WA'S PARKS, WILDLIFE AND CONSERVATION MAGAZINE

LANDSCOPE

Volume 40 Number 4 Winter 2025 $7.95

CELEBRATING 40 YEARS 1985 2025 LANDSCOPE

THE HUMBLE HAKEA
Striking diverse genus

Lasting adventures
LANDSCOPE expeditions

Brush with nature
Iconic botanical artist

Rocky and rugged
Millstream Chichester

1985



1986



1987




1988




1989




1990


1991



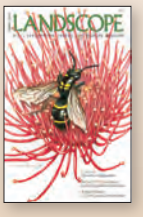

1992






1993



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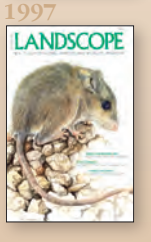


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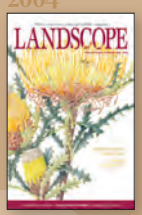
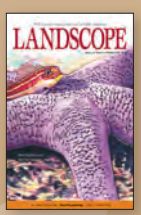

2005


LANDSCOPE

ON THE COVER

Front cover Needle tree (*Hakea preissii*).
Photo – Ann Storrie

Back cover New Holland honeyeater (*Phylidonyris novaehollandiae*) on hood-leaved hakea (*Hakea cucullata*), Stirling Range National Park.
Photo – David Bettini

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

Since it first went to print in 1985, *LANDSCOPE* has informed and inspired readers in Western Australia and beyond. What began as a science magazine has evolved to reflect the changing interests of its readers while staying true to its scientific foundations.

That same commitment to sharing knowledge and connecting people with the natural world is now guiding its next chapter, with *LANDSCOPE* transitioning to a fully online magazine following this final winter edition.

While there's no denying the lasting appeal of the printed editions, moving to a digital format will allow *LANDSCOPE* to be more accessible and reach more readers. What won't change is the magazine's role as a trusted and respected publication within the nature, conservation, and scientific communities.

This commemorative edition is a reminder that *LANDSCOPE*'s success over the past 40 years has never been the work of one person, or even a select few. It has always been a shared effort, shaped by the contributions of authors, photographers, artists, researchers and editors who have made it possible.

Long-time readers will recognise the name Cliff Winfield; a dedicated nature photographer whose work has featured in every edition of *LANDSCOPE* since its very beginning in 1985 (see '*Forty years of contributing to* LANDSCOPE' on page 18).

Photographers Jiri and Marie Lochman built an extraordinary body of work after moving to Australia, with their striking images appearing in almost every edition throughout *LANDSCOPE*'s printed history (see '*Enchanted by Australian wildlife*' on page 48).

Before photography became the hallmark of the front cover, hand-drawn illustrations were a defining feature. For 22 years, artist Philippa Nikulinsky's detailed works graced the magazine's covers, capturing the beauty and complexity of Western Australia's native species (see '*A brush with nature*' on page 38).

This edition also pays tribute to the dedication of researchers who have committed their lives to the cause of conservation, including the late Dr Anton Tucker, whose legacy in marine turtle research is remembered in '*So many turtles, so little time*' on page 23.

As a subscriber to the magazine, I have looked forward to reading about the great conservation work being done, seeing the beautiful pictures, and getting a better understanding of our great State. I will now look forward to receiving my digital edition.

Hon. Matthew Swinbourn MLC
Minister for the Environment

Contributing

Jasmine Browning is an environmentally passionate high school student with a love for nature and conservation. Dabbling in creative ways to showcase her interests in sustainability and taking part in her school's Roots and Shoots club, she takes any chance to explore, learn, and contribute to the environmental actions of her community and the planet.

Leah Seabourne is a botanist who has spent the last 20 years working in a variety of conservation roles within the not-for-profit, government and private sectors. Leah currently manages the Kings Park Herbarium, including curation of its small but valuable collection. This role also includes undertaking plant identifications and providing botanical advice and training to staff, volunteers and the public. Leah loves sharing her passion for Western Australian flora.

Hannah Beaney is an aspiring writer and communicator who has recently completed a Bachelor of Communications at Curtin University, specialising in Journalism and Public Relations. She enjoys exploring the outdoors and has a deep love for all things water related; from swimming in the ocean to rainy walks. Hannah hopes her writing allows her to continue telling stories and offering people fresh perspectives, as well as deepening her appreciation of the natural world.

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Editorial assistance Jenna Oliver, Conor Doherty.

