens that are added annually to the collection as fast as the staff can manage. Sometimes, however, we discover mystery boxes of specimens that have not yet been processed—specimens and data in the dark and not yet available for scientific research. This was the case for a recently 'discovered' series of specimens from across Australia dating from the early 1800s (collected by James Drummond, the first resident botanist in Western Australia who held the position of 'Government Naturalist' to 1868 (collected by Ferdinand von Mueller, Government Botanist in Victoria) that were repatriated to the Western Australian Herbarium from the Natural History Museum, London (38 specimens), Muséum National d'Histoire Naturelle, Paris (31 specimens), and the former South African Museum Herbarium.

In the South African Museum Herbarium boxes were more than 340 specimens collected by Robert Brown (1777–1858) between 1802 and 1805 when he travelled first as a "scientific gentlemen", accompanying Matthew Flinders on the historic Investigator voyage (1801-1803) to chart the coast of Australia, then collecting in Tasmania, Victoria and New South Wales before returning to Britain in 1805. Labelled *Iter Australiense*, these specimens are an important part of the more than 3,600 plant gatherings Brown made during his Australian expedition. These specimens were critical to the publication of Brown's *Prodromus florae Novae Hollandiae et Insulae Van-Diemen* (1810), documenting about 1,000 Australian plant species. Further study of the specimens has revealed more than 34 that were collected in Western Australia, and 58 that are type specimens—the specimens on which the description and name of a new species is based and, as such, the most important specimens as they unarguably represent the species.



Discovering collections

Unfortunately the specimens often have very little collecting information—typical of the era, but with further research and comparison with other Robert Brown collections, the collecting dates and locations may be able to be resolved.

All of these historical specimens have had their own journey of discovery. After being gathered in Australia in the 1800s, they returned to Britain to be studied by Robert Brown, Sir Joseph Banks and other notable botanists of the time. Around 1827, they were transferred to the Natural History Museum, London. As a duplicate (secondary) specimen set, they were transferred to the herbarium

of the Royal Botanic Garden, Edinburgh, eventually travelling across the globe once again in the late 19th Century to be deposited in the collections of the South African Museum Herbarium. In 2002, the specimens were again shipped across the Indian Ocean to be incorporated into the collections of the Western Australian Herbarium as exchange material, where they are available for further cultural and scientific research and study!

Above Robert Brown specimen of *Banksia plumosa* collected near Lucky Bay.
Photo – J. Percy-Bower

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Making tracks in warming waters

An aerial photograph of four Australian southern right whales swimming in clear turquoise water. The whales are seen from above, with their dark bodies and white patches visible. They are scattered across the frame, with one large whale in the lower right, one in the upper left, and two smaller ones in the middle. The water is a vibrant blue-green color.

Australian southern right whales (*Eubalaena australis*) feed across the Southern Ocean, which is vast and changing due to climate change. Researchers are addressing the question of how a changing climate affects the whales but first have to find out where exactly the whales are migrating.

by Dr Kate Sprogis, Dr Emma Carroll, Dr Rob Harcourt,
David Lierich, and Tim Button



In the 1800s, there were a number of whaling stations located across Australia, and southern right whales (*Eubalaena australis*) were hunted to near extinction. The species was protected in 1935, and but was not until 1955 that a sighting of southern right whales was confirmed—a mother-calf pair off Albany—and since then, the number of sightings has slowly increased.

The first evidence that southern right whales breed in Western Australian waters and migrate to Antarctica was by a photo-identification match of two right whales sighted by a Japanese vessel in

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Previous page

Main Southern right whales (*Eubalaena australis*).

Photo – Peter Nicholas/DBCA

Above The team of scientists approach a southern right whale to obtain data.

Below Southern right whale mother and calf.
Photos– Kate Sprogis



1996, but little else is known about their migratory destinations.

There are changes in the Southern Ocean due to the warming of the waters.

“It is predicted that the prey of right whales (krill/copepods) will be altered due to ocean warming,” Dr Kate Sprogis, from The University of Western Australia based at the Albany campus, said.

“The migration paths of right whales therefore need to be understood, to predict how their foraging may be affected in the future.

“If the whales cannot find enough high-quality food, then their reproductive output can decrease. For example, if a mother whale is unhealthy, she will not be able to go through pregnancy and give birth.”

JOINING FORCES

An international research team has joined forces to uncover some of the mysteries of southern right whale migrations across the Southern Ocean (see ‘Migration mysteries’, *LANDSCOPE* summer 2022–23). The team includes Macquarie University, The University of Western Australia, the University of Auckland (Waipapa Taumata Rau), and the Western Australian Department of Biodiversity, Conservation and Attractions (DBCA; Blackwood District, South Coast Region and Marine Science Program), and members of the Large Whale Disentanglement Team.

Honorary Professor Rob Harcourt from Macquarie University concedes there is much to learn.

“For example, we want to find out whether all Australian southern right whales are using the same foraging areas, or are they migrating in different directions?” Dr Harcourt said.

“Are the whales migrating to the subtropical front and feeding with the whales from the New Zealand right whale population?”

To answer these questions, the team needed to obtain data on the whales migration path to across vast areas of the Southern Ocean over a long period of time.

Satellite tags are the only technology that allow the researchers to follow the whales on these journeys and have provided data to start to piece the puzzle together.

