

WA'S PARKS, WILDLIFE AND CONSERVATION MAGAZINE

LANDSCOPE

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**WETLAND
WONDERLAND**
Yellagonga
Regional Park



**Indigenous
led conservation**
Aboriginal rangers
on country

**Unlocking
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Department of Biodiversity,
Conservation and Attractions

Contributing

Kendall O'Connor is a communications officer with DBCA's Public Information and Corporate Affairs branch. She has always enjoyed exploring WA's national parks and attractions and was lucky enough recently to live and work in regional WA working as a reporter covering stories from Albany in the South Coast to sunny Karratha in the Pilbara region. She is a qualified scuba diver and enjoys exploring the waters off the coast of Exmouth and south-west WA.



Griffin Longley is a former journalist and the CEO of Nature Play WA. Griffin has led the nature play movement in WA for the past 10 years and helped set up Nature Play organisations in WA, SA, Queensland and Canberra. In 2017, he led the development of the Nature Passport app in Seattle, USA. He believes play and a connection to nature are essential to a healthy and happy childhood, and to a sustainable future.



Felicity Kelly is an interpretation officer in DBCA's Parks and Wildlife Service in Exmouth. After volunteering with the Ningaloo Turtle Program in the summer of 2009 she nurtured her keen passion for wildlife and the marine environment. She loves the spectacular coastline in and around Ningaloo and devotes her time to protecting the coastal biodiversity through engagement and communications programs.



The intrinsic connection that Aboriginal people have with land and sea is becoming increasingly entrenched in decision making around how the Department of Biodiversity, Conservation and Attractions (DBCA) manages and cares for Western Australia's conservation estate.

Why? Because successive State Governments have been required to address the contention between Aboriginal aspirations for lands rights recognition via the Commonwealth's *Native Title Act 1993* and the creation of a conservation reserve system under the *Conservation and Land Management Act 1984* (CALM Act).

The two interests of 'conservation' and 'Aboriginal culture and heritage' are more closely aligned than you'd think, and there is a strong desire from governments and claimants to develop meaningful, sustainable and beneficial outcomes for Aboriginal traditional owners.

Since the UNESCO Convention on Biological Diversity signed by 150 governments in 1992 at the Rio Earth Summit, we have worked our way through both legal challenges and policy obstacles, while at the same time observing gradual attitudinal change and a willingness of all sections of society to 'close the gap'.

In 2011, changes to the CALM Act provided a statutory framework for joint management and Aboriginal customary activities and the *Conservation Legislation Amendment Act 2011* (2011 amendments) enabled Aboriginal groups to have a formal role in the management of Western Australia's parks and reserves.

Since then, 35 existing and proposed parks and reserves are jointly managed through formal arrangements with Aboriginal people (see 'Joining hands for Nyngulu', page 34). The most recent was announced by the Ministers for Aboriginal Affairs and Environment at Mina Mina near Patjarr on 28 October 2020 for the joint management of Pila Nature Reserve (formerly Gibson Desert Nature Reserve) with the Warnpurru Aboriginal Corporation. This equates to 22 per cent of the State's conservation reserve system.

The CALM Act amendments, joint management and joint vesting of country have formed an important part of the agreement process between the State and traditional owners by meeting the shared objectives of both groups 'to care for country'. They are a major plank in our reconciliation actions plan and DBCA acknowledges the 'importance of place' in Aboriginal culture and heritage. We will continue to develop deeper awareness and understanding of Aboriginal culture and celebrate the continuance of the oldest living culture on the planet. We invite you join us on this journey and experience culture in national parks and reserves with our Aboriginal traditional owners.

Peter Sharp, Executive Director, Parks and Visitor Services
Department of Biodiversity, Conservation and Attractions



ON THE COVER



Front cover Silvereye (*Zosterops lateralis*) perched in a marri tree, Yellagonga Regional Park.
Photo – Sallyanne Cousins

Back cover Swamp paperbark trees (*Melaleuca raphiophylla*) in the wetlands of Yellagonga Regional Park.
Photo – Colin Ingram

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This page Honey possum (*Tarsipes rostratus*).

Photo – Janine Guenther



Department of Biodiversity,
Conservation and Attractions

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**Snap
shot**



READERS' PIC

Narrow-lipped hammer orchid (*Drakaea thynniphila*)

Photo and words by Rob Horler

"I took this photo last September at Crusoe Beach near Denmark and was actually taking the shot of the narrow-lipped hammer orchid, (*Drakaea thynniphila*) when this Christmas beetle landed at the base of the stem of the orchid. It began its ascent up the stem while I was still taking pictures on its climb. When the beetle reached the top, I was lucky enough to snap him just as he was about to take off from the 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.



New Munda Biddi Trail and Bibbulmun Track southern terminus

Users of the Munda Biddi Trail or the Bibbulmun Track will soon enjoy a new terminus in the heart of Albany adjacent to the statue of Mokare, a Minang man famed for guiding Europeans through the walking trails used and maintained by Noongar people over generations in the area.

The southern terminus of the 1000km trails is currently at Proudlove Parade near the old visitor centre, and the new terminus will be at the Alison Hartman Gardens on York Street, adjacent to the new visitor centre.

The appealing southern terminus will feature large trail head panels for photo

opportunities, square benches for hiker and biker lay out spaces, bike racks and timber decking.

Minor realignments of the trails will lead walkers and hikers into and out of the new terminus, which is most commonly the end point for those who began their journey from the northern terminus in either Kalamunda or Mundaring near Perth.

Funding has been provided by the Great Southern Development Commission and through the economic stimulus package with construction is due to be completed by December 2020.

Above Artist's impression of the new terminus.

Right Hiking the southern coastline of WA near Albany.
Photo – Peter Reid

Ten-year hiking strategy

A ten-year *WA Hiking Strategy* has been released to complement other trail strategies in WA.

The hiking strategy focuses on traditional bushwalking and the emerging growth area of trail running, and will guide industry in the funding and development of hiking and trails for the next decade.

The State Government has allocated \$250,000 over the next three years to encourage participation.

The strategy was developed by the Department of Local Government, Sport and Cultural Industries and the Department of Biodiversity, Conservation and Attractions, along with significant community input.



Spotlight on the chuditch

It's spotty, fluffy and downright adorable, but WA's largest carnivorous marsupial, the chuditch, is more than just a pretty face. Also known as the western quoll, this critter is recognised for its brown fur, distinctive white spots, pointed muzzle and brushy tail.

Sadly, the chuditch is a threatened species that is considered vulnerable to extinction. To raise awareness for the chuditch, kids around WA put on their creative hats to enter the *Construct a Chuditch Challenge* to design their very own chuditch using any materials they liked and share their favourite fun fact about the animal.

The winning entry belonged to 11-year-old Mia Fletcher, who constructed her chuditch from a collection of sticks and leaves.

"While making it, I learnt chuditch are nocturnal, have spots, eat insects and are vulnerable to cat predation," said Mia.

Winner of the people's choice award, 12-year-old Breanna Heggie also used natural materials and recycled wire for her creation.

"I learnt that chuditch is the Noongar word for western quoll, and that they can live for up to four years in the wild," said Breanna.

Right Mia Fletcher's winning chuditch.
Photo – Fletcher family



Volunteer at the WA Herbarium

The Western Australian Herbarium is the State collection of more than 810,000 preserved specimens of plants, algae, mosses, lichens, and fungi. The Herbarium runs a satisfying, interesting, and popular volunteer program. The program has been running for 30 years. Volunteers work with the Herbarium for many years, an indication of the stimulating and supportive environment the program provides. Herbarium volunteering programs include mounting specimens by sewing and taping dried pressed collections and accompanying labels onto archival board, processing electronic images of WA's flora in ImageBank, the Herbarium's image repository, and helping the collections management staff with curation projects. Due to training requirements, a commitment of at least

three months is required, with a minimum of three hours per week. Please register your interest and skills by contacting the volunteer coordinator at herbarium@dbca.wa.gov.au



Left Volunteer mounting Cottonhead specimens.
Photo – DBCA

Guest column



Ellis Griffiths
President, Rottnest Voluntary Guides Association

Volunteering on Rottnest Island is an absolute joy. The Rottnest Voluntary Guides Association (RVGA) has more than 300 committed and passionate

members, and there is no shortage of applicants for the number of training places offered each year.

It has been estimated that if all volunteering was put together as one 'employment' sector it would be the largest such sector in Western Australia. The strength of volunteering is also a good measure of a society's social capital.

There are many misconceptions about volunteering including that it is mainly a lifestyle choice for retirees. A smaller proportion of volunteers are retirees (31 per cent) compared to the proportion of those in full-time (38 per cent) or part-time employment (44 per cent). However, retirees on average volunteer for more hours per week.

There is overwhelming evidence of the health benefits of volunteering whether it is for intrinsic or extrinsic reasons. The most common reason for joining the RVGA is that our guides are passionate about Rottnest, whether this be the natural environment, the social and cultural history or its military heritage (see 'Watching over Wadjemup: Rottnest Island's loyal volunteers', page 40).

Rottnest is unique. The story of Rottnest from a geological, evolutionary and Indigenous pre-history sense is fascinating, while the post-colonial story in the 19th century is a painful reminder of the injustices of the treatment of Aboriginal people.

By volunteering at Rottnest, the opportunities to indulge our passions and learn new things are endless. We can research, photograph, contribute to social media, conduct oral histories, provide star gazing tours for children, provide information on the marine and terrestrial environments and engage with people who are keen to find out more.

RVGA volunteers are able to enjoy a range of duties on the island from the West End, the Lighthouse, Guns and Tunnels to the Settlement to share the stories and to help make it a more memorable experience.





Yellagonga Regional Park

Yellagonga Regional Park delights young and old with its walk and cycle trails that wind through an array of lakes and wetlands, and is home to a variety of waterbirds, bush birds and other wildlife.

Located approximately 20 kilometres from Perth and six kilometres from the Indian Ocean, Yellagonga is one of eleven regional parks within the Perth metropolitan area. The park was named in 1990 to honour Yellagonga, the leader of the Mooro people who inhabited the region north of the Swan River at the time of European settlement.

Clockwise top left to right Swamp paperbarks in Yellagonga. Photo – Colin Ingram; Motorbike frog (*Litoria moorei*). Photo – Jiri Lochman; Large pansy orchid (*Diuris magnifica*). Photo – Cliff Winfield

The park comprises around 1400 hectares, dominated by the beautiful lakes and wetlands across the landscape. The wetland systems include Lake Joondalup, Beenyp and Walluburnup swamps and Lake Goollelal.

It is of regional importance because of its natural, cultural and recreational resources in a rapidly growing suburban area. Additionally, the park provides an important north/south link with Neerabup National Park and Yanchep National Park.

Along the western shores are substantial areas of banksia woodland, jarrah, marri, tuart forest and vegetation communities that were once widespread

on the Swan Coastal Plain. The diversity of habitats caters for a variety of waterbirds, bush birds and other wildlife.

EXPLORING THE PARK

Yellagonga is best explored from the historic site of Neil Hawkins Park, situated only a short stroll from Joondalup city centre. Nature lovers can walk through the native bushland that surrounds the 16-kilometre circuit around Lake Joondalup, home to wildlife such as long-necked turtles, frogs, kangaroos and a wide variety of birdlife.

The bushland adjacent to Duffy Terrace is an ideal place to see the park's numerous kangaroos.



Sites of historical importance

Perry's Paddock is named after Jack Perry who bred racehorses at the turn of the 20th century. The paddock was a popular venue for sports, horse races and picnic days.

Limestone ruins on the site include a two-storey shed and single room attached cottage that has been restored.

Cockman House was built for settler James Cockman around 1870, and it is the oldest residence in Wanneroo.

The **Luisini Winery**, built in 1929, provides an example of the early wine industry that reflects predominantly agricultural land use in the area prior to urban expansion. This was once one of the largest wineries in the southern hemisphere.

Neil Hawkins Park was once part of a stock route that was pioneered in 1854 and passed along the western side of Lake Joondalup.

Quarry Ramble Lookout overlooks the site where during the 1920s limestone was quarried for building and road construction, and to improve soil quality for agriculture.

The Wesleyan Mission Farm established by the Reverend John Smithies was built on the eastern shore of Lake Goollelal in 1844, with the aim of encouraging Aboriginal people to learn agricultural skills. There is no physical evidence remaining of the farm but the site is marked by a bronze plaque.

There are also numerous foundations and remnants of buildings such as stables and dairies scattered throughout the park to discover.



Discover more about
Yellagonga Regional
Park

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



The park contains several lakes and wetlands, which are part of a larger chain of water bodies that stretch from north of the park, south to Cockburn. Local community groups, 'Friends of Yellagonga' and 'Woodvale Waters Friends of Beenyup Channel' undertakes a range of projects to enhance the park.

AN ANCIENT HISTORY

The park is of cultural significance to the Nyoongar community, forming part of their Dreaming. Their ancestors used the lakes and surrounds as camping, social and ceremonial areas, and as a source of food and water.

In the seasonal cycle of camp movements, Yellagonga was used as a rest

point between the foothills and the ocean, and between Mount Eliza and the Moore River.

The Yaberoo Budjara Heritage Trail is a 28-kilometre walk trail based on the track Yellagonga and his mob would walk as they moved in line with the seasons. It commences at Neil Hawkins Park and goes through to Yanchep National Park, highlighting features of natural, cultural and historical significance.

The park has a diverse history of use since colonial settlement, as the moist soils and ready availability of ground water attracted market gardeners and viticulturists to the area.