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

This page Roebuck Bay.
Photo – Tourism WA

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Features

Regulars

Snap shot

READER'S PIC

Western grey kangaroo (*Macropus fuliginosus*) and willie wagtail (*Rhipidura leucophrys*)

Photo and words by Lee Rowland

"I was out doing bird photography at Neil Hawkins Park, walking towards Raptor Ridge, when I spotted the usual fairy-wrens (*Malurus* sp.), grey fantails (*Rhipidura albiscapa*), and silvereyes (*Zosterops lateralis*). After Raptor Ridge, I turned toward the lake, where I noticed a lively willie wagtail (*Rhipidura leucophrys*) bouncing through the trees. As I crouched down, a curious western grey kangaroo (*Macropus fuliginosus*) hopped over, stopping about 20 metres away to give me a good stare. Just as I wondered who was watching who, the wagtail swooped in and landed right on the roo's head—possibly picking off bugs. The kangaroo gave a cheeky wink, and I snapped the shot, barely holding in my laughter."

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 landscope@dbca.wa.gov.au.

Plastic Free July

Plastic Free July is a global movement that helps millions of people be part of the solution to plastic pollution so we can have cleaner streets, oceans, and communities. Awareness around plastic pollution is increasing as well as community efforts to reduce single-use plastic (see 'Reducing single-use plastic in the Swan Canning Riverpark' *LANDSCOPE* autumn 2023).

Now with Western Australia's Plan for Plastics banning the sale and supply of selected single-use plastic items, business and industry has begun a major transition.

Through the Plastic Free Riverpark program, more than $95,000 in grant funding has supported projects that reduce single-use plastic packaging within cafes, restaurants, bars, charter operator vessels, sporting organisations and at major foreshore events in and around the Swan Canning Riverpark.

Spare some time for conservation

Volunteering across Western Australia is taking off, with 150 on-ground projects that contribute to conservation, science, recreation and tourism.

DBCA's volunteer program offers opportunities to get involved in conservation efforts across Western Australia including campground hosting, trail maintenance, flora and fauna monitoring and numerous local community groups.

You can learn or enhance skills while working alongside experts and nature enthusiasts, making it a rewarding experience and a great way to connect and open doors to new prospects. Whether you're passionate about protecting threatened species, restoring habitats, visitor management or education, there's a role for everyone.

Visit dbca.wa.gov.au/get-involved/volunteer to find a project near you.

Top Volunteers with loggerhead turtle (*Caretta caretta*).
Photo – Craig Duncan

Above Volunteers helping to maintain the Munda Biddi Trail.
Photo – Munda Biddi Trail Foundation

Cadets get creative for conservation

Bush Ranger and River Ranger cadets from around WA participated in the *LANDSCOPE*. Threatened Species Art Competition to celebrate 40 years of the magazine. Tasked with recycling old editions of *LANDSCOPE* into their design, the cadets created sculptures of threatened Western Australian flora and fauna. These sculptures were displayed on a trail in the Perth Hills at the annual cadet conference for delegates to see. Conservation art was a strong theme at the conference, with the launching of a collaborative cockatoo mural. The reference cockatoo photo came from nature photographer Sue Harper, before being turned into a 'paint by numbers' style mural that encouraged participants to get involved.

Above Minister for the Environment, Hon. Matthew Swinbourn MLC and Minister for Youth, Hon. Hannah Beazley MLA at the annual cadet conference. *Photo – Peter Nicholas/DBCA*

Wellington National Park road upgrade completed

An exciting road upgrade in Wellington National Park was completed and opened earlier in the year, in time for the busy April school holiday period.

River Road, which provides access to popular locations in the park including Honeymoon Pool and newly constructed mountain bike trails, has been widened and is now dual direction.

New parking areas and a shuttle drop off/pick-up point have also been created to accommodate the growing number of visitors to the newly constructed mountain bike trails.

The River Road upgrades are a component of the $10 million Wambenger Trails initiative that has established Collie as a premier trail adventure town.

The initiative has resulted in more than 100 kilometres of mountain bike trails constructed in Wellington National Park, the five-day/four-night Wiilman Bilya walk trail around Wellington Dam, and improved parking, walkways and facilities in the Wellington Dam precinct.

Above River Road provides access to popular spots in Wellington National Park. *Photo – DBCA*

Guest column

Paul Reed
Environmental Operations Co-ordinator
The City of South Perth

Partnering with the Department of Biodiversity, Conservation and Attractions (DBCA) on the River Guardians Festival earlier this year (see '*Making ripples for conservation*' on page 45) was a valuable reminder of the power of collaboration in protecting our river systems. The event wasn't just a celebration—it reflected the community's deep connection to the Swan and Canning Rivers and a growing shared commitment to their long-term health.

At the City of South Perth, I see firsthand how important partnerships are in restoring and managing the natural systems that support the Riverpark. Our local waterways, wetlands and foreshore areas face increasing pressure from urbanisation, pollution and climate change—and without coordinated efforts, these fragile ecosystems can quickly degrade.

A good example of when local and state governments work together with a shared focus on practical, place-based solutions is the Hurlingham Living Stream project—a jointly funded initiative with DBCA—where the City has restored a previously degraded stormwater drain to create habitat for native fauna, improve water quality and reconnect people with the landscape. Through restoration, native revegetation and nature-based drainage systems, we're seeing how targeted investment in local sites can deliver broader ecological and community benefits.