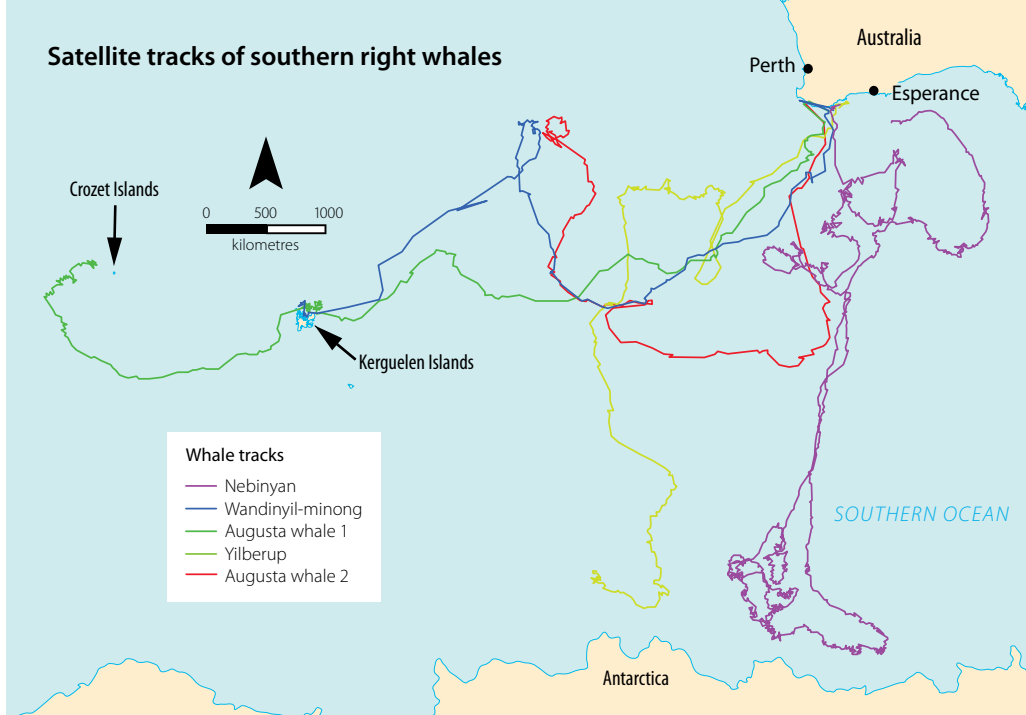
“Based on preliminary data from our first field season, whales from south-west Australia migrated to different foraging grounds spanning 6500 kilometres of the Southern Ocean,” Dr Harcourt said.

“Whales migrated to Antarctica, to the Kerguelen Islands and to the Crozet Islands. These are new insights.”

CONNECTION AMONG POPULATIONS

Satellite tracks show that southern right whales from Australia and New Zealand use foraging grounds south of

Satellite tracks of southern right whales



Australia. Unexpectedly for the team, both Australian and South African southern right whales also visit shared foraging grounds in the Indian Ocean.

But what about the genetic connectivity? During the field season, skin samples were obtained for genetic analyses at the University of Auckland by Dr Emma Carroll and her team.

“Previously, the only genetic data we had were from 17 biopsy samples from southern right whales in Western Australia from the early 1990s,” Dr Carroll said.

“Now, more than a decade later, we are working to increase the sample size. This means we can have a better understanding of how Western Australian southern right whales are connected to those from the east coast of Australia, New Zealand and South Africa.

“We are particularly interested in investigating if there are any close relatives between New Zealand and Australia.

“Samples will also be analysed in the future for microchemical markers called stable isotopes. These markers tell us

broadly where-and-on-what the whales are feeding. This is complementary to the high-resolution foraging locations we get from the satellite track data, with the advantage that we can analyse the microchemical markers from dozens of whales.

“Analysis of the samples from the 1990s suggests a strong link between WA and Antarctica, so it will be interesting to see if this has changed.

“Future biopsy samples will also be used to determine the age of whales in the population through genetic analysis.”



Circumpolar project

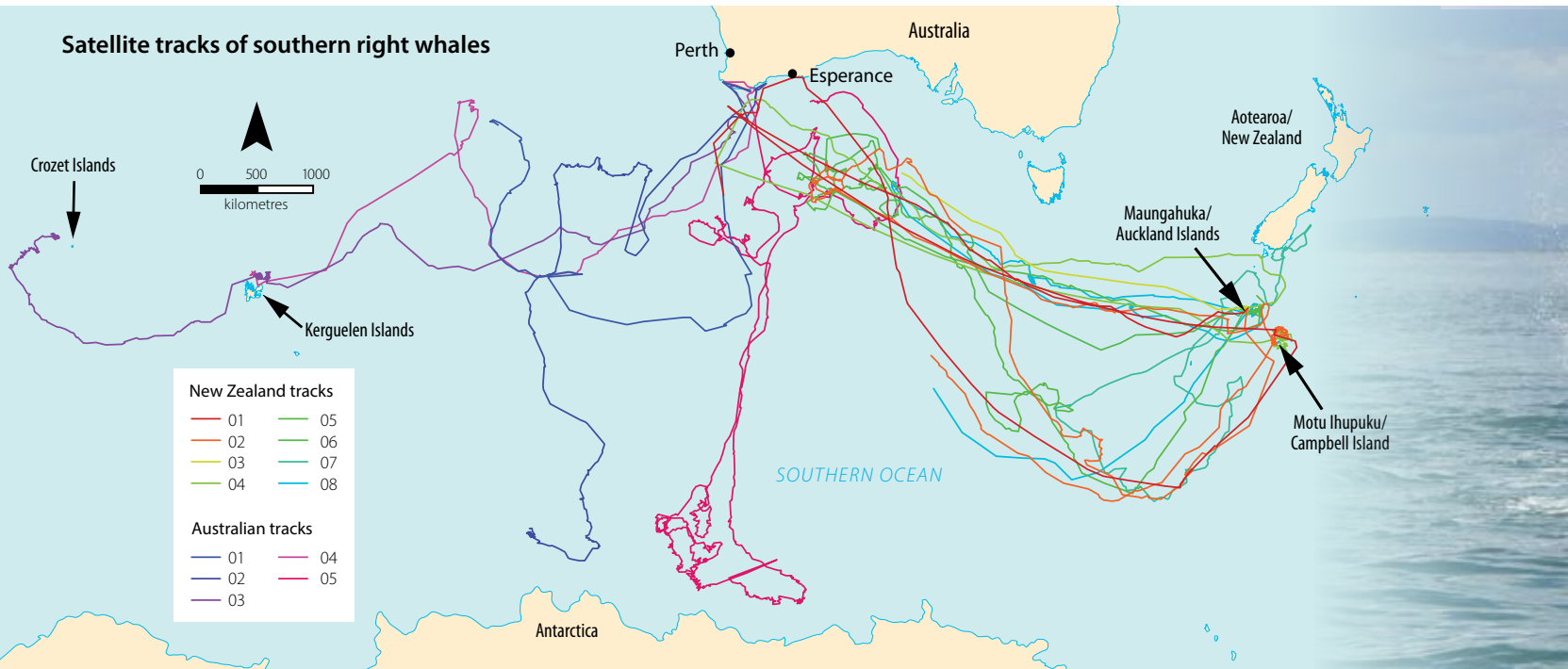
Associate Professor Emma Carroll from Auckland University is co-lead of the International Whaling Commission - Southern Ocean Research Partnership (IWC-SORP) theme on southern right whales. IWC-SORP is an international collaboration and circumpolar project with researchers from many nations, including New Zealand, South Africa, Brazil and Argentina.