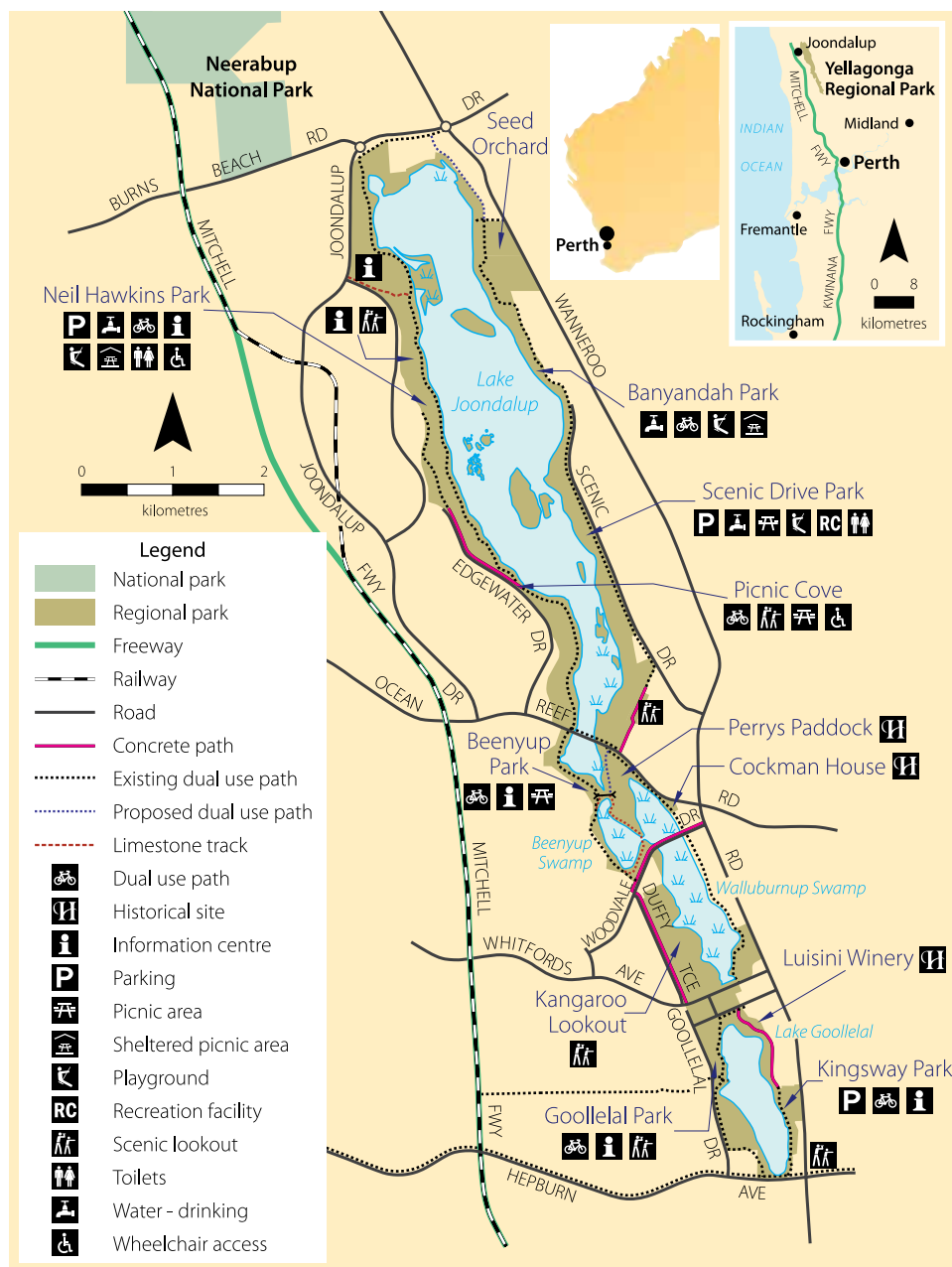
Clockwise from top Lake Joondalup.

Photo – Gooitzen van der Meer; Southwestern snake-necked turtle (*Chelodina colliei*).

Photo – Jiri Lochman; Tiger snake (*Notechis scutatus*). Photo – Alex Graham/Sallyanne

Cousans Photography; Egret. Photo – Jiri Lochman; Cockman house. Photo – Cliff Winfield

Parks for people Yellagonga Regional Park



Top Beenyup swamp boardwalk.
Photo – Colin Ingram

Above left Female cone of the zamia palm (*Macrozamia riedlei*).
Photo – Gooitzen van der Meer

Above right Western grey kangaroo (*Macropus fuliginosus*).
Photo – Sallyanne Cousans

WALK AND CYCLE TRAILS

There are two dual-use paths that loop through the park.

The **Lake Goollelal Loop** takes you on a circuit around Lake Goollelal in the park's south. The circuit takes in the historic sites of Wesleyan Mission Farm and the Luisini winery, stands of tuart, jarrah, marri, and paperbark, children's playgrounds and rest stops. Keep your eyes peeled for the area's fauna, including many wrens and waterfowl, freshwater turtles and the native water rat. **Distance:** 4.3 kilometres **Time:** Allow one hour (walking). **Class:** Easy.

The **Lake Joondalup Circuit** follows a route around Lake Joondalup in the park's north. The circuit takes you past stands of zamia palms, jarrah, marri, flooded gums, sheoaks and banksias. Wildlife to be observed include tiger snakes and dugites, kangaroos, freshwater turtles, as well as numerous waterfowl. The loop also takes in children's playgrounds, the local golf course, a boardwalk and observation tower, as well as the historic site of Neil Hawkins Park and panoramic lake views. **Distance:** 16 kilometres **Time:** Allow four hours (walking). **Class:** Medium.

Do it yourself

Where is it? 20 kilometres north of Perth

Total area: 1400 hectares

Recreational activities: Walking, cycling, bird watching, lookout

Getting there: An easy 30 minutes from the Perth CBD by car. The park is also serviced by five train stations on the Joondalup line; Greenwood, Edgewater, Currambine, Joondalup and Whitfords. Of these, the safest and most pleasant route to the park is accessible from Greenwood.

Styleworts (*Levenhookia* spp.) are a small but beautiful group of pint-sized triggerplant (*Stylidium*) relatives found in the southern temperate and arid zones of Australia. Twelve species are known, all of which are annual herbs with delicate and ornate flowers best observed under magnification. The genus is aptly named after Antonie van Leeuwenhoek (1632–1723), a Dutch shopkeeper who made optical lenses and bespoke microscopes and made a raft of microscopic discoveries including protists and bacteria. Although largely self-taught, Leeuwenhoek had a curiosity befitting the most practiced scientist and studied almost anything that could be looked at through a lens, such as exploding gunpowder—a feat that almost cost him his sight!

Stylewort flowers are works of art. They have five corolla segments, one of which (the labellum) is hooded over the reproductive parts that are found at the tip of the floral column. The labellum is usually adorned with appendages or hairs and is also touch-sensitive, springing backwards rapidly or opening to expose the column, which may exhibit limited movement as a result. Cross-pollination is the primary goal for some species, with pollen being flung from the tip of the column onto insect visitors like a catapult, and the stigmatic lobes then developing in order to receive pollen from subsequent visitors. In contrast, some species appear designed for self-pollination, transferring pollen from the anthers to the stigmatic lobes while the column is still enclosed by the labellum. Other species hedge their bets, staggering development of their two stigmatic lobes so that self- or cross-pollination is possible. Bee-flies and small native bees have been observed transferring pollen between flowers, although pollination studies are largely wanting.

Styleworts have recently been placed under the microscope as part of an Australia-wide taxonomic revision of the triggerplant family (*Stylidiaceae*). In addition to studying most species in the wild, more than 1700 stylewort specimens were examined and verified at herbaria across Australia, proving no job is too small!



Summer stylewort

Many misidentifications were corrected, helping to clarify the distribution and conservation status of each species. For example, we now know that the kwongan stylewort (*Levenhookia murfeti*) is not restricted to areas north of Perth but is widespread in south-western Australia, its distribution extending to the Salmon Gums area.

Historical herbarium records are also informing conservation efforts. Hairy stylewort (*Levenhookia dubia*) is common across southern mainland Australia but listed as extinct in Tasmania, with some uncertainty as to whether it was ever present in this State (the only specimen at the Tasmanian Herbarium has no location information associated with it and is therefore considered an unreliable record). However, a rummage through the collections at the National Herbarium of Victoria unearthed collections made in the mid- to late 1800s from Flinders Island and near Hobart, confirming its historic presence in Tasmania and providing clues that could lead to its rediscovery in the Apple Isle.

Herbarium-based studies also precipitated the discovery and description of the summer stylewort (*Levenhookia*

aestiva), which is endemic to the south-western corner of Western Australia. Specimens of this eye-catching new species were previously classified under Preiss's stylewort (*Levenhookia preissii*), but close examination of herbarium collections, photographs and illustrations established its distinctness. Although summer stylewort is relatively common, its taxonomic recognition has important conservation implications since Preiss's stylewort is now a relative rarity—only a handful of collections from the Swan Coastal Plain have been made in the past 70 years, either from small bushland fragments in Perth or from areas subject to mining.

The publication of a revised description of this species, together with identification guides to all species in the genus, is a critical first step in this process and will aid future survey efforts.

This stylewort research was supported by the Australian Biological Resources Study and is freely available at phytokeys.pensoft.net/article/51909/

Above The newly named summer stylewort has bright and intricate flowers.
Photo – Rob Davis



Indigenous led conservation Empowering people, community and connection to country

When Western Australia's Aboriginal Ranger Program launched in 2017, it was expected to create jobs and help with conservation outcomes. More than halfway through the program, it is the strong social and cultural impacts that are being most deeply felt throughout communities.

by Dr Kate Rodger and Dr Amanda Smith





In the more than 50,000 years prior to European settlement, Aboriginal people practiced a complex system of land management. Australia is home to hundreds of individual nations or countries, each with distinct cultural practices and methods of flourishing in a harsh environment.

Sharing of knowledge and caring for country is a fundamental part of Aboriginal culture. In modern times, caring for country is supported through Aboriginal ranger programs across Australia that combine traditional methods and generational knowledge with modern technologies and land management practices.

The ranger programs are managed by Aboriginal organisations, strongly guided by Aboriginal elders and community, with support and funding from government.

In remote communities, job opportunities are scarce and being employed as a ranger is not only helping with income and training, but with confidence and a sense of purpose.

In Western Australia, Aboriginal rangers are assisting the State Government to manage country and protect the environment with extraordinary results.

MAKING PROGRESS

WA's Aboriginal Ranger Program is a five-year, \$20-million initiative helping Aboriginal organisations manage country

and protect the environment with support from the Department of Biodiversity, Conservation and Attractions (DBCA) and across government.

Since the program was launched in 2017, 35 grants have been awarded to 28 projects across the State. Mid-way through the program, more than 300 people have already been employed, of which more than half are women, and \$11 million in funding has been leveraged from project partners.

Rangers undertake land and sea management including conservation, cultural, tourism and education activities across a range of tenures. Education and training are key components of the program, with almost 292 rangers commencing training (including on-the-job training) and 40 TAFE qualifications being achieved.

The key benefit identified from the Aboriginal Ranger Program was the creation of jobs and the associated

income. Jobs are often scarce and welfare dependency is high in remote areas. The opportunity for employment as rangers addresses this barrier and this program creates meaningful jobs with real benefits, whether casual, part time or full time.

The employment of rangers creates significant social, cultural and economic benefits as well as contributing to improved community wellbeing and resilience through building leadership skills and enabling partnerships with private sector organisations.

Fieldwork, including interviews and participant observation, were undertaken with two case study projects that involved Bardi Jawi Rangers, Nyul Nyul Rangers, Karajarri Rangers and Ngurrara Rangers in the Kimberley, as part of a scientific process to evaluate the social outcomes of the program. A third case study with Esperance Tjaltjraak Rangers has also commenced.



Previous page

Main Bardi Jawi rangers.

Inset left Bardi Jawi ranger inspects a tree.

Photos – Shem Bisluk/DBCA

Inset right Karajarri rangers.

Photo – Amanda Smith/DBCA

Above Bardi Jawi ranger tends to seedlings.

Left Nyul Nyul rangers.

Opposite page

Above left Nyul Nyul rangers planting seeds.

Right Dampier Peninsula.

Photos – Shem Bisluk/DBCA



ABORIGINAL RANGER PROGRAM

FUNDED PROJECTS



Learn more about WA's
Aboriginal Ranger
Program

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



In their words...

DBCA research staff visited two case study projects in the Kimberley and spoke to rangers and key partners about the program. This is what they said:



COUNTRY AND COMMUNITY

“Ranger program is good, asking elders to go out with them and tell them what we did a long time ago and how we survived on eating bush foods and lizards. Young people learning from us. Good for them to learn from us and listening. We need more women working with the rangers.” *Elder, Karajarri*

“Elders are teaching us. Being back out on country to see where our ancestors came from. Elders are happy and proud that sharing knowledge to us – being a ranger gives us that opportunity.” *Ranger, Ngurrara*

“We play a big role in the community, even though we are rangers I think about half of the time they think we are super rangers, they think we are powerful enough to take on the world” *Ranger, Nyul Nyul*

“My family and people in community, every day when I walk to work with my uniform on they look at me and are very supportive. I have got the whole community behind me. Seeing me as first young ranger at the age of 18 when I first started. I felt really proud of myself.” *Ranger, Karajarri*



PARTNERSHIPS AND OPPORTUNITIES

“We have seen some of our rangers come into this program who are very shy and don’t like to talk much but through experiences like going out with elders, going out with project partners, working with Parks and Wildlife they slowly get more confidence.” *Indigenous Protected Area Coordinator*

“Social benefits and conservation benefits are massive. In terms of the return on investment is massive, in terms of reduced cost for government, in terms of social welfare and health that has been shown.” *Key Partner*

“With the ranger program a nice balance, got some good partnerships synergies happening in ranger program. Empowering Aboriginal organisations to be able to run their own show and not need a KLC or DBCA.” *Key Partner*

“They [rangers] get an opportunity to learn and share their culture and when the department is lucky enough to be in collaboration with traditional owners, not only do we get to talk about the western science and monitoring but we get to learn some of that traditional ecological knowledge and the combination of those two things is really powerful when we are working with traditional owners managing country.” *Key Partner*

EMPLOYMENT

“Pretty hard to get job around here and seeing the application on the board I really wanted it and wanted to be a ranger.” *Ranger, Bardi Jawi*

“It is hard to have jobs around here If I didn’t have ranger program I would be at home with no income. Hanging off family, asking parents for money.” *Ranger, Bardi Jawi*

“You can start from scratch and build something for yourself and get qualified even if you have nothing. You can make a better future for yourself and family.” *Ranger, Karajarri*

“We see significant benefits for Aboriginal people through that employment [as rangers] and we also see the individuals who are employed really develop a skill set and confidence and being able to get out on country and undertake those land management activities. From this we see a real benefit to the individuals.” *Key Partner*

EMPOWERING WOMEN

Aboriginal women play an important role in strengthening social and family networks in the community. Traditionally the Indigenous ranger workforce has been male dominated. The Aboriginal Ranger Program focuses on employing women rangers to promote social change where by women act as leaders in the community and drivers of change. It also promotes gender equality so women can access opportunities that are available to men.

“Two different reasons for really promoting women. One is that within Australia we do still have really significant gender inequality. This is part of bridging that gap. There is also a concept of right people right country. Women often speak for different country and they open up the ability to manage in different ways. Women also have different knowledge bases and they bring different things to the program and different sets of knowledge that let you do more so you manage in a fuller way. Then there is also the community aspect of it. In community it is really well evidenced that women are leaders and that women are a big

part of shaping the positive drivers in a community. Women demonstrating what it is to have a job, women having money and using that in a really positive way. I think women are key change agents in community and getting them into the ranger program is essential.” *Key Partner*

“Get more women looking after country. All men used to get the jobs so good to have women getting jobs. Provide for family. Getting our certificates and education which is good.”

Ranger, Bardi Jawi



Fast facts:



- 35 grants awarded
- 304 people employed so far
- 161 women (52.9 per cent) employed under the program
- 40 TAFE qualifications achieved
- 292 training opportunities
- 215 people completed training*
- 53 partnerships with government/not for profit/other organisation
- 22 joint operations with government agencies
- 115 trips to significant sites

*Figures as at June 2020. *Including on-the-job training.*

- 82 sites where work has been undertaken to protect heritage values
- 411 ha of weed management
- 965,005 ha of feral animal management
- 129 ha actively managed for improved land management (e.g. habitat restoration, fencing, erosion management)
- 11,588 ha prescribed burning and bushfire suppression
- 86 flora or fauna surveys carried out
- 589 km of track managed

Opposite page

1) Ardyaloon (One Arm Point).