As a parent, I often reflect on the kind of environment we're passing on to the next generation. The decisions we make today—and the partnerships we form—will help shape that future.

The River Guardians Festival showed just how much community energy exists around protecting these special places. My hope is that events like this continue to inspire action—not just through awareness, but through meaningful investment in local projects that restore, protect and celebrate our rivers and wetlands.

City of South Perth

Millstream Chichester National Park

A rich landscape of rolling spinifex hills, spectacular escarpments and winding tree-lined watercourses makes up the remote 240,000-hectare Millstream Chichester National Park. Located 120 kilometres south of Karratha in WA's north, the park is known for its lush oases of the Millstream wetlands and Fortescue River pools.

Millstream Chichester National Park forms part of the Yindjibarndi and Ngarluma peoples' traditional lands and was an active pastoral station for more than 100 years.

Above left Bungarra or sand goanna (*Varanus gouldii*).
Photo – Remi Bremont
Above right Millstream Jirndawurrunha Pool.
Photo – Peter Nicholas/DBCA

Opposite page
Clockwise from top left Millstream Homestead. *Photo – Peter Nicholas/DBCA* Sturt's desert pea (*Swainsona formosa*), Palm Pool, spinifex pigeon (*Geophaps plumifera*), George River. *Photos – Cliff Winfield*

Right Millstream Chichester National Park near Snake Creek.
Photo – David Bettini

The park was previously two separate national parks; Millstream and Chichester, which joined as one park in 1982. It is now recognised as a national park with significant natural, recreational and cultural values.

The arid-land plants and animals respond to infrequent rainfall events while the wetlands support diverse plant, bird and invertebrate species. Many of these are endemic and rely on the permanent water source at Millstream.

The water that feeds the Millstream oasis springs from an aquifer, or natural underground reserve, contained in the porous dolomite rock. This aquifer is fed by the Fortescue River (Yarnda Nyirranha) catchment, which includes run-off from the Hamersley Range.

The Millstream area is a Priority 1 catchment and, used in tandem with the Harding Dam, the aquifer supplies water to industry and for domestic use to the residents of Wickham, Roebourne, Point Samson, Dampier and Karratha.

CULTURAL VALUES

The Millstream Chichester area is a very significant cultural site in northern Western Australia. Cultural and mythological importance stems from thousands of years of occupation, with Millstream being the home of the mythological serpent or warlu, whose presence is still strongly felt at Nhanggangunha (Deep Reach Pool).

All the pools are significant in this regard and warrant a high level of respect. The broad area of land straddling Yarnda Nyirranha from the Hamersley Range through to the Chichester escarpment is the homeland of the Yindjibarndi people.

Ngarluma people's lands run from the Chichester escarpment northward to the sea. Aside from its highly important

Millstream Homestead

Millstream was named in 1861 by the explorer Francis Thomas Gregory, who reported its favourable grazing prospects. The pastoral lease, first taken up in 1865, changed hands several times before it was taken over by Les Gordon in 1925. In its heyday, the station covered more than 400,000 hectares and ran 55,000 sheep.

The present homestead, built in 1919, housed the Gordon family until 1964. It was a tavern between 1975 and 1986, when the lease was purchased by the State Government.

The old Millstream Homestead is now a self-guided centre that visitors pass through when they visit the park. New displays showcase the building as a family home.

spiritual significance, Millstream was an important campsite for inter-tribal meetings. Yarnda Nyirranha provided food and water, particularly during drier months.

Along the river, Indigenous people had a varied diet of mammals, fish, reptiles, grubs, eggs, honey fruits and root vegetables. Extensive areas were burnt to create natural paddocks and attract kangaroos. The dry climate meant that knowledge of the locations of waterholes was important. The Ngardangarli people were skilled in land management and were nomadic within their traditional boundaries.

Yindjibarndi people continue to come to the park to spend time on Country and to carry out customary activities. They meet with the Pilbara Parks and Wildlife Service at the Department of Biodiversity, Conservation and Attractions (DBCA) to guide the strategic direction of the park.