The first year Australia joined the large-scale project was 2022. The project includes biopsy sampling and satellite tagging of southern right whales to understand the overlap among populations, and data is shared amongst researchers. For more information see marinemammals.gov.au

Above left Satellite tracks of the southern right whales tagged on the breeding grounds in south-west Australia in September 2022, showing the different migration paths into the Southern Ocean where the whales went for feeding. Each different coloured track line represents an individual whale. The map shows the arrival of the tagged whales near the French Kerguelen and Crozet islands, and Antarctica. *Map – Tohora Voyages*

Above Southern right whale adult showing the callosities on its head. The callosities are made of thickened and keratinised tissue. Each individual has a unique pattern of callosities on their head, which can be used for identification purposes.

Left Biopsy samples from southern right whales collected during the 2022 field season, ready for shipping to Auckland University for genetic and stable isotope analyses. Each one-to-two-centimetre sample is from a different whale. *Photos – Kate Sprogis*



Above Tracks of the southern right whales tagged in breeding grounds in southwest Australia and off the Auckland Islands (Maunahuka), showing their spatial overlap in the Southern Ocean.

Map – *Tohora Voyages*

Above far right Southern right whale calf tail slapping off Augusta, south-west Australia.

Below Dr Emma Carroll conducts photo identification of southern right whales.

Photos – *Kate Sprogis*



“The project not only provides valuable data on the movement of the whales along the coast of southern WA, but also provides invaluable capacity building for the Large Whale Disentanglement Team.”

WHALE JOURNEYS

Tohorā Voyages is the New Zealand-based southern right whale project, where tohorā is Māori for ‘whale.’ The project has so far included tagging of 25 whales with satellite transmitters in the Auckland Islands from 2020–22.

Mirnong Maat is the Australian-based southern right whale project, where Mirnong Maat is Menang/Merningar Noongar language for ‘whale travel path’ and is akin to ‘whale journey’. Mirnong means ‘whale’ and maat means ‘travel path’. As the whales are migrating to and from their feeding grounds they undertake a journey along a path, here we liken their migration to ‘maat’. So far, fieldwork has been conducted in September 2022 and August 2023, and is also being planned for winter 2024.

COASTAL MOVEMENTS

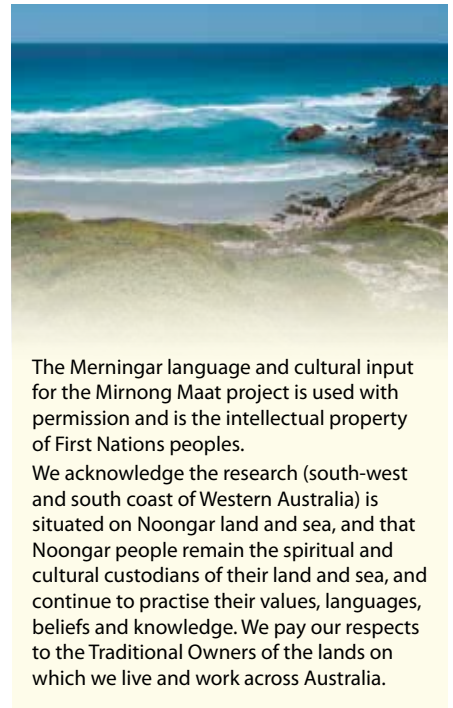
The coastal movements of tagged southern right whales provide relevant information for the proposed south coast

marine protected areas in WA. Before migrating into the Southern Ocean, the whales traverse the coast showing spatial variation in use over time.

“The movements of whales along the coast are important to know so that we can ensure these habitats are protected into the future,” Tim Button, DBCA’s Operations Officer Fauna based on the WA south coast said.

Interestingly, a tagged southern right whale from the Auckland Islands (Maunahuka) south of New Zealand, actually migrated to the south coast of Western Australia. This movement of New Zealand whales to shallow, coastal Australian waters was previously unknown. The whale named ‘Whitu’ traversed west along the coast from Esperance to Bremer Bay through the Archipelago of the Recherche and the proposed Fitzgerald Biosphere Reserve.

“Whitu’s movements into Australian coastal waters shows that we are not just managing Australian whales, but also New Zealand whales,” Tim said.



The Merningar language and cultural input for the Mirnong Maat project is used with permission and is the intellectual property of First Nations peoples.

We acknowledge the research (south-west and south coast of Western Australia) is situated on Noongar land and sea, and that Noongar people remain the spiritual and cultural custodians of their land and sea, and continue to practise their values, languages, beliefs and knowledge. We pay our respects to the Traditional Owners of the lands on which we live and work across Australia.

“From the 2023 Mirnong Maat field season, a whale tagged off Cheynes Beach traversed from Cheynes Beach east to Twilight Cove and back, before heading west towards Augusta at the southwest tip, and then migrated south into the Southern Ocean.”

“It was found that whales tagged off Augusta traversed the coastline to near Windy Harbour, before heading south past the shipping lane into the Southern Ocean,” David Lierich, DBCA’s Marine Park Coordinator for the Ngari Capes Marine Park said.

“When these areas overlap areas of high human usage, we can target our

patrols in those areas to make sure people are keeping their distance.”