2) Nyul Nyul ranger.

Photos – Shem Bisluk/DBCA

3) Ngurrara rangers.

Photo – Amanda Smith/DBCA

4) Bardi Jawi rangers.

This page

5) Bardi Jawi rangers.

Photos – Shem Bisluk/DBCA

6) Karajarri ranger.

Photo – Amanda Smith/DBCA

Kate Rodger is a research scientist with DBCA's Parks and Wildlife Service. She can be contacted at kate.rodger@dbca.wa.gov.au or (08) 9278 0919.

Amanda Smith is a social science coordinator with DBCA's Parks and Wildlife Service. She can be contacted at amanda.smith@dbca.wa.gov.au or (08) 9219 8225.

Additional input provided by **Dampier Peninsula Women Rangers** and **Karajarri-Ngurrara Rangers**.

Anonymity of those quoted has been maintained in line with social research best practice.

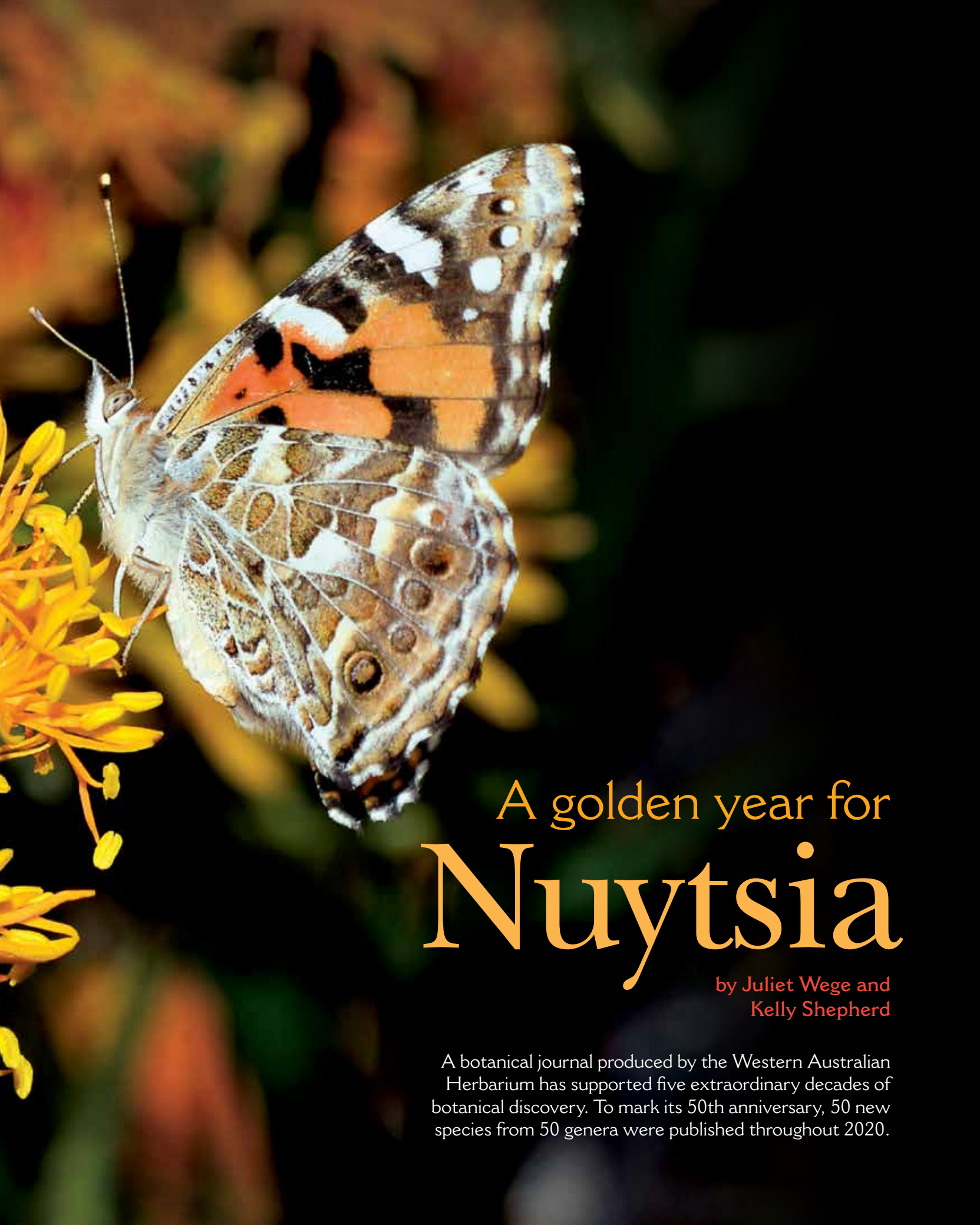
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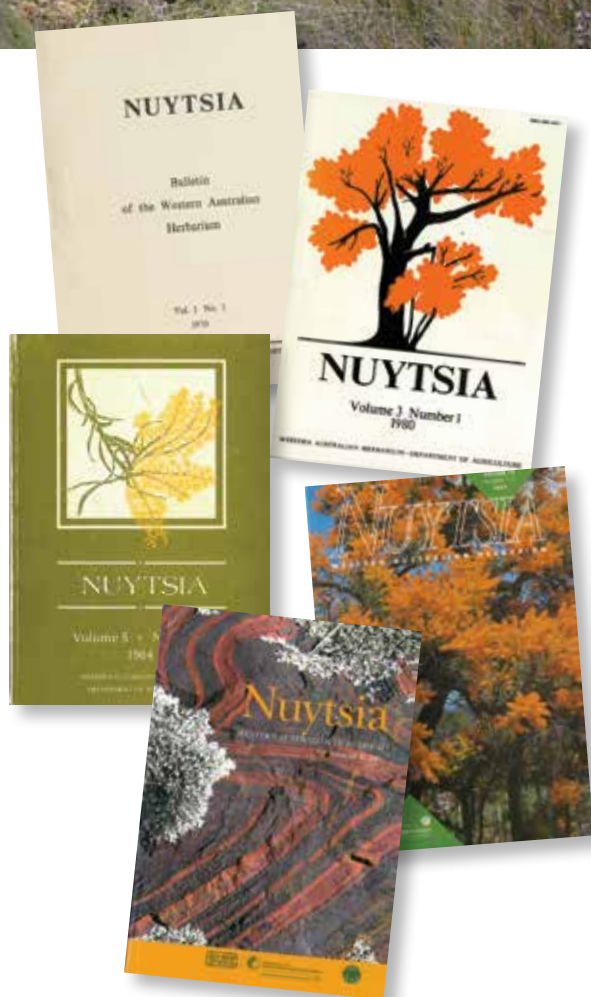




A golden year for Nuytsia

by Juliet Wege and
Kelly Shepherd

A botanical journal produced by the Western Australian Herbarium has supported five extraordinary decades of botanical discovery. To mark its 50th anniversary, 50 new species from 50 genera were published throughout 2020.



In 1970, the Western Australian Herbarium founded its flagship taxonomic journal *Nuytsia* so that new information on the State's diverse and fascinating flora could be locally published. It was the initiative of then-curator Bob Royce in response to an increased amount of botanical survey and taxonomic research being conducted at the Herbarium. Named after the Christmas tree (moojar or kaanya tree; *Nuytsia floribunda*) – a spectacular giant mistletoe of cultural significance to Noongar Aboriginal people – the journal quickly developed into the quintessential publication outlet for an extensive array of information relevant to Western Australia's flora and its botanical collections.

Since the inaugural paper was published by Paul G. Wilson under the editorship of Alex George, a broad array of scientists, collections staff and associated personnel have added to the growing body of information on Western Australia's flora by writing, reviewing and editing *Nuytsia* manuscripts and curating the associated specimens, achieving a cumulative output that was unimaginable when the journal was founded. Over its 50-year history, the number of native vascular plants recorded for Western Australia has risen from 5802 to more than 10,500 species with around one-fifth of species, subspecies and varieties having been scientifically named in *Nuytsia* (more than any other publication).

To honor this collective achievement and to mark the 50th year of *Nuytsia*, 50 new Western Australian species from 50 genera were named and described in a golden anniversary edition of the journal (Volume 31). Since late January, Herbarium staff have been publishing one or more species each week via the Herbarium's online portal FloraBase and using social media to communicate stories behind the discoveries. It has proven to be a botanical birthday bash like no other.

FIFTY TAXONOMIC TALES

The unique idea behind the golden anniversary edition was simple but somewhat ambitious and took several years of planning and research to achieve. Efforts were focussed on

Previous page

Main The cover photo of the golden anniversary edition. *Nuytsia floribunda* with an Australian painted lady butterfly (*Vanessa kershawii*)

Photo – Fred Hort

Inset Pages from the first edition of *Nuytsia*, 1970.

Above left Libby Sandiford photographing beardless pea.

Photo – Kelly Shepherd/DBCA

Above Kelly Shepherd collects dancing Lechenaultia.

Above right A pressed specimen is databased at the WA Herbarium.

Photos – Juliet Wege/DBCA

Left Covers from the past 50 years of *Nuytsia*.



Hear more about Kelly Shepherd's work naming new species

Scan this QR code to read the article and watch the video on ABC's Gardening Australia website.



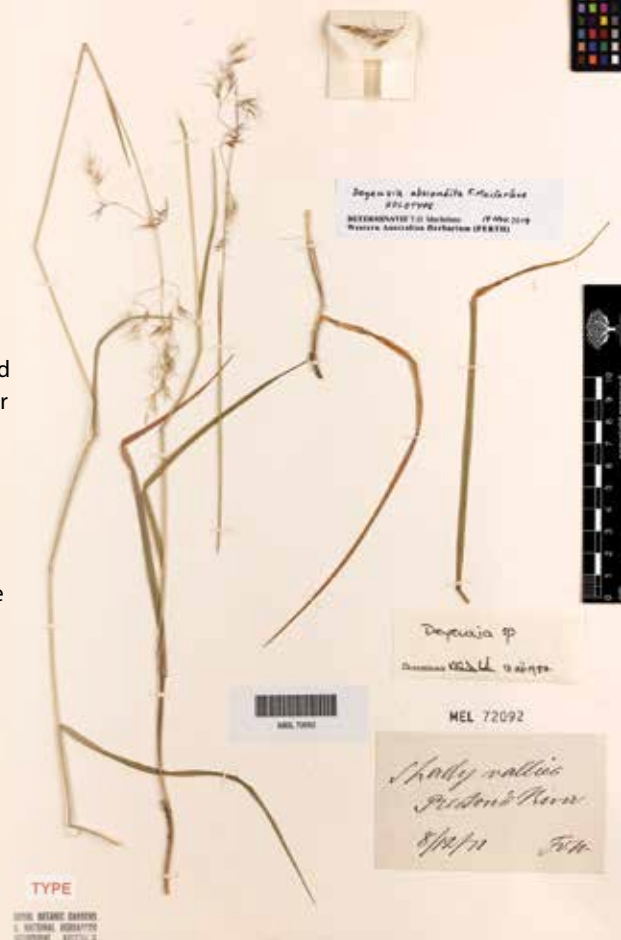
A lost grass

The discovery and description of Preston bentgrass (*Deyeuxia abscondita*) – a species last collected more than 140 years ago and now thought to be extinct in the wild – is one of the more remarkable stories in the golden anniversary edition of *Nuytsia*.

This newly named native grass is known only from specimens collected by Ferdinand von Mueller, a legendary botanist who founded the National Herbarium of Victoria and described a raft of Western Australian species. His collection from the 'Preston River' or 'Blackwood and Preston Rivers' was made on 8 December 1877 as he travelled from Bunbury to the Balingup area as part of a government forest resources survey. It remained unassigned to a genus at the National Herbarium of Victoria for more than 100 years, after which there was considerable speculation as to its correct identity and classification.

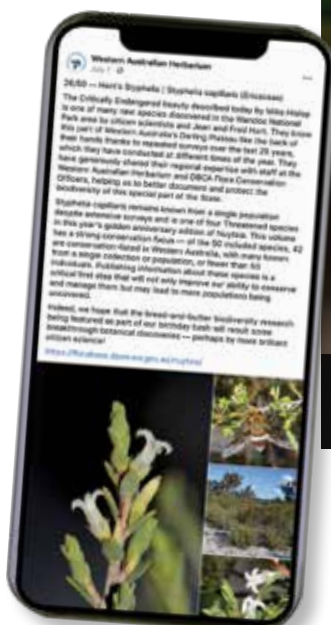
Mueller's material was recently sent to Terry Macfarlane at the Western Australian Herbarium so that it could be studied alongside specimens of other Western Australian grasses. His detailed examination of the spikelets supports its placement in *Deyeuxia*, although the status and membership of this genus has yet to be settled globally. Terry has unsuccessfully searched for Preston bentgrass over many years and, with much of the native vegetation around the Preston River having been cleared for agriculture, there are fears that it is extinct.

Herbarium specimens are records in time and space. They represent several hundred years of collection history, including species that are extinct or from habitats that no longer exist. Unfortunately, many historical plant collections from Western Australia are held in other herbaria (both in Australia and overseas), which can be a hindrance to taxonomic research and associated conservation efforts. We are grateful that our colleagues at the National Herbarium of Victoria have donated one of Mueller's collections to the Western Australian Herbarium so that we have reference material to inform future surveys. We can only hope that it's not lost to us forever.



"Over its 50-year history, the number of native vascular plants recorded for Western Australia has risen from 5802 to more than 10,500 species..."

rare, threatened or poorly known species, drawing on in-house taxonomic expertise and forming local, national and international collaborations where appropriate. A major challenge was a lack of high-quality herbarium material to inform taxonomic decision-making, enable an adequate species description to be prepared, or to serve as reference material. But with funding from DBCA's Biodiversity and Conservation Science, a series of field expeditions were conducted to obtain specimens, photographs and associated data for a range of species to facilitate their resolution.



Hort's styphelia (*Styphelia capillaris*), a critically endangered beauty discovered by citizen scientists in Wandoo National Park. Photo – Jean and Fred Hort

Top Preston bentgrass was last collected by Ferdinand von Mueller in 1877.

Photo – Reproduced with permission from the National Herbarium of Victoria

Above Social media was used to communicate stories behind the discoveries.