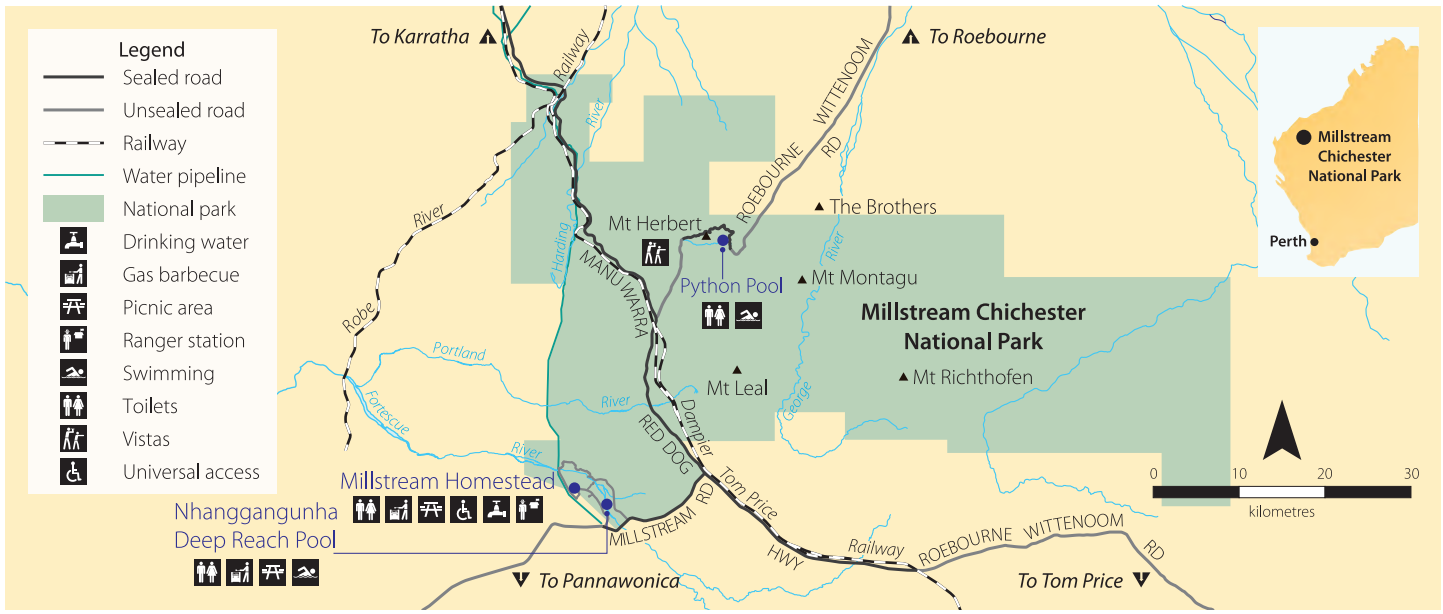
THE ENVIRONMENT

The Chichester Range rises sharply from the coastal plain and includes rocky peaks, tranquil gorges and hidden rock pools. Snappy gum (*Eucalyptus leucophloia*) woodland and hard spinifex (*Triodia wiseana*) clumps cover the stony plateau, which gradually slopes down to the bed of Yarnda Nyirranha before rising again to the vast bulk of the Hamersley Range. Along the river lies the Millstream oasis with its string of deep spring-fed pools fringed by sedges, palm groves and silver cadjeput (*Melaleuca argentea*) forest—some of the largest of its type in the Pilbara.

Wildfires caused by lightning strikes can occur frequently during summer. An extensive prescribed burning program with Yindjibarndi Elders and rangers is carried out annually for biodiversity and asset protection. Burnt areas recover quickly after rain and provide a variety of resources and habitats for local wildlife.

Discover more about Millstream Chichester National Park

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



"Twenty-two species of dragonfly and damselfly have been recorded in the Millstream wetlands, and over 500 species of moths."

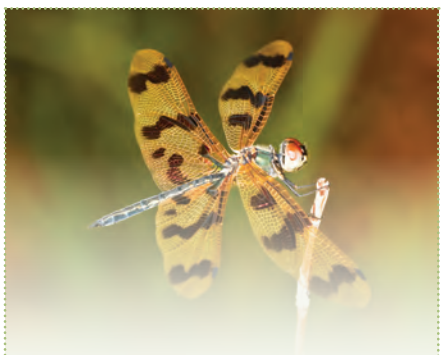
Wildlife is abundant in areas of the park close to water. Rock holes, riparian zones and river pools support a thriving ecosystem. On the plains, many species of animal adapted to aridity can be frequently seen, and the transition zone between moist and dry environments is particularly diverse.

Plants flower year-round following rain, but most spectacularly in winter (June to August) when blankets of tall mulla mulla (*Ptilotus exaltatus*) and Sturt's desert pea (*Swainsona formosa*) cover the landscape. The solid yellow flowers of wattles and sennas provide a dramatic contrast to the hard red earth and chocolate brown rocks. Plants more typical of the tropical north grow near permanent water pools; here forests of silver cadjeput and Millstream fan-palms (*Livistona alfredii*) can be seen.

The Millstream palm, with its fanned, grey-green leaves and smooth bark, is relict from the deep past when rainforest covered the Pilbara in past times with much higher rainfall. Twenty-two species of dragonfly and damselfly have been recorded in the Millstream wetlands, and over 500 species of moths.