“The project not only provides valuable data on the movement of the whales along the coast of southern WA, but also provides invaluable capacity building for the Large Whale Disentanglement Team.”

“The opportunity to operate our vessels close to these animals gives team members insight into how the whales behave in a relaxed manner. This is important as it provides a better understanding of body position and behavioural cues when dealing with an entangled whale.”

With the support of DBCA, the research team hopes to piece the puzzle together further through this international, collaborative project.

.....
Above left Dr Emma Carroll catches a drone returning to the boat.
Photo – Kate Sprogis

Above Fitzgerald River National Park.
Photo – Marie Lochman

Below left Southern right whale mother-calf pairs at Cheynes Beach in shallow waters.
Photo – Kate Sprogis



Dr Kate Sprogis is a Marine Mammal Scientist whose research focuses on dolphins and whales off Western Australia. Kate is based at The University of Western Australia, Albany campus, and can be contacted at kate.sprogis@uwa.edu.au

Dr Emma Carroll is an Associate Professor at the University of Auckland | Waipapa Taumata Rau and co-leads the research project *Tohorā Voyages* off New Zealand. Emma can be contacted at e.carroll@auckland.ac.nz

Dr Rob Harcourt is an Honorary Professor at Macquarie University in marine science. Rob is head of the Marine Predator Lab, specialising in marine conservation, marine ecosystems, animal behaviour and ecology. Rob can be contacted at robert.harcourt@mq.edu.au

David Lierich is a marine and freshwater scientist. Dave is the Marine Park Coordinator for the Ngari Capes Marine Park for DBCA in south-west Australia and can be contacted at david.lierich@dbca.wa.gov.au

Tim Button is a Natural Resource Manager and is the Operations Officer Fauna for DBCA around the Albany region on the south coast of Western Australia, and can be contacted at tim.button@dbca.wa.gov.au

For more information on *Mirnong Maat*, please see tohoravoyages.ac.nz/welcome-to-mirnong-maat



Adventuring Dwellingup

by Mike Wood

Over the past three years the Dwellingup area has been developed as a world-class trail destination within a unique forested natural environment and a stunning river valley.



The picturesque town of Dwellingup is within easy driving distance from Perth and Mandurah, making it an ideal location for a day trip or an overnight adventure activity for families, trail enthusiasts and international event participants.

In 2021 and again in 2023, Dwellingup won Western Australia's

Top Tiny Tourism Town award and the National Tiny Tourism Town award in 2023. Dwellingup is now recognised as an awesome trail and adventure tourism destination (see 'Trails firing up Dwellingup', *LANDSCOPE* Winter 2021). The town welcomes in excess of 250,000 visitors a year, 80 per cent of whom camp at the popular Lane Poole Reserve and are

focused on family oriented outdoor nature experiences.

There is a range of walking, mountain biking, four-wheel drive and paddle trails in the area as well as the internationally recognised Munda Biddi Trail and Bibbulmun Track, which pass through the area. There are more than 50 kilometres of new mountain bike trails alone to entertain riders, plus 24 kilometres of new walk trails in addition to the 10 kilometres of paddle trail on the Murray River.

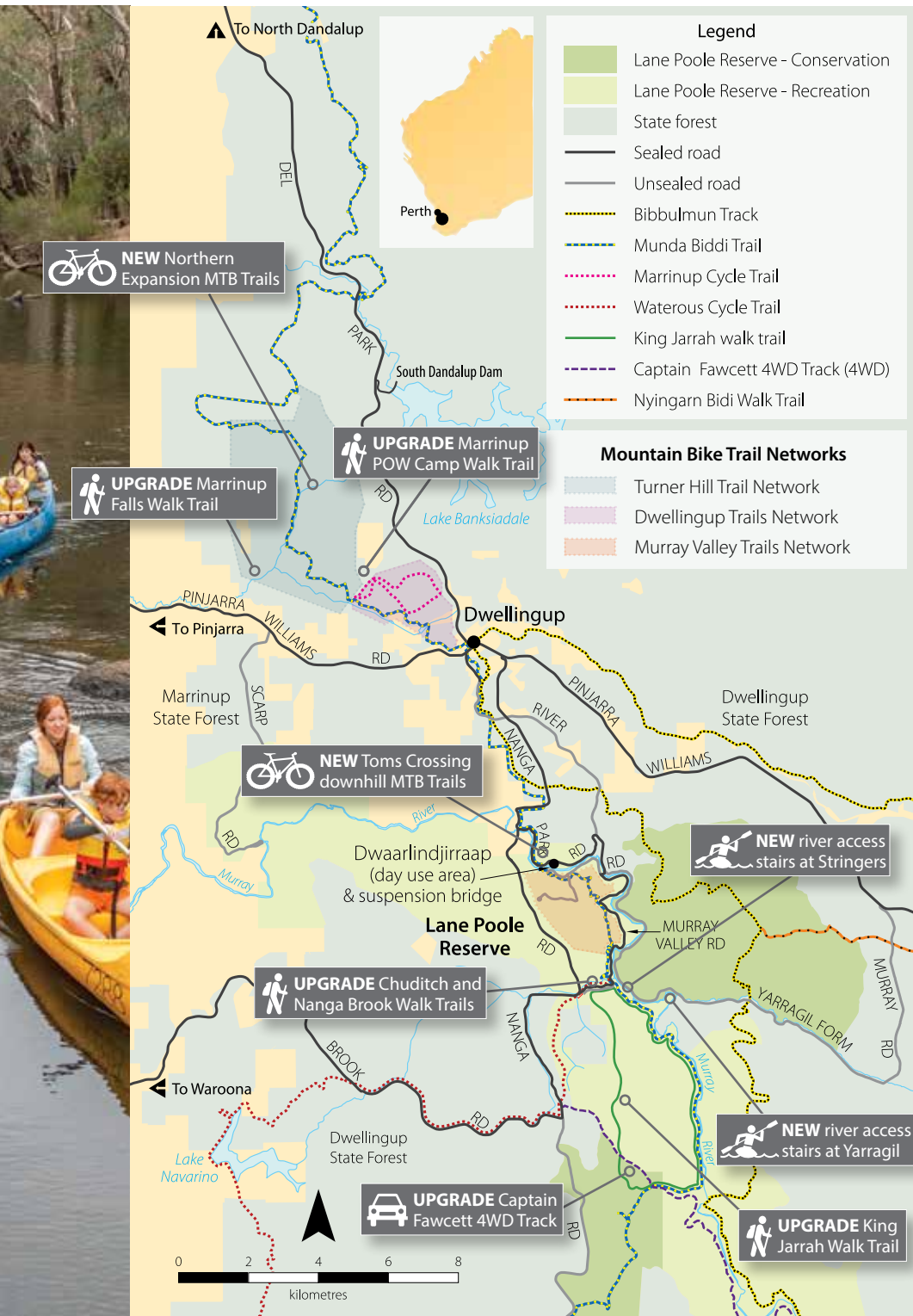
As more cafés and eateries open, adding to the town's café culture, and the range of accommodation continues to expand in town and in the surrounding rural and forest environment, the region will become more attractive to people looking for a nature-based, bush-focused, adventure experience.