Leeuwen's lily (*Arthropodium vanleeuwenii*), a significant discovery from the Pilbara that is named for Pilbara botanical survey specialist Stephen van Leeuwen. Photo– Steve Dillon



Dragon rocks kunzea (*Kunzea dracopetrensis*), a vivid and poorly known species unexpectedly discovered in the collection at the Western Australian Herbarium. Photo – Rob Davis



Porcupine grevillea (*Grevillea hystrix*), a prickly species known from a single site in sandplain country near Koolyanobbing. Photo – Rob Davis



Neon leptofaucha (*Leptofaucha lucida*), an iridescent red seaweed from the Houtman Abrolhos. Photo – John Huisman



Dancing lechenaultia (*Lechenaultia orchestris*), a recently discovered rarity whose horticultural potential is being explored at Kings Park. Photo – Kelly Shepherd

The strategy of gradually unveiling new species on separate days throughout the year provided a unique opportunity to use social media, such as the Western Australian Herbarium's Facebook page, to communicate more widely about the extraordinary flora and the vital baseline work that is done at the Herbarium to underpin conservation efforts. The taxonomic stories have not only highlighted the scientific treasures held in the Herbarium's collections and the painstaking work of individual researchers, but the collaborative nature of taxonomic research and the remarkable efforts of DBCA flora conservation officers, citizen scientists and botanical consultants in helping us to advance our botanical knowledge.

CONSERVATION BENEFITS

Although the golden anniversary edition of *Nuytsia* features a diverse range of species from across the State, most are united by their apparent rarity. Of the 50 included species, 42 are conservation-listed in Western Australia, with most requiring further survey to better understand their distribution and conservation status.

Giving scientific names to species and providing descriptions to aid their identification is a critical step that is likely to stimulate surveys that may lead to

positive conservation outcomes such as the discovery of new populations. This is especially important in view of the escalating threats to our biodiversity in an era of rapid environmental change.

Over the five decades since *Nuytsia* was founded, significant progress has been made in documenting Western Australia's exceptional botanical diversity and continuing to name and describe new species at a globally significant rate. But with more than 1100 undescribed plant species currently known in Western Australia, stories of discovery will continue well beyond this golden anniversary.

Below *Nuytsia floribunda*.
Photo – Kelly Shepherd/DBCA



Juliet Wege and **Kelly Shepherd** are senior research scientists at DBCA's Western Australian Herbarium and have co-managed the golden anniversary edition of *Nuytsia* (Volume 31) at florabase.dbca.wa.gov.au/nuytsia



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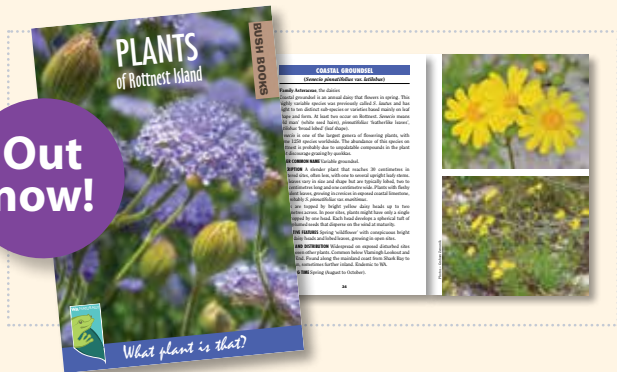
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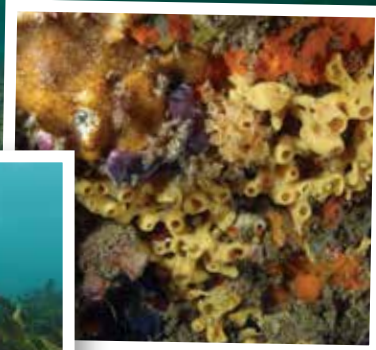


Department of Biodiversity,
Conservation and Attractions

Marmion Snorkel Trail

Situated just offshore, the Marmion Angling and Aquatic Club Dive and Snorkel Trail was officially opened in January 2020, providing those with an interest in marine life yet another reason to visit Perth's northern beaches and the Marmion Marine Park.

by Dr John Huisman



The seasonal storms had finally abated, and the swell was forecasted to be small, so my long-standing dive buddy Ian and I decided to check out the new Marmion Angling and Aquatic Club (MAAC) Dive and Snorkel Trail. While we're generally more unconstrained and not typically up for trails and guided dives, it had been some years since we had dived in the Marmion Marine Park and we were curious to see what was on offer.

The snorkel trail was created through a collaboration between Department of Biodiversity, Conservation and Attractions (DBCA) and the MAAC and is located just offshore from the MAAC clubhouse. Parking is available adjacent to the clubhouse and the trail is accessed by a ramp leading down to the beach.

ON THE TRAIL

On the north wall of the clubhouse is a trailhead, including a map showing the course and advice on how to get the most out of the experience, with guidelines about how to stay safe. Entering the water, we immediately realised that the conditions weren't as great as we'd hoped; the water was quite murky, with large amounts of detached seaweed.

The snorkel trail comprises 20 underwater plinths, each with artwork by Kellee Merritt and including interesting snippets about local marine life. We snorkelled out to the large buoy that marks the start of the trail, then somewhat haphazardly followed the trail.

Finding the first of the plinths was fairly straightforward, but the conditions did hamper our progress. Each plinth has an indication of the distance to the next plinth and direction arrows to get you started. Snorkelling in clear water would make life easier, particularly as the artwork on the plinths have a reflective glass cover that is easily spotted from the surface.

UNSTOPPABLE NATURE

Marine life has a habit of quickly colonising all available surfaces and the plinths are no exception, with most



Previous page

Main above Snorkelling on the reef.

Photo – Peter Nicholas/DBCA

Main below Common kelp.

Inset from left: One of 20 underwater plinths; Divers can reach the deeper plinths.

Colourful sponges on the reef wall.

Above Moonlighter fish tend to be solitary.

Photos – John Huisman



Listen to more about the MAAC Dive and Snorkel Trail

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



“Brightly coloured corals, sponges and other invertebrates were common on the vertical walls and overhangs of the reefs.”

of them sporting a healthy cover of seaweeds, even after only a relatively short time in the water.

The local limestone reefs are mostly covered with a healthy growth of seaweed, primarily the common kelp *Ecklonia radiata*, interspersed with a variety of smaller green, brown and red seaweeds. Brightly coloured corals, sponges and other invertebrates were common on the vertical walls and overhangs of the reefs. It is also the haunt of the McCulloch's scalyfin (*parma mccullochi*), a territorial damselfish that aggressively defends its patch. Those we

encountered leaving us in no doubt that we were definitely unwelcome intruders.

Further offshore as the depth increased, the water clarity improved considerably. Here we found swim throughs and underwater caves, often with large schools of tarwhine (*Rhabdosargus sarba*) and silver drummer (*Kyphosus sydneyanus*) swimming circuits through the caves, and the more lonesome moonlighter (*Tilodon sexfasciatus*) and banded sweep (*Scorpiis georgiana*) hiding out. The cave walls were decorated with a collage of sponges, bryozoans and ascidians, providing a multicoloured



Above Snorkellers enjoying the trail.
Photo – Peter Nicholas/DBCA

Right Construction/lowering of the trail plinths.
Photo – Miecha Bradshaw/DBCA

Below right Silver drummers.
Photo – John Huisman

backdrop to the ever-changing commotion of energetic fish. Other invertebrates, like the mobile but rarely seen on the move western slate-pencil urchin (*Phyllacanthus irregularis*) were spotted tucked into crevices.

THE VERDICT

The trail follows an anticlockwise loop that eventually led us back closer to shore and we exited in front of the clubhouse. Our post-dive assessment: a nice dive/snorkel, plenty of marine life on view, with eye-catching plaques to keep you on track and informed, suitable for most beginners, but possibly a bit tame for the thrill seekers. But be warned, even the smallest of swells will stir up the detached seaweed and reduce the water clarity. Best to wait for several days of calm conditions for the best experience, which is when I'll be heading back for a second look.



Do it yourself

Where is it? Marmion Angling and Aquatic Club Dive and Snorkel Trail is immediately offshore from the MAAC clubhouse, West Coast Drive, Marmion.

What to do: Snorkelling, swimming, diving.

The trail is situated in the General Use Zone of the Marmion Marine Park. Spearfishing and collection of marine fauna is not permitted.

Staying safe: This beach is not patrolled. Make sure you assess the conditions and only swim within your ability. Use a dive flag if using SCUBA or snorkelling more than 50 metres from shore.



John Huisman is the curator of the Western Australian Herbarium and specialises in marine botany. He is a regular contributor to *LANDSCOPE* and can be contacted by email (john.huisman@dbca.wa.gov.au).

NOT THE COLLIE YOU KNOW



Trail tourism is playing an increasingly important role in reinvigorating and reinventing towns. Collie, with its rich and proud coal mining history, continues its transition into a 'Trail Town', as the \$10 million investment to create 180km of hiking and mountain bike trails begins to take shape and investments are being made in local art.

by Rod Annear



Collie has a rich and proud history as a coal mining town and is WA's only operating coalfield. Its knockabout reputation and working town image belie the beauty and richness of the surrounding environment protected by national parks and reserves.

Things are changing in Collie. As changes to power generation and coal mining begin to kick in, Collie is reinventing itself as a trail, tourism and adventure town. This is part of a 'just transition' for the people of Collie, for jobs and for the future of the town.

Part of Collie's big transition is a \$10 million investment to develop Collie into a 'trail town' and create 180 kilometres of hiking and mountain bike trails (see Putting Collie on the map, *LANDSCOPE* Spring 2019). Since the announcement of the Collie Trails Adventure initiative in 2019, real progress has been made towards attracting mountain bikers, walkers and adventurers from across Australia and the world.

TRAIL TOWNS

To truly understand the buzz around 'trail towns', Department of Biodiversity, Conservation and Attractions (DBCA) project coordinator for the Collie Trail Project, Stuart Harrison, visited an established trail town in Derby, Tasmania in late 2019. He found that everyone was



Tasmania's trail town

In Derby, Tasmania, once a thriving tin mining town, the population fell from more than 3000 in the early nineteenth century to less than 200 a few years ago. Derby was a 'blink and miss it' place, then mountain biking came to town. World-class trails and a world-class landscape mixed with a can-do approach and an experienced trail builder have resulted in a now thriving town, with new businesses, new residents and families and more visitors than they can handle.



there to experience the trails and the vibe was a bit like a ski town.

"I couldn't get a meal in town and had to travel 20 minutes to the next town to wait for two hours for dinner at the pub – and that was a quiet mid-week!" said Stuart. "It was a real eye opener and confirmed our planning; just how big the impact could be with the right planning and right trails – trail users will come to visit."

The new trail networks in and around Collie are a real game changer. Thirty kilometres of trail at Arklow, 35 kilometres at Westralia and around 65 kilometres in Wellington National Park will result in the biggest mountain bike trail network in Western Australia.

Add to that the existing and improved walk trails including the Wiilman Bilya trail – a five-day, four-night hike around Wellington Dam with overnight campsites.

There will also be shorter loop options that will result from the new trail construction. Part of the new walk trail includes a planned suspension bridge across the Collie River. The bridge and nearby upgraded Collie Scenic Drive provide yet another new attraction for Collie.

"What I'm really excited about is the opportunity that the new trails provide to develop a new generation who value and care for natural places," said Stuart. "Connecting kids and families to the jarrah and marri forests through trails gives us the opportunity to tell stories about why forests are important, how they work and what we can all do to protect them."

"Finding that connection is a big part of what we are doing and getting kids away from screens and out into the natural world is more important than ever. I have two young daughters who I want

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Previous page

Main and inset Arklow mountain bike trails.
Photos – Frances Andrijich

Top Arklow mountain bike trails.
Photo – Tim Campbell/Common Ground Trails

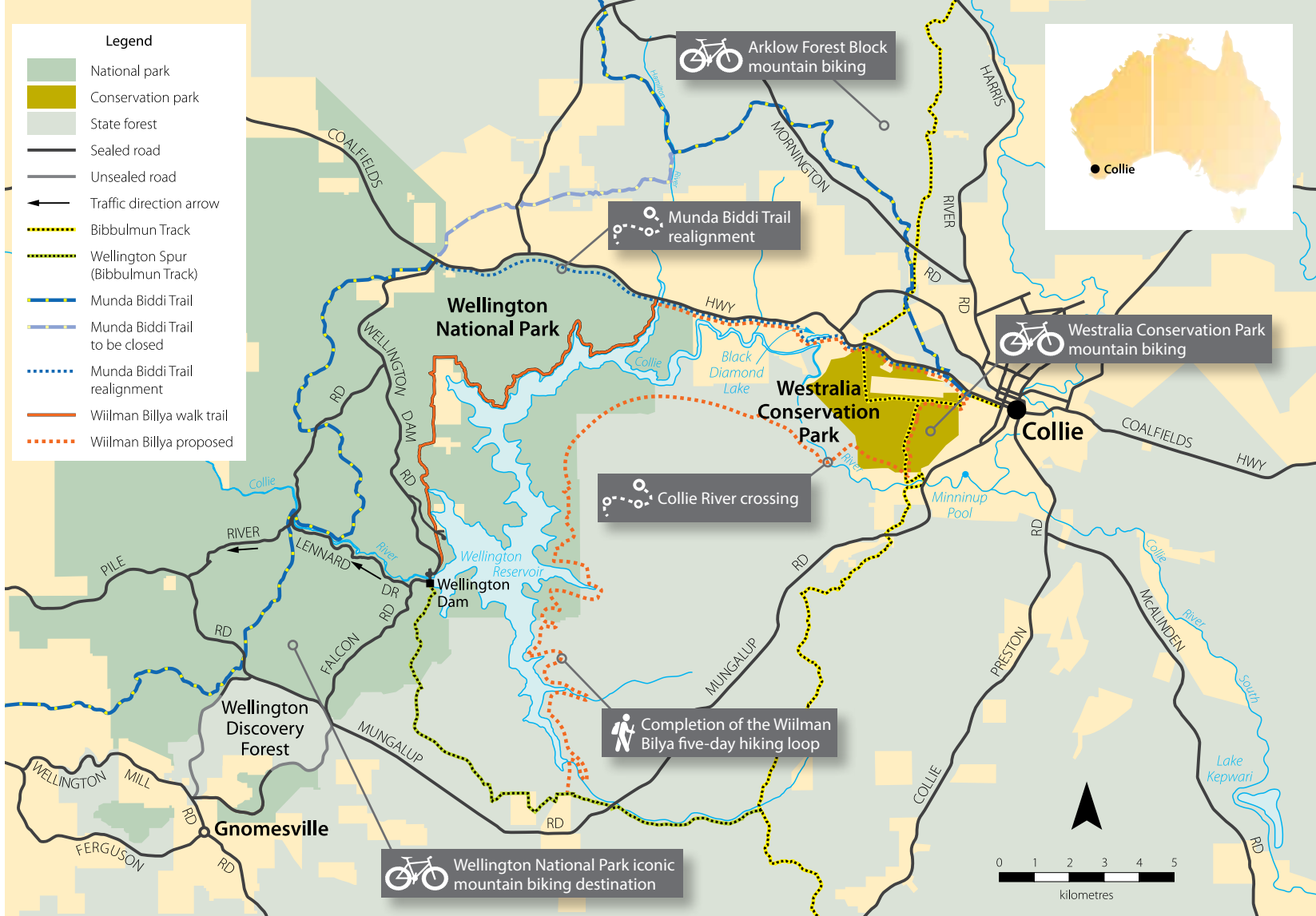
Above Trail town Derby, Tasmania.
Photo – Rod Annear/DBCA



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to learn to love the WA bush as much as I do, and I want a next generation who care and will speak up to protect it. Trails are a hook to help make that happen.”