Almost 100 reptile species and nearly 150 bird species call the park home. Resident mammals include the endangered northern quoll (*Dasyurus hallucatus*), little red antechinus or kaluta (*Dasykaluta rosamondae*) and the euro (*Osphranter robustus*). Many of the bird species are delightfully coloured and can be seen during the cooler hours of the day, especially near water, and reptiles are prolific. Lizards are seen frequently on rocks and trees; even large species such as the Pilbara olive python (*Liasis olivaceus barroni*) and bungarra or sand goanna (*Varanus gouldii*) make an appearance.

Introduced species such as date palms and cotton palms were once prolific at Millstream. They competed with native vegetation, blocked creek channels and encouraged wildfires. The majority have been removed and the area rehabilitated. Other weeds at Millstream include the Indian water fern (*Ceratopteris thalictroides*), hairy water lily (*Nymphaea pubescens*) and stinking passion flower (*Passiflora foetida*).



Right Graphic flutterer (*Rhyothemis graphiptera*).
Photo – Jiri Lochman

Do it yourself

Where is it? 120 kilometres south of Karratha or 1600 kilometres north of Perth.

Total size 238,497 hectares.

Things to do Swimming, walking, cycling, wildlife observation.

Must see Python Pool, Deep Reach, Mount Herbert, Warrungunha Trail, Red Roo Trail.

Facilities Visitor centre, campgrounds, toilets, camp kitchens, picnic tables, gas barbecues, walk trails.

Safety information Entry and camping fees apply in the park. All campsites must be booked online prior to visiting the park. Temperatures can be extreme, exceeding 50ºC from November to April. It is recommended you walk in the cooler months or first thing in the morning. Drink 1 litre of water per person per hour of walking.

Nearest Parks and Wildlife Service office Karratha District Office, 984 Woodbrook Road, Karratha (08) 9182 2000

MERMAID OF THE NINGALOO REEF

BOOK

Mermaid of the Ningaloo Reef by Chantelle Ciccotosto is a delightful children's book about a young girl discovering she has the power to make environmental change.

Mia travels to Ningaloo Reef with her family to swim with whale sharks, and while there she becomes 'Mermaid Mia' for the day and has to draw on her powers to help protect the area from environmental threats.

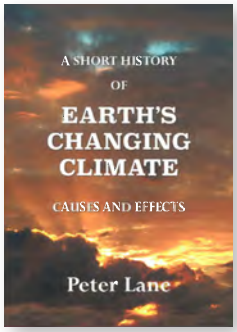
While the first part of the book is a traditional children's story, the last six pages provide guidance for parents, carers and educators about some of the threats facing Ningaloo Reef, some of the groups working hard to protect it and information about whale sharks.

Set in the beautiful Ningaloo Coast, which is inscribed on the UNESCO World Heritage List, the book is illustrated with vibrant, colourful underwater scenes featuring some of the popular marine flora and fauna the area is known for.

Mermaid of the Ningaloo Reef *is available online and in bookstores with RRP $15.95.*

A SHORT HISTORY OF EARTH'S CHANGING CLIMATE – CAUSES AND EFFECTS

BOOK



At just 146 pages in length, Margaret River-based author, researcher, former Shire councillor and petroleum geologist Peter Lane has covered a remarkable amount in this book.

A Short History of Earth's Changing Climate, published earlier this year, is about the causes and effects of changes to the planet's climate throughout history, and how they have shaped Planet Earth as we know it today and the evolution of species, including *Homo sapiens*.

Starting all the way back in the Hadeon Aeon—4.6 billion years ago—there is a lot of change covered, with more than 99 per cent of species to have lived on Earth now extinct; most due to changes in climate.

Peter Lane told *LANDSCOPE* magazine that his reason for writing the book was to explain the causes and effects of the many changes our climate has experienced so we can better understand and act on the changes we are now facing.

Here's hoping people take up the challenge!

A Short History of Earth's Changing Climate – Causes and Effects *is available online and in bookstores.*

MERLIN BIRD ID

APP

Merlin Bird ID is a fantastic, free bird ID app for all the times you don't want to carry around a heavy guidebook, which for a lot of people, let's face it, is most of the time.

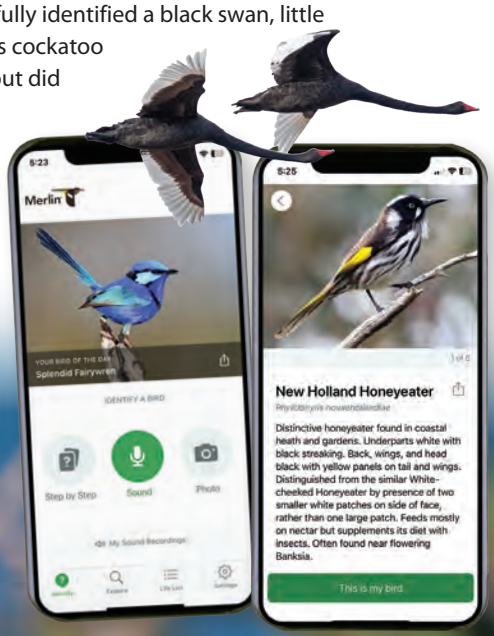
Once you've downloaded a 'bird pack' (I chose 'Australia: All'), you can browse birds that may be in your area at the time (based on your phone's location) and click through for more information.