DEVELOPING DWELLINGUP

The Dwellingup Adventure Trails project, coordinated by the Parks and Wildlife Service at the Department of Biodiversity, Conservation and Attractions, facilitated the investment of \$8.4 million to develop new trails and facilities that showcase the area's natural landscapes and cultural heritage, and make a significant economic contribution to the region.

The Dwellingup Adventure Trails project and the new Dwellingup Trails and Visitor Centre, developed with project partners the Shire of Murray, have seen Dwellingup emerge as a world-class trail destination providing facilities for individuals and families to enjoy all the adventure activities on offer.

The connectivity of the trail network has recently been greatly improved with the opening of the spectacular \$4.5 million



Previous page

Main Dwaarlindjirraap Bridge.

Photo - Visit Dwellingup

Inset top Dwellingup mountain bike trail.

Photo - Peter Nicholas/DBCA

Inset centre Paddling Dwellingup.

Photo - Tourism WA

Inset below Walking Dwaarlindjirraap bridge.

Photo - Visit Dwellingup

Left Paddling the Murray River.

Photo - Tourism WA

Dwaarlindjirraap Bridge, which connects mountain bike visitors and campers at the day use area and Baden Powell campground with the stunning Murray Valley mountain bike trails on the southern side of the Murray River.

Just over the bridge on the southern bank, you'll find the Murray Valley mountain bike trail head, with detailed trail information, a map of the network and a bike repair station and bike rack. The lung-busting climb to 'The Roost' at the top overlooks the Murray Valley and riders can experience exhilarating descents.

BUILDING MEMORIES

The first thing trail builders and mountain bikers talk about in Dwellingup is 'hero dirt', the holy grail of perfect consistency of soil moisture, soil makeup and perfect traction.

The second thing mountain bikers notice about the Dwellingup trails is the 'flow'; these trails have been designed and constructed so that bikes can roll down hill in a fluid motion, tyres gripping the high sided berms and throwing the speeding bike out of the bottom of the turn. The thrill of the descent is unforgettable.

As the construction of the trails are completed, information is uploaded and available to the public on the TrailsWA website.

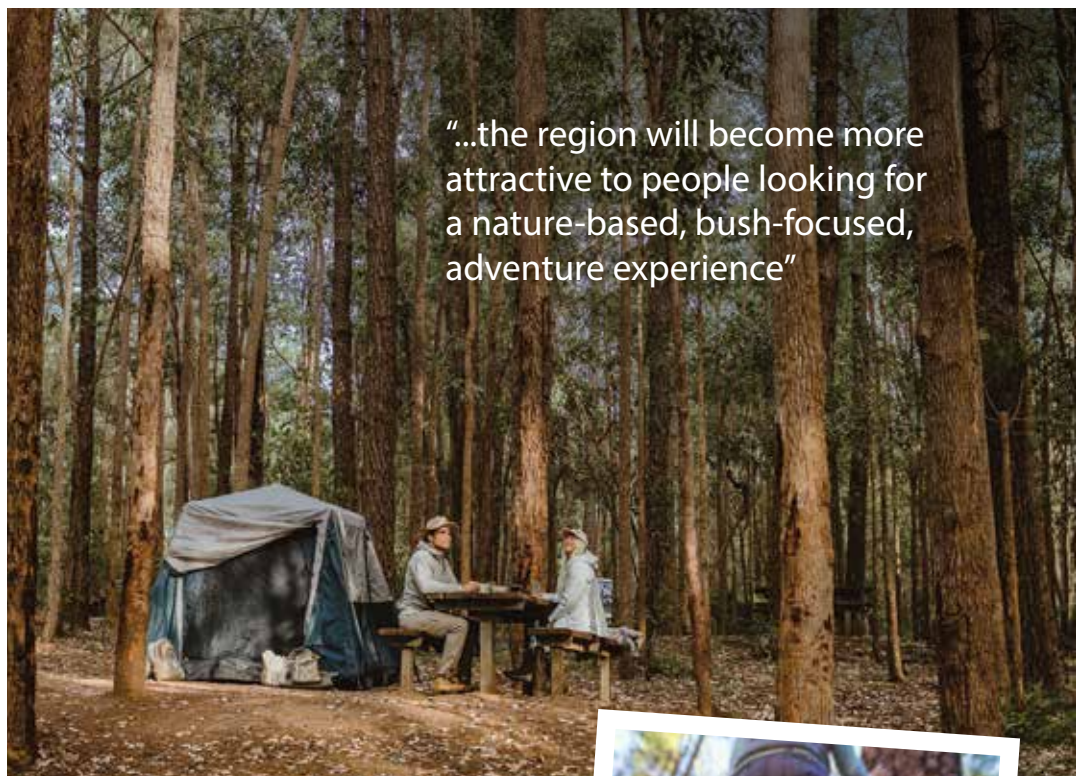
The Dwellingup Adventure Trails project will continue to add even more new trails and activities to Dwellingup's trail network while also upgrading and improving the existing offering, providing even more reasons to visit.