FUN FOR ALL

The trails will also cater for riders and walkers of all ages and abilities. One of the new mountain bike trails is the Arklow Adaptive Trail (see Adventure ahead for cyclists with a disability, *LANDSCOPE* Summer 2019–20), built specifically to cater for riders on adaptive bikes.

Break the Boundary Deputy Chair Wade Jarvis says that providing opportunities to access the outdoors through well designed infrastructure for people with physical and neurological disabilities empowers people to go beyond flat surfaces, out of their comfort zone and into off-road areas which they may have thought were inaccessible (See Breaking

the boundaries, *LANDSCOPE*, Autumn 2020).

“It’s about empowerment, confidence and freedom – that buzz of being outdoors and in the bush should be available to everyone, and trails like the Arklow Adaptive Trail make that possible,” said Wade.

Consultants, Common Ground Trails, developed the concept plan for the trails in Wellington National Park and company owner David Wilcox says the new mountain bike trail network will provide visitors an experience like nothing else available in WA.

“The quality and number of trails will keep people in Collie for days – and keep them coming back,” said David.

“What we have seen elsewhere is that investment follows the trails. Riders and walkers want somewhere to stay, somewhere to eat and want to take



Above Arklow adaptive trail.
Photo – Shem Bisluk/DBCA

home a shirt or hat to remember their visit.

“The trail experience will be great, and I think we will see a massive change in Collie in the next few years.”

Anticipated timeline

Works	Works	Works	
- Mountain bike trails in Wellington National Park and Arklow forest block - Wiilman Bilya walk trail	- Mountain bike trails in Wellington National Park and Westralia Conservation Park - Collie River crossing	Mountain bike trails in Wellington National Park	
2019/20	2020/21	2021/22	2022/23
Projects completed	Projects completed	Projects completed	Projects completed
Trails in Arklow Forest Block	- Wiilman Bilya walk trail - Some trails in Wellington National Park - Collie River crossing	- Mountain bike trails in Westralia Conservation Park - Extension to Munda Biddi Trail - Some trails in Wellington National Park	All mountain bike trails in Wellington National Park



Top Lake Kepwari.
Photo – Shem Bisluk/DBCA

Above Collie local bike shop owner Erik Mellegers.
Photo – Rod Annear/DBCA

TRANSITIONING TOWN

It's a familiar story in Australia and around the world where trail tourism is playing an increasingly important role in reinvigorating and reinventing small towns around industries have changed or left.

Collie Shire President Sarah Stanley says the changes to the town will enable the transition from coal and power generation to tourism and other new industries to soften the loss of traditional mining and power jobs.

"Collie has a great soul," said Sarah. "People in Collie are resilient and adaptable and while the changes won't be easy, investment and planning will help the transition we are all facing. By diversifying Collie's economy, we can create new jobs and maintain our strong and vibrant community."

Shire of Collie Director of development services, Andrew Dover says the town is ready and willing to embrace its new trails and adventure focus.

"The Shire of Collie and Council has developed and adopted a comprehensive trails strategy and are working closely with DBCA to deliver a total trail town experience for visitors new and old," said Andrew.

"This is an exciting partnership between state and local government and the community to grow a new sustainable industry."

Collie's makeover runs deep with some of its outstanding heritage buildings getting their original facades restored. New wayfinding signs and maps will be put in place and a business development officer is working with local businesses to get them tourism and trail ready.

CYCLING COMMUNITY

Erik Mellegers is a local bike shop owner and says that Collie has a long and proud cycling history.

"Cycling was a working man's sport," said Erik. "It was relatively cheap and in the early days of Collie, everyone owned a bike."

"You could ride your bike to the mine during the week and on weekends push the handlebars down and race on the road and track."

The town's velodrome still stands, now a little worse for wear but tells a story of time when cycling was king in Collie.

"Collie had and still has a thriving cycling community and industry and once had bike shops and manufacturers in town – Bill Atkinson's Collie Star Cycles were known to be very high quality and are now very collectable," said Erik.

The 'Collie to Donnybrook and Return Cycling Classic' is one of the oldest road cycling events in WA and is coming up to its 100th anniversary in 2025.

"I'm expecting that with the new trails, we will have many more cycle tourists coming to Collie to continue that long cycling tradition," said Erik.

Today, the 1000-kilometre Munda Biddi mountain bike trail and 1000-kilometre Bibbulmun Track walk trail pass through Collie bringing a steady stream of visitors. While the Bibbulmun Track already passes directly through the town, a realignment of the Munda Biddi Trail is underway so that it will also come into town, rather than a spur trail as is currently in place.

There are also new drive trails, such as the Collie Scenic Drive that follows the Collie River just out of town and a new sealed road links Collie, Wellington National Park and the Ferguson Valley.



“Collie has a great soul... people in Collie are resilient and adaptable and while the changes won’t be easy, investment and planning will help the transition we are all facing.”

MINE SITE TO SKI LAKE

But it’s not just the trails investment that will attract new visitors. Lake Kewpuri is a former open cut coal mine south east of Collie that filled with water after mining ceased.

The water body has long been identified as having great potential as a ski area, with a large expanse of water and still conditions for much of the year. DBCA project manager Glenn Willmott has been overseeing the transformation from mine site to ski lake.

“It’s really going to be something special,” said Glenn. “The lake is so calm, the water inviting, and the new facilities and camping areas are right on the lake. You can camp, swim, ski, picnic – it’s a stunning place.”

With ample car and trailer parking, picnic shelters on the lake edge, a boat ramp and floating jetty, campgrounds and new sealed road, Lake Kewpuri opened for visitors in late 2020 and is a popular addition to Collie’s outdoor adventure options.

MEGA MURAL

The centrepiece of the \$1.5-million Collie Mural Trail is the creation of a mega

mural on the Wellington Dam wall – likely the largest artwork by a single artist anywhere in the world.

Artist Guido van Helten has been selected to paint the Wellington Dam mural. A world-renowned large-scale mural artist, van Helten’s work is characterised by extensive research and technical precision to create photo realistic images.

“I am looking forward to learning more about Collie’s rich history of industry and the environment; and I will hopefully be able to bring together a shared vision of Collie’s historical identity with its future as a tourism and recreation hotspot in WA’s south-west,” said Mr van Helten.

“The Wellington Dam is already an iconic structure of great heritage value; through my process, I aim to make an artwork that respects the historical significance of this structure while making certain it is harmonious with the natural setting of Wellington National Park.”

A series of smaller murals painted by local Western Australian artists in and around Collie will complete the mural trail, expected to be completed in late 2020, and a new viewing walk trail, lookouts and improved visitor facilities at Wellington Dam will complement the mural work.

LAST WORD

John Wallace is a Collie local and trail guru who understands the unique nature of the environment around Collie.

“We have this gem sitting in clear view,” said John. “Sometimes I have felt like a voice in the wilderness, spruiking the benefits of building Collie as a trail town.

“I’ve been all round the world to look at how others do it, and we have all the building blocks to be as good or better. But don’t take my word for it, come and experience it for yourself, you might be surprised what you find.”

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Above left Willman Bilya walk trail.
Photo – Cliff Winfield

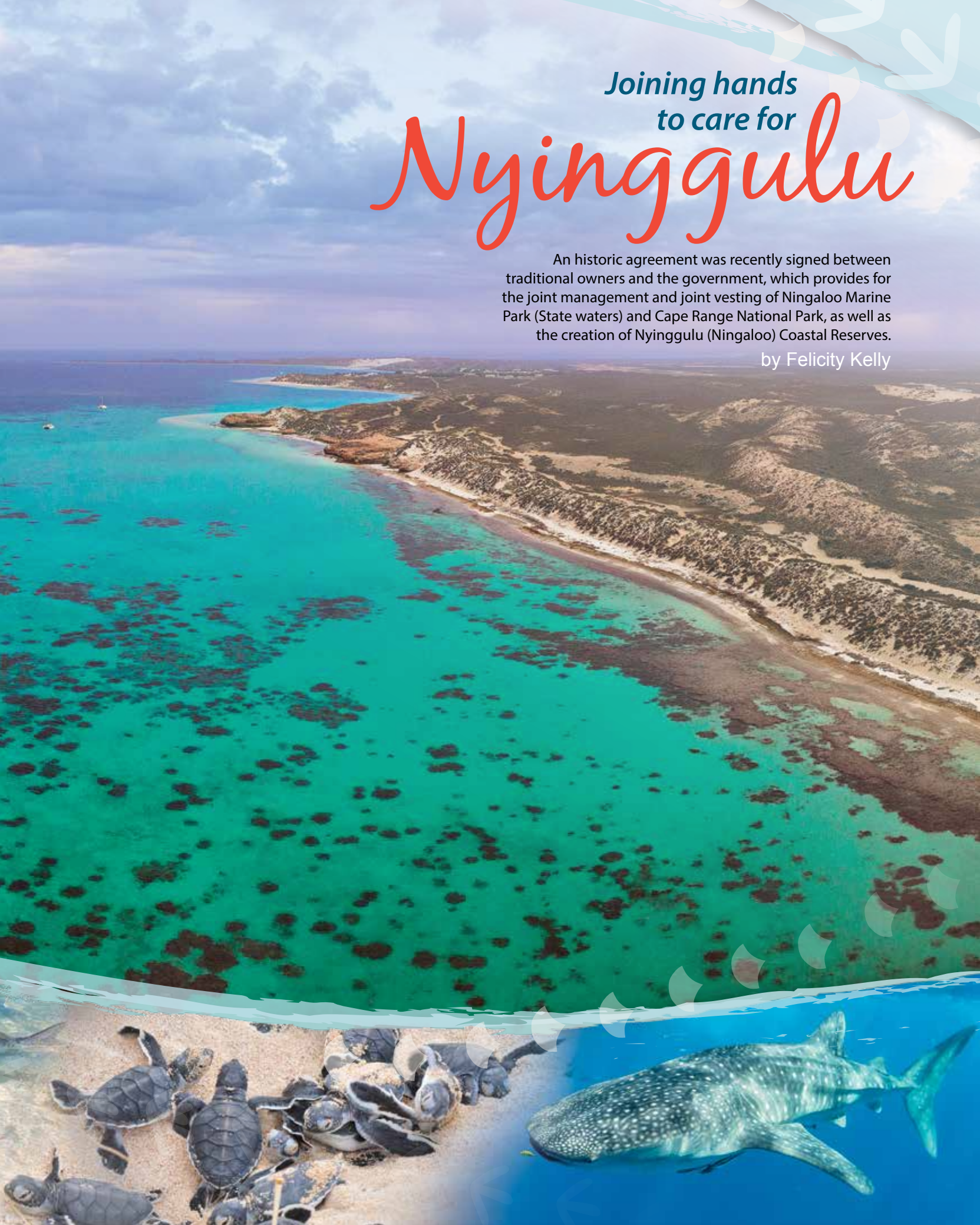
Above Site of the mega mural at Wellington Dam.
Photo – Rod Annear/DBCA

Below Arklow mountain bike trails.
Photo – Frances Andrijich



Rod Annear is the assistant director visitor services with DBCA’s Parks and Wildlife Service and can be contacted at rod.annear@dbca.wa.gov.au or (08) 9219 8524.





Joining hands
to care for

Nyinggulu

An historic agreement was recently signed between traditional owners and the government, which provides for the joint management and joint vesting of Ningaloo Marine Park (State waters) and Cape Range National Park, as well as the creation of Nyinggulu (Ningaloo) Coastal Reserves.

by Felicity Kelly





The Ningaloo (Ningaloo) Coast is of significant cultural importance to Aboriginal people, who have an ongoing connection to the area spanning over 32,000 years. The marine park and the low-key, remote recreation experience are also enjoyed by many visitors each year.

An historical moment was marked on 4 August 2020 when the Department of Biodiversity, Conservation and Attractions (DBCA) came together with traditional owners from the Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC) to formally enter into the Ningaloo Indigenous Land Use Agreement (ILUA) to jointly manage country.

"Today we come together to fulfil our past Elders' vision with the joint management agreement between DBCA and traditional owners, working together

creating many opportunities for younger generations through employment, traineeships, cultural values and connecting to country," said Baiyungu Elder and DBCA cultural advisor, Hazel Walgar.

KEEPING CULTURE STRONG

Today, the Ningaloo (Ningaloo) Coast is still highly valued by traditional owners and they continue to uphold the binding responsibility to care for country and keep culture strong. The undertaking of customary activities on country is central to maintaining the cultural heritage of the land.

Sharing of knowledge, engaging in traditional practices, nurturing relationships with the land and water, as well as looking after significant places are important aspects of being a traditional owner.

The plants and animals that form *ngarrari* (land) and *thanardi* (sea) country of Ningaloo have sustained traditional owners for thousands of years, providing them with food, water and medicine.

Being predominantly coastal dwelling people, they have strong connection to *thanardi* (sea) country relying on marine resources including *majun* (turtle), *gawangga* (egg), fish and shell fish.

Ngarrari and *thanardi* country are rich with cultural heritage sites and places of ceremonial and mythological significance including *thalus* which are places for ceremonies and rituals surrounding totemic species. Many historical remains have been found along the Ningaloo (Ningaloo) Coast including middens, fish traps, burial grounds and the 'mandu mandu beads'—one of the world's oldest pieces of jewellery.

Baiyungu strong statement

This area was always known as Ningaloo which means in our Baiyungu language – nose. Stories passed down say that the Ningaloo area would attract many people from other tribes especially from the Pilbara and Gascoyne and that they would gather for ceremonies. Still to this day Ningaloo is a gathering place that attracts many people of many cultures. The beauty of our traditional country is so unique we Baiyungu people are proud to share it with the world.

Baiyungu people's strong statement:
Respect and look after our country.
Our country will respect and look after you!
Hazel Walgar, Baiyungu Traditional Owner.



Previous page

Main Aerial view of the Ningaloo (Ningaloo) Coast.

Photo – David Bettini

Inset from left Emu. Photo – Simon Cherriman; Camel bush (*Trichodesma zeylanicum*).

Photo – Aberline Attwood/DBCA; Spangled

emperor. Photo – Marc Russo; Green turtle

hatchlings. Photo – Grant Griffin; Whale shark.

Photo – Matt Kleczkowski

Above left Remote camping at South Lefroy.

Photo – Josh Baker

Above Ningaloo ILUA signing at Bulbarli.

Photo – Thomas Nagle/DBCA

Left Traditional owner, Hazel Walgar with a grinding stone, Ningaloo (Ningaloo) Coast.

Photo – Aberline Attwood/DBCA

Home on the range

Populations of threatened black-flanked rock-wallaby, majun (turtle) nesting areas, seabird and shorebird roosting areas, endemic reptiles and landsnails, karst habitats, and subterranean fauna, interglacial fossil reefs, culturally significant flora and fauna are some of key natural values of the new reserves along with the striking contrast of the rugged, arid Cape Range with the sparkling white beaches and clear, turquoise water of Ningaloo Reef.