You can also identify a specific bird you've seen by search, sound or image.

In search mode, you input a bird's size, colour and behaviour and are given a list of potential options. I described the New Holland honeyeater I saw out my office window (small, brown, in trees or bushes) and was given 19 possible birds, one of which was indeed a New Holland honeyeater—success!

The sound ID capability suggests birds based on a recording of birdsong, and photo mode identifies birds from (you guessed it) a photo. I successfully identified a black swan, little corella and Carnaby's cockatoo from photographs, but did not have any luck with sound identification mode.

You can download Merlin Bird ID *from the App Story and Google Play.*



Above right Black swans (*Cygnus atratus*).
Above White-winged fairy-wrens (*Malurus leucoptus*). *Photos – Mark Davidson/DBCA*

Lasting adventures

A history of *LANDSCOPE* Expeditions

by Hannah Beaney

As we celebrate the 40th anniversary of *LANDSCOPE* magazine, we look back at a groundbreaking program that saw members of the public invited to join conservation scientists in the field to see and participate in hands-on research activities. *LANDSCOPE* Expeditions ran from 1992 to 2009 and traversed the State, laying the foundation for some major conservation programs that still exist today.

From traversing the rugged landscape of the Kimberley, to uncovering rare flora and fauna in the south-west; *LANDSCOPE* Expeditions promised a share of adventure, discovery and camaraderie.

Starting in 1992 with a trip to the Gibson Desert, the idea for the expeditions was inspired by The University of Western Australia's Extension program led by Jean Paton (nee Collins) and Western Australian Naturalists' Club excursions, led by Kevin Coate and Kevin Kenneally, both of which conducted scientific research trips throughout Western Australia. As the program was designed to raise public awareness of plant and animal species, the eligibility requirements for the volunteers joining the expeditions were simple.

"The only qualifications needed are general good health, common sense, enthusiasm, an ability to adapt to other people, and a sense of humour," former *LANDSCOPE* managing editor, Ron Kawalilak said at the time.

Participants were members of the community, young and old, who would join expedition teams that consisted of departmental scientists and regional staff. On each trip, the expedition leaders were responsible for keeping an expedition diary and thoroughly documenting details—from scientific discoveries to personal anecdotes and humourous moments.

Flicking through these honest, authentic diary entries in modern times provides an insightful glimpse into the past. While useful to understand scientific discoveries, these diary entries have also captured the spirit of the expeditioners through the selection of memories, giving a relatable human element to the formulaic structure of science.

Averaging between five and ten expeditions per year, the location of the trips depended on scientific research priorities and public appeal. A full list of all the trips for the year ahead was detailed in an Expeditions Program, giving potential volunteers a snippet into each of the locations, the field work to be conducted and the cost and duration of the trip. A brief biography of the head scientists and expeditioners leaders was also included, giving expeditioners a chance to get to know the leadership.

PAVING THE WAY

While the *LANDSCOPE* Expeditions program has concluded, the legacy of research and scientific contribution expeditioners made continues to hold value. Several of these trips paved the way for established and continuing Parks and Wildlife initiatives, such as the conservation program Western Shield, which works to reduce introduced predators and protect local fauna (see 'Restoring the balance: 25 years of wildlife protection', *LANDSCOPE*, Spring 2021).

Laying the foundation for this program was the introduction of Project Eden in the 1990s. Project Eden is an initiative that aimed to reintroduce native species and remove all foxes and feral cats from part of the Shark Bay World Heritage Area. An expedition in 1998 saw participants recording data on both reintroduced species and the feral cat population. Project Eden is still going today, having inspired the Dirk Hartog Return to 1616 restoration project.

Citizen scientists are often limited by their resources and capabilities, which made these expeditions appealing to those who wanted to make a difference, but did not know where to start. The major attraction to volunteers was the diverse learning

Previous page
Inset Exploring Woolgorong Station.
Main Volunteers at a seabird breeding colony on Pelsaert Island, Houtman Abrolhos.
Photos – DBCA

Above Examining pitfall traps along the Canning Stock Route.
Photo – Graeme Liddelow

Above right The Durba Hills on the Canning Stock Route.
Photo – Wendy Thompson/DBCA

Opposite page
Insets (from top)
Bat Island, Kimberley expedition vessel.
Photo – Kevin Kenneally; Little corellas and pied cormorants at Lake Gregory.
Photo – Michael Coote/DBCA; Expedition member painting the landscape on the 2007 A brush with nature expedition.
Photo – Bill Muir; Photographing wildlife along the Canning Stock Route.
Photo – Andrew Spiers