A number of networks have now been built and opened to the public, and some are planned or under construction.

Above right Camping in Lane Poole Reserve.
Photo – Visit Dwellingup

Inset right Bushwalking in Lane Poole Reserve.
Photo – Josh Cowling

Right The Bibbulmun Track passes through Dwellingup.
Photo – Bibbulmun Track Foundation



"...the region will become more attractive to people looking for a nature-based, bush-focused, adventure experience"

Walk trails

King Jarrah Walk Trail upgrade and new short loop in Lane Poole Reserve

Status – works underway

The 18-kilometre King Jarrah Walk Trail is a WA classic day walk which begins at Nanga Mill and is a five-hour return trip. Not to be confused with the actual King Jarrah tree at Dwaarlindjirraap, Lane Poole Reserve, you will see another King Jarrah on this trail. Work on this trail includes:

- Construction of steps to mitigate drainage and steep slope issues and improve sustainability.
- Construction of approx. 4.4 kilometres of realignments to address erosion issues.
- Construction of a new 1.6-kilometre section of trail to create a shorter 4.2-kilometre loop option.

Completion expected by December 2023.

Bibbulmun Track loop

Status – construction works underway.

This new trail is being built in response to trail-user demand for more loop trails as per the *WA Hiking Strategy 2020–2030*.

- Development of a three-day/two-night walk loop utilising the Bibbulmun Track and two campsites, Swamp Oak and Chadoora.
 - Trail construction is to be completed by the Bibbulmun Track Foundation Maintenance Team.
- Completion expected by November 2023.



Mountain bike trails

Murray Valley Trail Network

Status – completed

- Now access the Murray Valley trails from Lane Poole Reserve and cross the Murray River via the Dwaarlindjirraap Bridge avoiding vehicle roads.
- 30 kilometres of green (easy), blue (moderate) and black (difficult) mountain bike trails.
- Unisex toilets and bike repair facilities at the Murray Valley trail head with limited phone reception.
- Try trails with names like Quokkamoly, Busted Nuts and Inzamia.

Marrinup Circuit upgrade

Status – completed

This traditional, hand-built trail is Dwellingup's original cross-country loop trail. The works included:

- An upgrade of the existing seven-kilometre circuit.
- Construction of an additional 1.2 kilometres of new trail, which included the realignment of the existing fire road sections onto a new single track.

Turner Hill upgrade

Status – completed

Like Marrinup, Turner Hill is a traditional, hand-built loop trail. New works include:

- An upgrade of the existing 11 kilometres of single track by adding 2.5 kilometres of optional lines to give riders a variety of descents.

Dwellingup Town Trails Mountain Bike Network

Status – completed

With construction taking place during 2023, this network provides trails directly accessible from town and links the Dwellingup townsite to the Marrinup Circuit. This network:

- Has 15 kilometres of new mountain bike trail linking the Marrinup Circuit to town.
- Offers loops of varying lengths and difficulty providing something for everyone.

Northern Loop mountain bike trail

Status – planning commenced

- 15 kilometres of new cross country



mountain bike trail linking the Marrinup and Turner Hill circuits.

Tom's Crossing downhill trails in Lane Poole Reserve

Status – construction commenced.

- Situated above the Baden Powell campground in pine plantation, this small network of technical downhill trails will be constructed to national competition standards. These trails will not be for the faint hearted and designed to challenge the most experienced riders, including those preparing for competitions, and will feature up to three kilometres of technical, downhill blue and black rated trails.



Paddle trails

New paddle craft launching facilities are planned at Yarragil and Stringers campsites on the banks of the Murray River in Lane Poole Reserve.

Construction of at least two facilities are proposed, with steps to mitigate damage to the riverbank and to allow easier access to, and exit from, the river.

Above and inset top Riding 'Inzamia' on the Murray Valley Trails

Photos – Visit Dwellingup

Inset above Trail markers.

Left Paddle trails are suitable for all ages.

Photo – Tourism WA

Mike Wood is a Communications and Community Engagement Officer within DBCA's Parks and Wildlife Service. He is the former Chair of the Bibbulmun Track Foundation, a current Board Member of the Foundation and a keen trail user. Mike can be contacted (08) 9219 8254 or mike.wood@dbca.wa.gov.au

Up to date information on trail projects in WA can be found at projects.trails.wa.com.au or explore.parks.dbca.wa.gov.au

KOOKABURRA KOOKABURRA CARD GAME



Illustrator, printmaker and children's author Bridget Farmer's original card game, *Kookaburra Kookaburra*, is a versatile set of beautifully illustrated cards that can be enjoyed by the entire family.

The deck consists of four sets of 12 Australian birds and the two to six-player game requires players to collect sets of each bird by requesting specific bird cards from other players, although it can be used for many other popular card games.

It is marketed as suitable for ages five and up but proved a bit too complicated for my five-year-old niece, whereas using the cards to play memory and snap proved popular with her and her three-year-old sister.

Over the next few days, we were able to point out some of the birds featured in the game to the girls as we encountered them in the surrounding bushland.

Birds featured are the laughing kookaburra, Australian magpie, western yellow robin, New Holland honeyeater, superb fairy wren, spotted turtle dove, Australian raven, boobook owl, sulphur-crested cockatoo, willie wagtail, red wattlebird and welcome swallow.

Bridget Farmer has since brought out two more beautifully illustrated card games—*The Bush Birds* and *The Beach Birds*—with all three games accompanying books of the same name.

Kookaburra Kookaburra Card Game is available from bridgetfarmerprintmaker.com for \$26.



BEST WALKS OF SOUTH WEST WA: FROM DWELLINGUP TO WINDY HARBOUR



Mark Pybus is well known to many Western Australian hikers thanks to his fabulous trails website 'The Life of Py' and the podcast 'Real Trail Talk', which he co-hosts with fellow bushwalking blogger Donovan de Souza.