There is a rich European heritage associated with the early exploration of the north-west cape, including shipping, pastoralism and settlement as well as the Afghan and North Indian cameleers and traders and whaling, rock lobster and turtle harvesting industries. Remains of this heritage can still be found throughout the area and pastoralists still manage adjacent land for stock such as goats and cattle and provide additional recreational opportunities in tourism enclaves within the planning area and adjacent homestead accommodation areas.



Above Lighthouse keepers' quarters at Point Cloates, built in 1910.
Photo – Tiffany Taylor

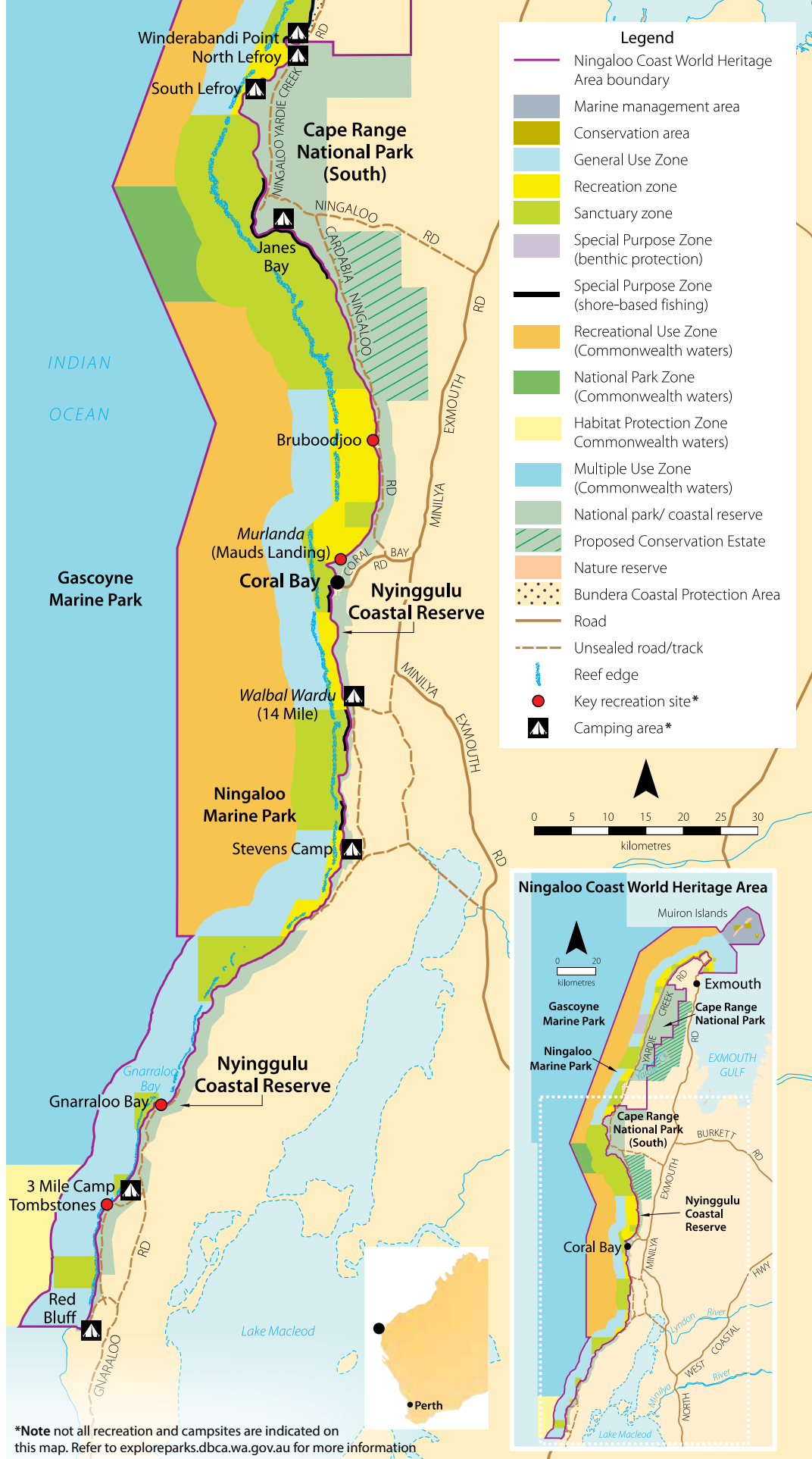
COMING TOGETHER

The Nyinggulu Coast ILUA enables the creation of about 78,000 hectares of new conservation estate including the establishment of the Nyinggulu Coastal Reserves and the eastern extension of Cape Range National Park.

The ILUA is the first under the State Government's Plan for Our Parks initiative, a plan to create five million hectares of new national and marine parks and conservation reserves across Western Australia.

Together, traditional owners and Government will oversee management of the area and make decisions to deliver positive outcomes for WA's conservation estate, Aboriginal people and for the general community.

The Nyinggulu ILUA also formalises the joint vesting and ongoing joint management of the new reserves and the



"Warutharra Baiyungu ganyarajarri.
Nhubalu marnumanmayi ngarrari.

We Baiyung people are happy and proud to share our unique beauty with visitors from all over the world. Respect and look after our country, our country will respect and look after you."
Hazel Walgar, Baiyungu Traditional Owner



World Heritage-listed Ningaloo Marine Park (State waters) and Cape Range National Park.

The ILUA and Joint Management Agreement provides an opportunity to gain a better understanding of traditional knowledge applicable to the planning area, and foster opportunities for integration of traditional knowledge with contemporary conservation science and management.

Joint management is about traditional and Western culture working together to look after country. DBCA has been jointly managing the area with the traditional owners on an informal basis, building relationships and trust while a joint management plan has been prepared to conserve the Nyinggulu (Ningaloo) Coast, through the collaborative identification of challenges and solutions.

Applying a joint management framework will enhance the protection

of culture and heritage, geology and landforms, plants, animals and habitats, while allowing culturally appropriate opportunities for recreation and tourism. The joint management plan will also apply to research and monitoring and the management of fire, weeds, introduced animals, resources and utilities.

NEW COASTAL RESERVES

The need to create public reserves along the Nyinggulu (Ningaloo) Coast was identified in the 1970s. Apart from a coastal strip 40 metres inland of the high-water mark along the coast from Red Bluff to Winderabandi (and other small Crown reserves), the new reserves were previously under pastoral lease. As part of the 2015 pastoral lease renewal process, the land was identified as being significant for conservation and the reserves were excised from pastoral leases.

The signing of the historic ILUA has allowed the creation of the conservation and recreation reserves, that are now jointly managed by DBCA and the Baiyungu and Thalanyji traditional owners through the Nganhurra Thanardi Garibu Aboriginal Corporation. The new reserves will now have statutory protection under the *Conservation and Land Management Act 1984*, and joint management will ensure effective conservation of the significant natural and cultural values, while providing ongoing access for visitors.

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Above Lagoon day-use site.
Photo – Aberline Attwood/DBCA

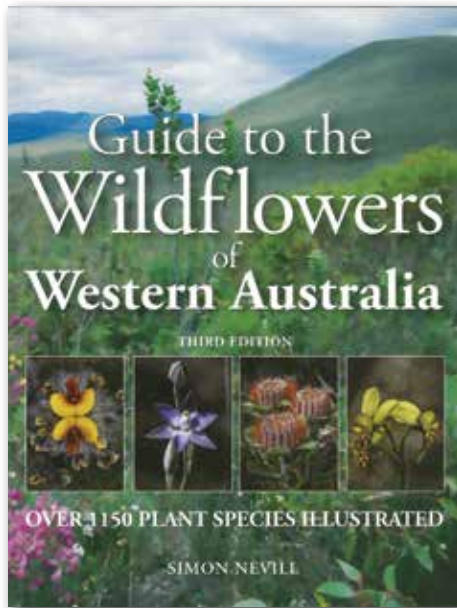
Below left South Lefroy night sky.
Photo – Josh Baker

Below Threatened black-flanked rock-wallaby (*Petrogale lateralis*).
Photo – Simon Cherriman



Felicity Kelly is a visitor interpretation officer with DBCA's Parks and Wildlife Service in Exmouth. She can be contacted at felicity.kelly@dbca.wa.gov.au or (08) 9947 8026.

GUIDE TO THE WILDFLOWERS OF WESTERN AUSTRALIA



WA is home to more than 13,000 wildflower species, with many of them rare and endemic.

But if you don't have a whole lot of experience with native flora, the sheer volume of species is enough to make your head spin. And that's where this new book *Guide to the Wildflowers of Western Australia* comes in handy.

Packed with pictures, maps and helpful hints, this guide can be a budding botanist's new best friend. Readers can expect to come away with an understanding of WA's plant species, where to find them and the best time of year to see them in bloom.

If you are planning a trip around WA or just interested to learn more about native plant species, *Guide to the Wildflowers of Western Australia* is a helpful starting point since it is geared to the layman.

While it can be read cover to cover, it's probably best to use this book as a reference to look up plants as you come across them or to plan out a plant bucket list for when you travel. Keep it as a resource and think of it as the 'Shazam' of the plant world.

Guide to the Wildflowers of Western Australia is available to purchase at woodslane.com.au.



SMART PARK MAPS

Navigating Cape Range National Park just got a whole lot easier – the latest *Smart Park Map* is live!

Developed by the WA Parks Foundation in partnership with the Department of Biodiversity, Conservation and Attractions, Smart Park Maps are geo-referenced PDFs that provide information on facilities, trails, lookouts and other points of interest within parks.

Download the *Avenza Maps* smartphone app and visit the 'map store' to download *Smart Park Maps*. The maps use the built-in GPS on your smartphone or tablet to plot your real-time location onto the *Smart Park Map*. This can be done without a network connection and without roaming charges.

Even if you're a stickler for detail and plan before you leave, you might find this map leads you to some hidden gems for the perfect Instagram shot or to a public bathroom when you need it most.

Cape Range is the third addition to the *Smart Park Map* series, with maps already available for Kalbarri and Karijini national parks.

Avenza Maps app is available to download on the App Store and Google Play.



CAMPFIRE RECIPES



If you regularly #WanderOutYonder with your tent under one arm and a sleeping bag in the other, this smartphone app could be the game changer you've been waiting for.

Campfire Recipes offers up a collection of easy-to-follow meals that can be cooked in the outback and enjoyed by lots of hungry mouths.

The best part? There is plenty of variety and many options beyond just your typical campfire barbequed meats.

From grilled fish to cobbler delight, the healthy recipes are all made with simple ingredients that can be packed, stored and carried for days at a time.

Plus, recipes are specifically catered to provide enough nutritional content to help energise campers for adventures like hiking, canoeing, rock climbing and more.

Carb-lovers can rejoice in cooking the camp pasta and multiple different kinds of camp potatoes.

Campfire Recipes is available to download on Google Play.



Watching over Wadjemup

Rottnest Island's
loyal volunteers



Many Western Australians have fond memories of time spent on Rottnest Island. For some, their love of the island and its diverse natural, social and historical significance, drives them to volunteer their time to ensure the island is understood, protected and enjoyed for years to come.

by Jon Dodd, Elizabeth Rippey
and Judith Harvey



The beauty and charm of Rottnest Island are enjoyed by more than 800,000 visitors each year, making the island one of Western Australia's most popular and accessible destinations. The many local, interstate and international visitors enjoy the island's unique ambience and its natural and historic attractions, especially its marsupial mascot, the quokka (*Setonix brachyurus*), its beautiful beaches, coastal scenery and abundant birdlife.

The Rottnest Island Authority (RIA) manages the island and funds the maintenance of its diverse natural and cultural heritage. However, arguably the public face of the island is that of the volunteers who play an important role, especially in environmentally-focussed activities including the provision of interpretive tours, beach clean-ups, dune rehabilitation, tree planting, fauna monitoring, and maintenance and construction works.

Rottnest Island is part of the traditional lands of the Whadjuk Noongar people, who know the island as Wadjemup or 'place across the water where spirits come to rest'. The Aboriginal connection with Rottnest is ancient, dating back tens of thousands of years before it became an island 6500 years ago when it was separated from the mainland by rising sea levels. There are some highly significant Aboriginal sites on the island, several linked to the former prison building (the Quod) and the adjoining burial ground.

FOR THE LOVE OF THE ISLAND

The Rottnest Voluntary Guides Association (RVGA) was established in 1986 with the aim of promoting an increased awareness of the island's environment and history by conducting informative tours around the island. The RVGA has more than 300 active members who provide a wide range of daily tours on the island and have up to 250,000 interactions with visitors annually. The RIA engages the assistance of several other partner volunteer groups including the Rottnest Foundation, the Rottnest Society, the Winnit Club, Conservation Volunteers Australia and more.



Previous page

Main The Gabbi Karniny Bidi walk trail lined with Coastal groundsel (*Senecio pinnatifolius*) and revegetation plantings above Geordie Bay with Lake Baghdad and the Indian Ocean beyond.

Photo – Elizabeth Given/Alamy

Inset Nursery volunteers Judith and Dais transplanting seedlings.

Photo – Rebecca South

Above Rottnest Society volunteers ready for tree planting near Serpentine Lake, July 2010.

Photo – RIA

Right RVGA guides Lucy and Rose surveying plants at Pink Lake.

Photo – Jon Dodd



Increasingly, volunteers have been involved with botanical activities such as conducting plant surveys, monitoring populations, seed collecting and propagation of island plants, undertaking scientific studies, and revegetation.

A major botanical activity undertaken by RVGA members in 2016 and 2017 was the comprehensive collection of the island's native and naturalised plants, completing a task begun by RIA staff. Plant identifications were confirmed by the WA Herbarium.

The resulting collection, known as the Rottnest Island Reference Herbarium, is housed on the island and consists of around 400 specimens of 220 plant

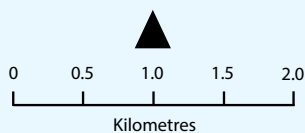
species, of which 121 are native. The specimens are valued conservatively at \$50 each, but collectively they have an immeasurable scientific value as a resource that provides baseline information on Rottnest's plants at the start of the 21st century.

Every fortnight a bunch of keen volunteers make their way to Rottnest to help the island's environmental technicians with running the Rottnest Island Authority Nursery.

The nursery volunteers are a dedicated team, some of whom have been participating since the nursery's inception in 2006. They help with raising seedlings and cuttings, preparing propagation trays for

Legend

-  Toilets
-  Drinking fountain
-  Surfing
-  Fishing
-  Snorkelling
-  Tennis courts
-  Island Explorer bus stop
-  Sanctuary Zone
-  The Settlement
-  Roads
-  Tracks
-  Train Line
- Walk trails**
-  Ngank Yira Bidi (9.4km)
-  Gabbi Karniny Bidi (9.7km)
-  Wardan Nara Bidi (10km)
-  Karlinyah Bidi (5.9km)
-  Ngank Wen Bidi (7.6km)



Right Salmon Bay.

Photo – Marie Lochman

Below right Nursery volunteer Bruce at work in the nursery shadehouse.