Expeditions locations

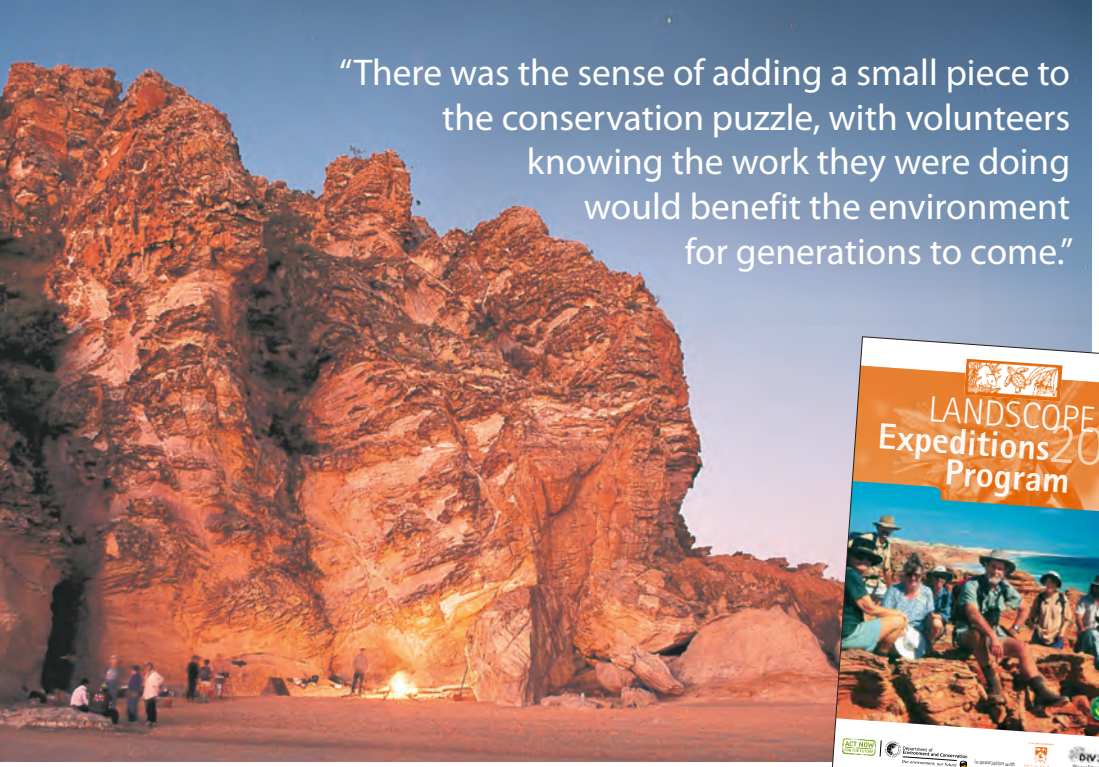
Bat Island, Kimberley Coast

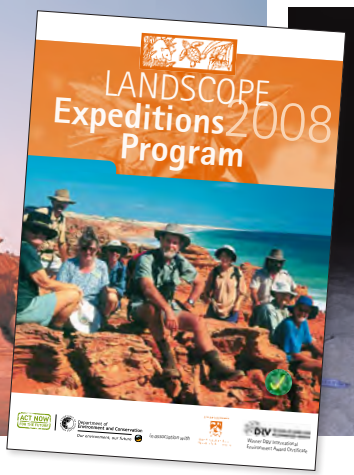
Lake Gregory

Capturing the art of the landscape

Canning Stock Route

Mitchell Plateau
Kimberley Coast
Buccaneer Archipelago
Osmond Range
Purnululu
Roebuck Bay
Eighty Mile Beach
Tanami Desert
Lake Gregory
Montebello Islands
Nullagine River
Gibson Desert
Barlee Range
Little Sandy Desert
Doolgunna
Shark Bay
Dirk Hartog Island
Lorna Glen
Houtman Abrolhos
Yalgoo
Mount Singleton
Great Victoria Desert
PERTH
Dundas Nature Reserve
Lake Magenta
Dunn Rock
Cape Arid





experience the expeditions offered, alongside knowledgeable scientists in the field. Many volunteers became repeat expeditioners, allowing them to hone their skills each time round.

HANDS-ON EXPERIENCE

Volunteers for the expeditions ranged from 13 to 81 years, and by the turn of the millennium in 2000, more than half of the volunteers had been repeat expeditioners. One woman even signed up for her seventh expedition at the age of 79.

There was the sense of adding a small piece to the conservation puzzle, with volunteers knowing the work they were doing would benefit the environment for generations to come.

Often, biological surveys were carried out in remote areas where minimal work had previously been conducted. This meant each survey provided a standard for which future observations could be compared. Biological surveys typically involve the recording of animal populations, flower patterns and other notable natural processes in the area.