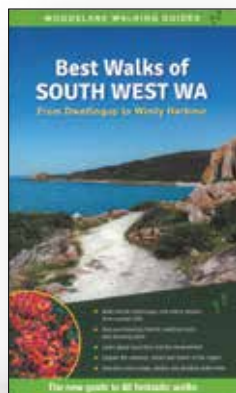
Pybus's new book, *Best Walks of South West WA*, is a guide to 40 walks located throughout WA's south-west, ranging from short walks of less than an hour to longer and more strenuous day-walks.

As they are grouped by area, it's easy to find a walk that suits your requirements near where you live or are visiting.

For each walk there's a summary table, coloured maps, step-by-step directions, some history or information about the area, and several stunning photographs to give you a preview of what you're in for.

A double page spread towards the back of the book will help walkers identify some of the more common flora of the south-west. And at less than A5 in size, it should easily fit in your hiking backpack or holiday bag.

Best Walks of South West WA can be purchased online and in good book stores for \$32.99



iNATURALIST



The iNaturalist website and app connects you to a community of citizen scientists to help identify plants and animals in your local neighbourhood, or that you may encounter in your travels.

Users can upload a photograph of any flora or fauna and receive immediate identification suggestions based on visually similar species identified in that area.

If the app can't definitively identify it via its algorithm, other members of the community may be able to assist.

Using the search function you can see other plants and animals that have been identified nearby, and you can join local projects to learn more about the plants and animals of a particular area and contribute your findings.

A project close to our office in Kensington, the 'Swan River Aquatic Life' project, had almost 3900 observations of 589 species of aquatic life found on or under the Swan and Canning Rivers in Perth, recorded at the time of reviewing this app.

Once you've created an account, you can access your profile, observations and groups from the app or through the website (either the American website: inaturalist.org or the Australian version: inaturalist.ala.org.au).

The app also allows you to share your picture under a Creative Commons licence to be used by scientists and naturalists around the world for research purposes.

The iNaturalist app is free to download from the App Store and Google Play.





Saving the **southwestern snake-necked turtle**

Murdoch University researchers, hundreds of 'Turtle Tracking' citizen scientists, local councils, the Department of Biodiversity, Conservation and Attractions, and many other partners have joined forces to play a crucial role in helping to protect the southwestern snake-necked turtle from becoming endangered.

by Anthony Santoro



Most residents of Perth and the wider south-west of Western Australia will be familiar with the southwestern snake-necked turtle (*Chelodina oblonga*), so named because of its occurrence in the south-west of the State as well as its long neck, which can be almost half the total length of the turtles. The species occurs from Hill River near Jurien to the Fitzgerald River National Park and is also colloquially known as the oblong or long-necked turtle.

Rumours suggest shell lengths can reach up to 40 centimetres, however the largest captured in the last decade was just over 30 centimetres. Males are generally smaller than females but have longer tails. The species' exact lifespan is unknown, though, like most turtles, is likely to be decades.

Southwestern snake-necked turtles are most frequently seen between September and January, when the females venture from wetlands in search of suitable nest sites. Each female can lay up to three clutches each year, with a total of between 25 to 40 eggs, so every female lost is a blow to the viability of the species.

Unfortunately, when they venture from their nests they are most vulnerable to predators such as foxes and ravens, or to being struck by vehicles when they attempt to cross roads.

ALARM BELLS

The southwestern snake-necked turtle is not currently listed as threatened, however, studies have shown that its populations are in decline, particularly



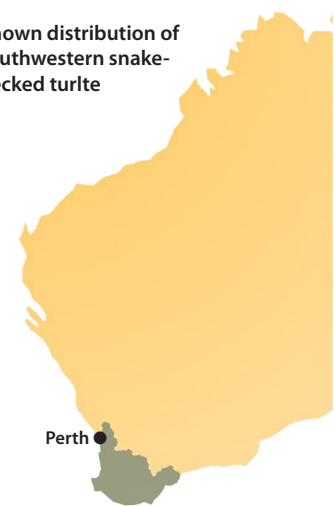
around Perth. Of greatest concern is the decline in numbers of females and juveniles—a recent Murdoch University study found very few juvenile turtles in 35 Perth wetlands. The lack of juveniles is likely due to a combination of issues such as nests full of eggs frequently being destroyed by predators such as foxes and ravens, and loss of native vegetation around urban wetlands reducing the number of suitable nesting sites.

WA's changing climate is also a factor in this decline, with turtles sometimes not emerging from aestivation sites at all during dry winters and therefore not nesting or producing young. If Perth's populations are left unmanaged, they appear to be at significant risk of local extinction.

CITIZEN SCIENCE

This is where an ambitious citizen science project comes in. Probably one of the biggest citizen science projects ever attempted to date in south-western Australia, the Saving Our Snake-Necked Turtle (SOSNT) project is a citizen science and community engagement program to help conserve the southwestern snake-necked turtle. The project aims to protect local turtle populations from further decline and potential extinction by enlisting the support of hundreds of volunteers across the metropolitan area and the south-west.

● Known distribution of southwestern snake-necked turtle



Local councils participating in the project include the Cities of Cockburn, Albany, Bayswater, Belmont, Bunbury, Canning, Joondalup, Kwinana, Melville, Rockingham, South Perth, Stirling, Subiaco, and Wanneroo, the Towns of Cambridge and Claremont, and the Shires of Denmark, Harvey, and Katanning.

These councils have hosted talks for local residents where Murdoch University turtle researcher Dr Anthony Santoro has presented research findings to date, with those attending being encouraged to use the TurtleSAT application and sign up for 'Turtle Tracker' training.

Turtle Tracker volunteers are shown how to use the TurtleSAT app to record and monitor the species and how to protect females and their nests from predators. The councils facilitate the

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Previous page

Main Southwestern snake-necked turtle (*Chelodina oblonga*).

Photo – Anthony Santoro

Above Blue Gum Lake, a southwestern snake-necked turtle habitat.

Photo – Carolyn Thomson-Dans

Above right Southwestern snake-necked turtle population studies have shown their numbers are in decline.