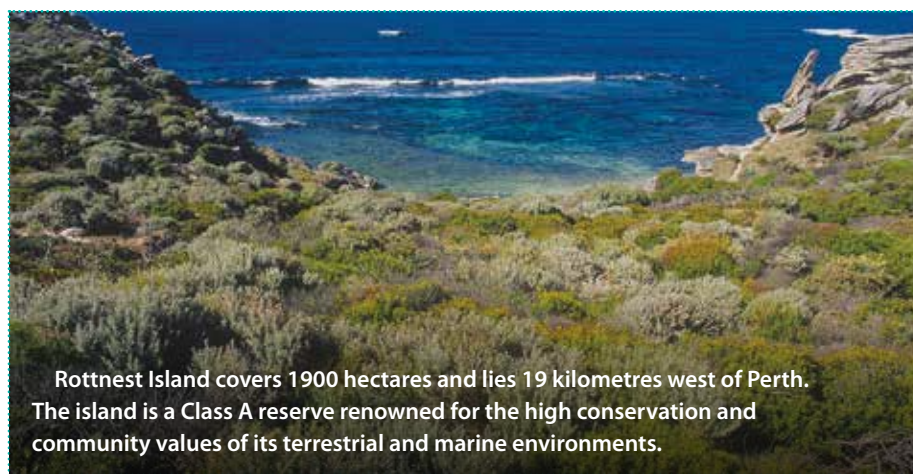
Photo – Rebecca South

new seedlings, cleaning and upgrading the nursery and many other jobs.

BOTANICAL BIODIVERSITY

The island's woodlands, heaths, revegetation areas, and avenues lined with giant, shade-giving fig trees provide the backdrop to many visitors' memories and experiences, while the walk trails and cycle routes bring visitors close to nature, especially its plant life.

Rottnest Island lies within the South-West Botanical Province, a region famous for its plant biodiversity arising from its large numbers of unique, endemic plant species. Unlike the adjacent mainland, Rottnest has relatively few plant species,



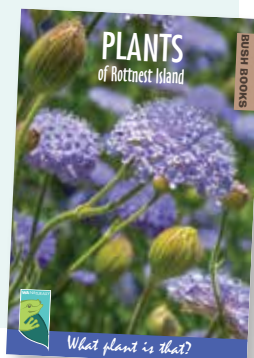
Rottnest Island covers 1900 hectares and lies 19 kilometres west of Perth. The island is a Class A reserve renowned for the high conservation and community values of its terrestrial and marine environments.





New Bush Book for Rottnest

Based on the knowledge arising from recent surveys of the island's flora, a Bush Book titled *Plants of Rottnest Island* was released in November 2020. In keeping with this popular series, this latest Bush Book – the first in over a decade – will be a user-friendly field guide to Rottnest's characteristic plants and their special features, and a companion to the related Bush Books *Marine Life of Rottnest Island*, *Marine Plants of the Perth Region* and *Bush Tucker Plants of the South-West*.



“...very few plant species have been lost over the past two centuries and the island, with its beautiful scenery and coastline, remains a source of delight for its many visitors.”

most of which are widespread and found elsewhere along the WA coast and beyond. The island also lacks many of the plant types characteristic of the mainland, such as eucalypts, banksias, grass trees and zamias that died out on Rottnest because of exposure to the island's nutrient-poor sandy soils and salt-laden winds blowing from all directions.

Because the island's plant life is not as diverse and species-rich as the equivalent area on the adjacent mainland, it is a great place to get to know some of WA's fascinating plants. Winter and spring

are the best seasons for seeing plants flowering on Rottnest, especially species such as Shark's tooth wattle (*Acacia littorea*), Cockies tongues (*Templetonia retusa*), Coastal groundsel (*Senecio pinnatifolius*) and the Rottnest daisy or Blue lace flower (*Trachymene coerulea*), which are missed by summer visitors.

BUSH TUCKER AND MEDICINAL PLANTS

The plant life of the south-west of WA has been a sustainable source of almost all of life's necessities for countless generations of Aboriginal people, by providing food, medicines, weapons and household needs such as shelter, warmth and utensils.

Many of Rottnest's characteristic plants are known to be important to Noongar people. For example, *moonah* (Rottnest teatree, *Melaleuca lanceolata*) and *marro* (Rottnest pine, *Callitris preissii*) are sources of traditional medicines – their crushed foliage relieves congestion by inhaling the vapours and was used in hot poultices to treat aches and pains. The

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Top Injid or Cockies tongues (*Templetonia retusa*).

Photo – Pam Ghirardi

Above left Rottnest daisy or Blue lace flower (*Trachymene coerulea*).

Photo – Jon Dodd

Above right Coastal beard-heath (*Leucopogon parviflorus*) produces edible fruits.

Photo – Graham Zemunik



versatile *marro* also has durable timber and its resin was used to attach axe heads to handles. Other well-known Rottnest plants are sources of food: *yackel djarr* or *injid* (Cockies tongues, *Templetonia retusa*) has edible flowers and its crushed seeds were used for bush tea, while Nitre bush (*Nitraria billardiarei*) and Coastal beard-heath (*Leucopogon parviflorus*) have edible fruits. *Kerbein* (Coast sword sedge, *Lepidosperma gladiatum*) has fibre-rich leaves used for making twine and nutritious rhizomes valued as a source of food, as were the tuberous roots of *taaruk* (Old man's beard, *Clematis linearifolia*).

Rottnest Island has been a dynamic place during the brief 6500 years of its existence. Changing sea levels, strong salt-laden winds, grazing and fires have caused radical vegetation change and extinctions of most of the island's original plants and animals. Settlement on the island brought development and further vegetation change with introduced plants, increased quokka numbers and the loss of natural woodlands. But very few plant species have been lost over the past two

One guide's personal journey

Volunteering on Rottnest – the rewards can be far greater than the contribution!

Guiding on Rottnest became an absorbing focus of interest shortly after migrating to Australia. It presented an enormous challenge in learning, interpretation, and delivery for a rather shy introvert.

The learning, or knowledge, is too great to be encompassed, and you can take it as far as you like: astronomy, history, marine science, weeds, sustainability of the island and its coastline... And the knowledge changes as time and research dictate.

The interpretation is a joy – the search for causes, effects, processes and relationships.

Perhaps the greatest gifts have been the friendships and joint projects. The Guides are a highly diverse group: academics, administrators and actors; scientists, soldiers and children's story tellers; physicists and photographers... These are extraordinary, beautiful people who passionately contribute their own genius to any venture or adventure.



centuries and the island, with its beautiful scenery and coastline, remains a source of delight for its many visitors.

The future for the island's plant life looks good. Careful management of the terrestrial environment, revegetation and education will ensure that the island's plant cover, wildlife and scenic coastline will continue to be enjoyed by increasing numbers of visitors for many years to come.

Top left Marro or Rottnest Island pine (*Callitris preissii*) at Vlamingh Lookout.

Above left Taaruk or Old man's beard (*Clematis linearifolia*).

Photos – Jon Dodd

Above RVGA guide Teresa Wright with group viewing quokkas.

Photo – Pam Ghirardi

Below Train approaching the Oliver Hill guns.

Photo – Tourism WA



Jon Dodd is a botanist, natural historian and volunteer guide at Rottnest Island and Kings Park. He can be contacted at jondodd@inet.net.au

Elizabeth Rippey is an island ecologist, author and a volunteer guide at Rottnest Island. She can be contacted at rippyj@gmail.com

Judith Harvey is a DBCA Biodiversity and Conservation Science plant and fire ecologist and a Rottnest volunteer guide. She can be contacted at harveyjm@live.com.au

Plants of Rottnest Island *Bush Book* can be purchased in selected bookshops, newsagents and online at shop.dbca.wa.gov.au

For more information on the Rottnest Voluntary Guides Association visit rvga.asn.au



The irresistible honey possum



With only a few hours before the sun rose over Western Australia's southern coast, Parks and Wildlife Service staff and volunteers worked quickly to check and clear fauna traps in the hopes of recording a tiny, beloved honey possum.

**by Stephen Butler and
Emma Massenbauer**



It is early morning in Cape Arid National Park, the sun is just breaking the horizon, it is chilly and the dew is thick on the ground as a small team of Parks and Wildlife Service staff and volunteers walk out to the *Western Shield* grid on Poison Creek Road. The grid contains a combination of Sheffield, Elliott and pit traps that need to be checked and cleared within three hours of sunrise.

For the volunteers, this is a great opportunity to see some of the small native fauna found on the south coast of Western Australia. But even more enticing is the opportunity to observe and hopefully photograph the world's only

truly nectivorous marsupial, the honey possum (*Tarsipes rostratus*), or noolbenger.

The honey possum is endemic to the south-west of WA, found from Kalbarri to the east of Esperance, favouring the floristically rich heath vegetation of coastal WA. It's a totem animal for some of the Noongar traditional owners of the region.

TWO OF A KIND

The group approaches the first of 15 pit traps with a keen anticipation of what they might find. Kneeling above the pit trap and reaching down carefully, the makeshift shelter that is placed at the base of the trap to provide cover for animals

Opposite page

Main Honey possum.

Photo – Janine Guenther

Inset A western mouse (*Pseudomys occidentalis*) recorded during fauna trapping in Cape Arid.

Above *Western Shield* Cape Arid fauna trapping.
Photos – Shem Bisluk/DBCA



Discover more
about honey
possums

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





Tiny features

The honey possum is a distinct animal, tiny in size, (up to 10 grams), with an elongated muzzle. The species is famous for its long snout – the species name, *rostratus*, is Latin meaning ‘beaked’.

It has three brown stripes running along the length of its back. The central stripe is dark brown starting between the ears and ends at the base of the tail. The outer two stripes are generally lighter in colour.



that may have spent the night, is carefully lifted. There, under the shelter are two honey possums, one is fast asleep, and the other full of energy.

The team speculates that the active possum was a more recent capture, explaining its behaviour of running fast laps around the pit trap. Quickly, and with practiced efficiency, this animal is caught by hand and placed into a small bag. The other possum is in a state of torpor, a common strategy by honey possums to conserve energy by lowering their metabolic rate and internal temperature, and it too, is gently placed in a small bag for processing.

Both animals are weighed, sexed, the head length measured, and the tail marked with a permanent marker for identification in the event of recapture. The females are checked for pouch young or joeys. A female may produce between two and three joeys at any time of the year when food is plentiful. Finally, before being released, both are given a drink of honey

water, referred to as ‘possum petrol’, to ‘fuel them up’ and replace the energy they may have lost during the night.

SWEET TOOTH

The possums are released on a *Banksia speciosa* flower, at which point they forget all about their recent capture and bury their heads for a feed of nectar.

The photographic opportunities are superb with a combination of the early morning light, the brightly coloured banksia flower and two compliant marsupials focused on drinking their fill. Their tongue tips are bristled to allow the honey possums to collect nectar from the flowers. At 1.8 centimetres, their tongue is almost a quarter of their head and body length and allows them to reach deep into a variety of flowers to obtain the nectar or pollen. To survive, honey possums require a continuous year-round supply of nectar.

Once they have had their fill, both animals move away swiftly and nimbly,

demonstrating their arboreal (tree-dwelling) skills. The photographers are visibly disappointed to see them go but brimming with anticipation at the 14 traps still to clear and the possibility of more honey possums to photograph.

Above left Honey possum drinking water.
Photo – Shem Bisluk/DBCA

Above Honey possum collecting nectar.
Photo – David Bettini

Left Cape Arid National Park.
Photo – Ann Storrie

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YOSHI

finds home

by Kendall O'Connor

In the spring 2020 edition of *LANDSCOPE* magazine we brought you the story of Yoshi the loggerhead turtle who was released from the Two Oceans Aquarium in Cape Town, South Africa after twenty years, and swam more than 40,00 kilometres to Western Australian waters off the Pilbara coast (see 'Yoshi's journey', *LANDSCOPE* Spring 2020).

As we went to print, CEO of the Two Oceans Aquarium Foundation and guest columnist for the magazine, Maryke Musson, updated Yoshi followers to let them know that the determined loggerhead turtle has indeed found home in WA.

With lockdown restrictions slowly being lifted and people having more freedom to leave their homes and travel, Yoshi the loggerhead sea turtle seems to have found her home range off the coast of Eighty Mile Beach in Western Australia's north.

It was initially speculated that Yoshi originated from the Northwest or Southwest Indian Ocean loggerhead populations, Oman or KwaZulu-Natal respectively, but it now seems that it is more likely that she is from the Southeast Indian Ocean population from Western Australia. Her tracks, once she reached the Indian Ocean, showed a very similar route to that of post-hatchling loggerhead turtles from Western Australia, but just in reverse. As a juvenile, she might have followed the currents from Shark Bay or Ningaloo rookeries in Western Australia towards Madagascar.

"It has been such a privilege to be part of this remarkable adventure, part of it with Yoshi, and part of it cheering her along from Cape Town", said Maryke. "I am thrilled that she has found a safe area to call home (for now). The Aussies have been superb hosts to Yoshi, and now I believe they are family. I am hoping her tag will last for a few more months so we can finally see whether she is going to contribute to the region's loggerhead population. She has proven to be a superior athlete, and her 40,011 kilometre



swim is the longest recorded sea turtle journey ever tracked, in both distance and in time. It is also the longest distance tracked for any marine animal. Only one bird, the little arctic tern, with its up to 77,000 kilometre migration, can give Yoshi a run for her money, and holds the record of longest animal migration tracked."

Above A loggerhead turtle.