Photo – Anthony Santoro



“In fact, absolutely anyone can help to collect valuable data instrumental in addressing one of the major challenges in turtle conservation—a lack of information.”

formation of dedicated teams of Turtle Trackers at wetlands throughout the southwestern snake-necked turtle’s range. The Department of Biodiversity, Conservation and Attractions (DBCA) is also supporting this initiative by providing the insurance for all trained Turtle Trackers and by promoting the project throughout its network of volunteers.

Each Turtle Tracker is asked to commit to walk around their allocated wetland at least once a week during the peak turtle breeding season (mid-September to mid-November) to report any sightings, and a roster is drawn up for each group to ensure each wetland is well monitored. All observations are important, even of dead turtles and destroyed nests.

Should a volunteer spot a turtle, they are asked to follow it (staying at least 15 metres away to avoid spooking it) to see if it successfully excavates a nest and lays eggs. If it does so, they have been shown how to protect it from predators by overlaying the nest site with mesh.

ONE HATCHLING AT A TIME

In 2021–22, Murdoch University researchers established an egg incubation program in conjunction with the City of Cockburn. Honours student April Sturm assessed optimal conditions for successfully hatching the eggs in an artificial environment by incubating eggs under different temperature and humidity levels. The 61 hatchlings that were successfully raised were released into Bibra Lake, with 40 having miniature tracking

devices attached to their shells (which will eventually fall off as the hatchlings grow).

This phase of the project, led by another Honours student, Liz Whatmore, involved tracking the hatchlings to understand their movements, habitat use and post-release mortality and survival.

Thanks to this work, if relatively intact dead females are found by the Turtle

Top left Turtle researcher Anthony Santoro working in the field.
Photo – Vita Summers

Above left Every hatchling saved from predation will help ensure the species survives.
Photo – Simon Cherriman

Above An informative sign at Blue Gum Lake.
Photo – Carolyn Thomson-Dans



Trackers, they are asked to take their remains to the WA Wildlife Hospital in Bibra Lake to see if the eggs can be saved and incubated for release back into the wetland. With local turtle populations in such a dire situation, every embryo is important.

MASS NESTING

Two or three days every year during the main spring nesting season have proved to be mass nesting events, usually following rain-bearing low pressure systems, falling barometric pressure and air temperatures above 17°C. On such occasions, turtles emerge en masse to lay their eggs.

They tend to choose open nest sites with minimal vegetation, at sites anywhere from one to 800 metres from the water's edge, but generally within 500 metres. They may spend up to an hour out of the water searching for a suitable site and can take another 25 to 45 minutes to dig the nest, lay the eggs and cover the nest.

Above Introduced kookaburras prey on WA's southwestern snake-necked turtles.

Top right Mating southwestern snake-necked turtles.

Photos – Sue Harper

Right Illustration of a southwestern snake-necked turtle. Available for purchase as a print via shop.dbca.wa.gov.au

Illustration – Gooitzen van der Meer/DBCA



During the 2022 nesting season, Turtle Trackers protected almost 280 turtle nests, improving the chances of hatchlings successfully emerging from these nests and helping boost the population of turtles in 12 wetlands. In 2023, the program has been expanded to more councils and more wetlands and more volunteers have signed up to help, offering significant hope for improving the outlook for the species.

In fact, absolutely anyone can help to collect valuable data instrumental in addressing one of the major challenges in turtle conservation—a lack of information. Any member of the public can download

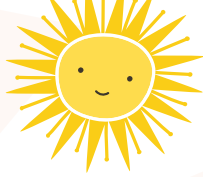
the TurtleSAT app and help scientists keep tabs on southwestern snake-necked turtle sightings, nesting and mortality by uploading data should they see a live or dead turtle or intact or destroyed nest.

Data generated through this project will help scientists to determine the conservation status of the species, inform management of the species' wetland habitats and raise awareness in the community about the threats to turtles. Ultimately, it is hoped the data can be used to create management plans for the species, both generally and at select wetlands.



Dr Anthony Sontoro has studied the southwestern snake-necked turtle for seven years. After his research showed that Perth's turtle populations were in decline he initiated the 'Saving Our Snake-Necked Turtle' project to protect females and their nests across Perth's wetlands.

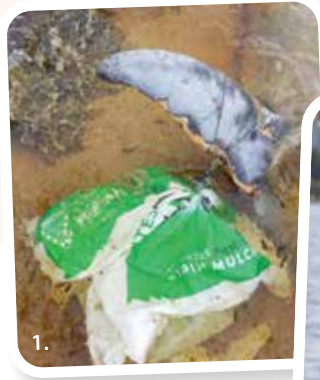
For more information about saving our snake-necked turtles visit sosnt.net.au



Take 4 for the shore

Rubbish around the river can have a big impact on our wildlife. Birds can mistake small pieces of plastic as food and get sick from eating them. Animals, especially waterbirds and dolphins, can get entangled in fishing line and hooks that wrap around their body.

1. Resident dolphin, Highnitch, entangled in fishing line and a mulch bag on her tail. *Photo – DBCA*
2. *Reel it In* bins are at popular fishing spots to encourage fishers to dispose of their fishing line and hooks in the bin. *Photo – Veronica McPhail*
3. An Australasian darter trying to eat a plastic fork. *Photo – Sue Harper*



Search and find

Circle all the pieces of rubbish and dangerous fishing items left behind.

Bonus: spot all the fishing line bins!



There are 38 pieces of rubbish and dangerous items, and five *Reel it In* bins.



Matchstick banksia (*Banksia cuneata*)

Part of the Proteaceae family, the matchstick banksia (*Banksia cuneata*) is known only from a few small populations near Quairading in Western Australia. The plant produces plenty of flowers in late winter and spring that have pinkish limbs with a green top that look somewhat like a matchstick. *Banksia cuneata* is susceptible to dieback disease. Seed of the species is held in woody follicles (fruit) on the plant, often for many years, and are predominantly released after fire.

Illustration by Gooitzen van der Meer

Reference photo by Leonie Monks

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