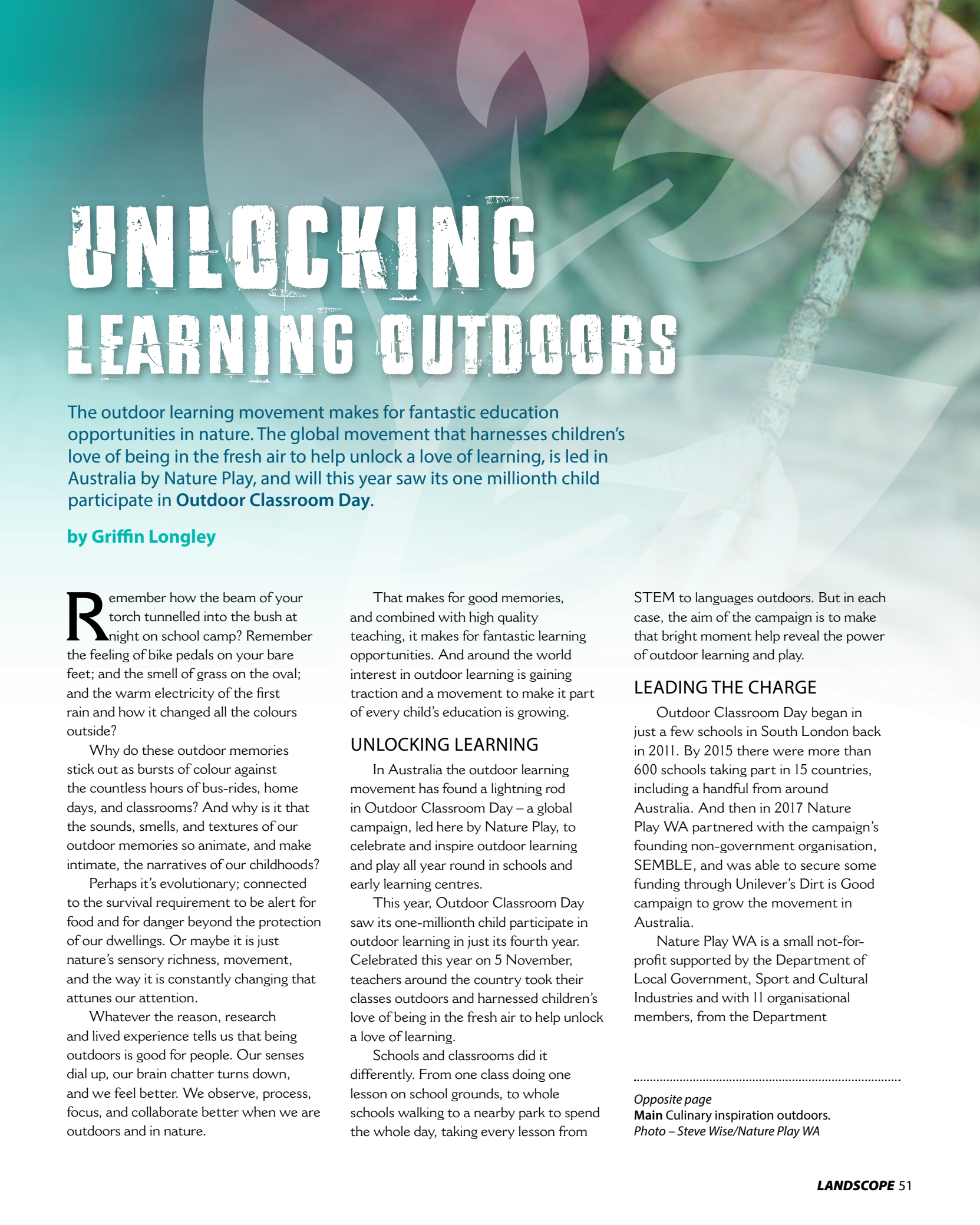
Photo – Gary Bell/Oceanwide Images

Right Yoshi being released.

Photo – Two Oceans Aquarium Foundation







UNLOCKING LEARNING OUTDOORS

The outdoor learning movement makes for fantastic education opportunities in nature. The global movement that harnesses children's love of being in the fresh air to help unlock a love of learning, is led in Australia by Nature Play, and will this year saw its one millionth child participate in **Outdoor Classroom Day**.

by **Griffin Longley**

Remember how the beam of your torch tunnelled into the bush at night on school camp? Remember the feeling of bike pedals on your bare feet; and the smell of grass on the oval; and the warm electricity of the first rain and how it changed all the colours outside?

Why do these outdoor memories stick out as bursts of colour against the countless hours of bus-rides, home days, and classrooms? And why is it that the sounds, smells, and textures of our outdoor memories so animate, and make intimate, the narratives of our childhoods?

Perhaps it's evolutionary; connected to the survival requirement to be alert for food and for danger beyond the protection of our dwellings. Or maybe it is just nature's sensory richness, movement, and the way it is constantly changing that attunes our attention.

Whatever the reason, research and lived experience tells us that being outdoors is good for people. Our senses dial up, our brain chatter turns down, and we feel better. We observe, process, focus, and collaborate better when we are outdoors and in nature.

That makes for good memories, and combined with high quality teaching, it makes for fantastic learning opportunities. And around the world interest in outdoor learning is gaining traction and a movement to make it part of every child's education is growing.

UNLOCKING LEARNING

In Australia the outdoor learning movement has found a lightning rod in Outdoor Classroom Day – a global campaign, led here by Nature Play, to celebrate and inspire outdoor learning and play all year round in schools and early learning centres.

This year, Outdoor Classroom Day saw its one-millionth child participate in outdoor learning in just its fourth year. Celebrated this year on 5 November, teachers around the country took their classes outdoors and harnessed children's love of being in the fresh air to help unlock a love of learning.

Schools and classrooms did it differently. From one class doing one lesson on school grounds, to whole schools walking to a nearby park to spend the whole day, taking every lesson from

STEM to languages outdoors. But in each case, the aim of the campaign is to make that bright moment help reveal the power of outdoor learning and play.

LEADING THE CHARGE

Outdoor Classroom Day began in just a few schools in South London back in 2011. By 2015 there were more than 600 schools taking part in 15 countries, including a handful from around Australia. And then in 2017 Nature Play WA partnered with the campaign's founding non-government organisation, SEMBLE, and was able to secure some funding through Unilever's Dirt is Good campaign to grow the movement in Australia.

Nature Play WA is a small not-for-profit supported by the Department of Local Government, Sport and Cultural Industries and with 11 organisational members, from the Department

Opposite page

Main Culinary inspiration outdoors.

Photo – Steve Wise/Nature Play WA



Above left Cubby houses make great outdoor classrooms.

Photo – Nature Play SA

Above Rosalie Primary students have fun under a parachute.

Photo – Nature Play WA

Left Nature walk in Mundaring.

Photo – Simon Cherriman



of Biodiversity, Conservation and Attractions, to the Royal Australasian College of Physicians, and the Western Australian Primary Principals Association. So, leading the Australian campaign has been a huge task for us, including helping to coordinate the efforts of partners in every State and Territory.

But the call to action has been simple and compelling. Taking learning outdoors isn't about adding something to the already daunting list of expectations our community has of schools. It is about helping schools reach the goals they already have, and do what they are already doing, in a slightly different, but highly achievable way, that will benefit the whole school community.

GETTING OUT

We know from a growing body of research that simply being in fresh air reduces children's stress, improves their eyesight, increases physical activity, and promotes learning. In one US study of 40 schools, it was demonstrated that

using natural surroundings as a context for learning – combined with best practice education – contributed to improving problem solving, lifted enthusiasm for learning, and led to a jump in test scores in subjects including science, social science, language, arts and maths.

And a study in Norway, that bastion of outdoor learning, showed that pre-school children with more outdoor time consistently scored better on standardised tests for executive function, attention and short-term memory, when compared to children who attended pre-schools with fewer outdoor hours.

GROWING UP FAST

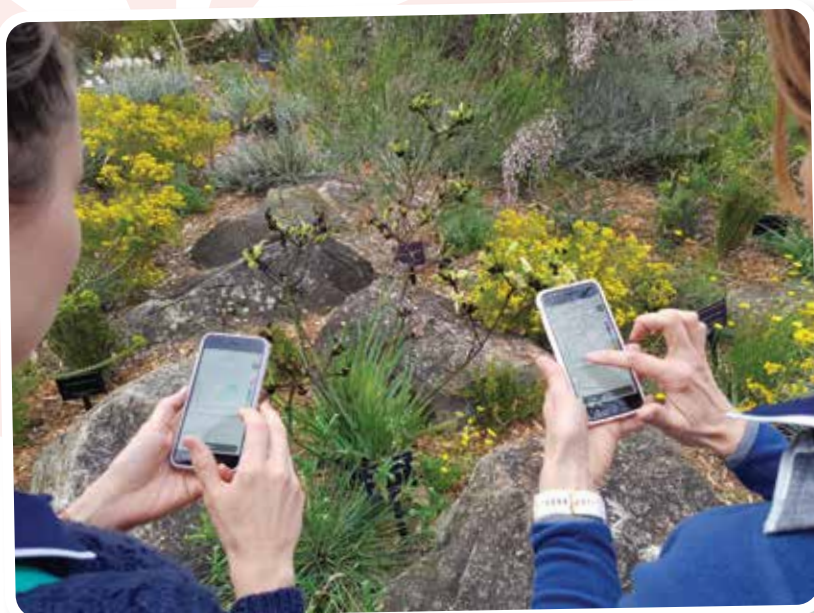
In the campaign's first year in Australia more than 200,000 children from schools and early learning centres took part. By the third year that number grew to more than 314,000, at more than 3000 schools in every corner of Australia – including more than 46,000 Western Australian children at more than 45 per cent of all primary schools in the State.

And the outdoor learning movement has never been more important than in 2020. Paediatric anxiety disorders were already growing at an alarming rate before our community became consumed first with a terrifying fire season, and then a pandemic. And our children are feeling it.

But taking our children outdoors and into nature, not just on Outdoor Classroom Day, but every day, can help. It will relieve some of the stress they are feeling, help them develop a connection to nature that will shape their conservation behaviours into the future and support their learning. And, you know what, it will just be fun.



Griffin Longley is an award-winning journalist and CEO of Nature Play WA. He can be contacted at griffin@natureplaywa.org.au



Above Exploring Kings Park with the *Play Trails* app.
Photo – DBCA

Wander with purpose

We often hear the phrase “kids need to stop staring at screens and go outside”. Is it really as simple as ‘screens bad, trees good’? The answer is no, and in fact we can use technology to inspire families to get outdoors and explore nature using apps such as the *Play Trails* app developed by Nature Play WA in partnership with DBCA.

Using *Play Trails*, families visit trail locations where they can ‘wander with purpose’ following a nature trail downloaded to a device and unlock challenges, answer quiz questions and score points.

Creating a healthy balance between screen time and outdoor play, the *Play Trails* app encourages active time outdoors and gets users looking up from the screen at the world around them.

Download Nature Play WA's new *Play Trails* app from the App Store or Google Play or find out more at the website natureplaywa.org.au/playtrails

Explore Kings Park wildflowers

The Kings Park Wildflowers trail was the first of the DBCA trails to go on the app and is a lot of fun to explore! There are 10 locations to navigate and learn more about wildflowers. Ask yourselves: who will unlock the challenges, solve quiz questions and score the most points!

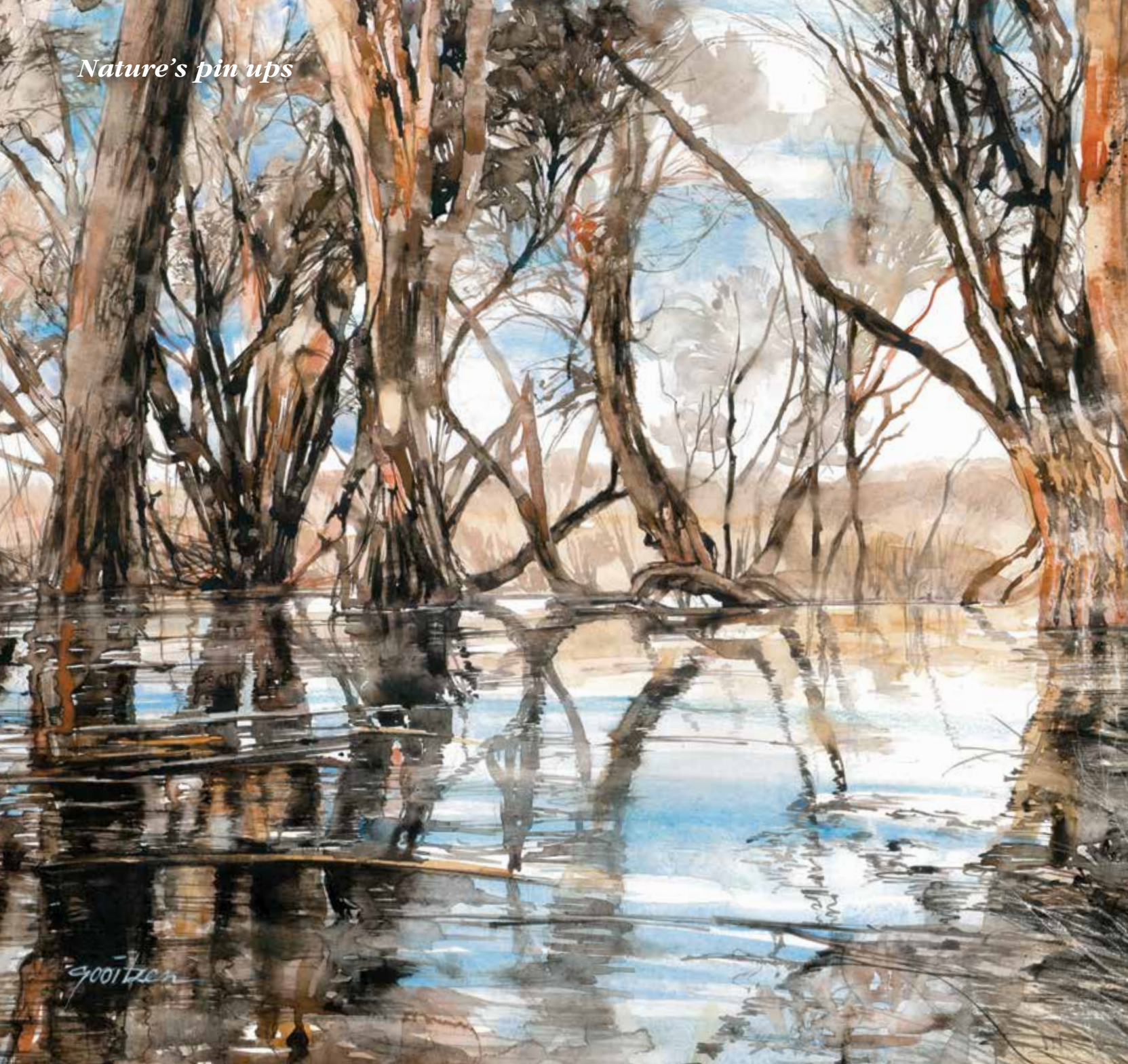
When the challenges are unlocked, the fun begins. Answer quiz questions, step back in time, guess the height of a karri tree, take close-up photos and draw pictures of flowers and even take a selfie!

Walking along the trail activates your senses, ignites our curiosity and will have you laughing, learning and exploring.

- 1 Black kangaroo paw challenge
- 2 Drawing the black kangaroo paw
- 3 Taking a photo the ground cover banksia and adding creatures features
- 4 Taking a selfie with the everlastings

Photos – DBCA





Swamp paperbark (*Melaleuca raphiophylla*)

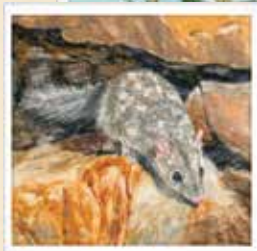
Melaleuca raphiophylla, commonly known as swamp paperbark, is a plant in the myrtle family, Myrtaceae, and is endemic to the south west of Western Australia. It has narrow, needle-like leaves and profuse spikes of white or yellowish flowers at variable times throughout the year.

Illustration and reference photo by Gooitzen van der Meer

Nature's pin ups

PRINT COLLECTION

Artwork featured in *LANDSCOPE* magazine



Each edition of *LANDSCOPE* magazine features original artwork by artists Gooitzen van der Meer and Gwendolen Monteiro.

Using a water colour technique or acrylics, the pieces depict species featured in the magazine. Prints of these beautiful pieces of artwork can now be purchased in A3, A4 or A5 size, printed on high quality art paper and delivered to your door, ready to be framed and hung somewhere special.

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