Kevin Kenneally was the Scientific Coordinator of *LANDSCOPE* Expeditions and went on many of the trips himself. Discovering new things was always a highlight of a trip.

"So many new discoveries were added to science, it was one bit of excitement after another," Kevin said.

With many volunteers coming from city backgrounds, the trips also provided an escape to nature, away from the bustle and business of everyday life. While the expeditions were scheduled and involved manual work, they were also a way to connect back to the natural world. Hearing animal cries while at a remote camp or listening to birds at dawn and dusk allowed participants to feel far away from the urban demands of the city.

With tourism perpetually evolving, these expeditions also appealed to an audience interested in nature-based tourism experiences. They were an opportunity to explore some of the unique treasures found in WA, combined with an element of scientific philanthropy. There were instances of volunteers and scientists coming from overseas to be involved, many returning for multiple expeditions.

To add to the tourism marketing of the expeditions, all volunteers were given a *LANDSCOPE* Expeditions duffle bag,

Above Base camp for the 1994 turtle tagging expedition to Cape Dommett in the north Kimberley.
Photo – Tom Keating

Top right Expedition staff (left to right) Cheryl Tonts, Kevin Kenneally, and Jean Paton.

Above right Collecting data on turtles.
Photos – DBCA

Inset *LANDSCOPE* Expeditions program, 2008

Protecting native fauna: Western Shield initiative

Western Shield is a program working to reduce the impact of feral cats and foxes on Western Australia's threatened and native species. Since starting in 1996, the project now covers 3.8 million hectares of land across WA and operates through the laying of baits for predator control. The first initiative of the program was Operation Foxglove, which used 1080 baits to control foxes in the northern jarrah forest. It was not until nearly a decade later that a feral cat bait, known as Eradicat®, was developed to target feral cats. This program has seen population increase for a variety of native species, both through the reduction of invasive predators and through successful translocation of species into baited areas.

Foundations for restoration:
Dirk Hartog Return to 1616 project

Return to 1616 is a restoration project aiming to return Dirk Hartog Island to its ecological state prior to European influence. Named after the Dutch explorer, this island has had a varied history. In the 1860s it was used as a grazing ground for sheep and by the 1900s it was home to lighthouse keepers, who introduced goats as a food source (See 'Welcoming wallabies to Wirruwana', *LANDSCOPE*, spring 2018). Reduced vegetation from the sheep and goats, combined with predation from cats, meant only three small native animals remained in 2009. The first phase of the Return to 1616 project began in 2012, and set out to eradicate all feral cats, sheep and goats from the island (see 'De-stocking Dirk Hartog: Eradicating goats and sheep', *LANDSCOPE*, spring 2019). By the end of 2017, there were no more goats, sheep or cats on the island, paving the way for the start of phase two in 2018. Phase two is focused on translocating 13 species back onto the island, which started with the banded hare-wallaby (*Lagostrophus fasciatus*) and the rufous hare-wallaby (*Lagorchestes hirsutus*). By 2022, six species had been translocated to Dirk Hartog with more planned for the future.

RETURN TO 1616
DIRK HARTOG ISLAND NATIONAL PARK

thermal mug, stubby holder, lanyard and name badge. This merchandise standardised the luggage brought by each of the members while also serving as a valuable marketing opportunity.

However, perhaps the best marketing opportunity for the trips was not the merchandise, but rather the reputation for excellence the expeditions established. Volunteers went away from the trip full of freshly acquired knowledge and experiences, which they discussed with friends and family alike. Rather than a marketing program, the expeditions relied on news coverage garnered from the occasional journalist invited on an expedition. Word of mouth was often the best way to attract the attention of prospective volunteers.

Contributing to this reputation for excellence was the unblemished safety record of the expeditions. Throughout its entirety, there were no significant incidents or medical emergencies. Kevin Kenneally attributed this pristine track record to thorough training and planning by expedition organisers and project leaders, such as alerting the Royal Flying Doctor Service of the expedition's route and the number of people involved.

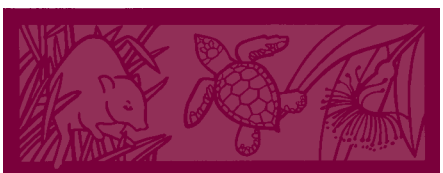
While the expeditions were pitched at a cost that allowed the department to break even, any left-over funds went directly to a trust fund. This could only be used towards future research and conservation projects. By the year 2000, expeditioners had contributed three-quarters of a million dollars towards Western Australian wildlife and conservation research, which only grew throughout the remaining years.

Leaving behind a lasting impression of discovery, determination and scientific discipline, the *LANDSCOPE* expeditions embodied the true potential that comes from a collaboration of scientists and everyday people wanting to give back to nature.

Top left Expeditioners work side-by-side with scientists in the field.
Photo – DBCA

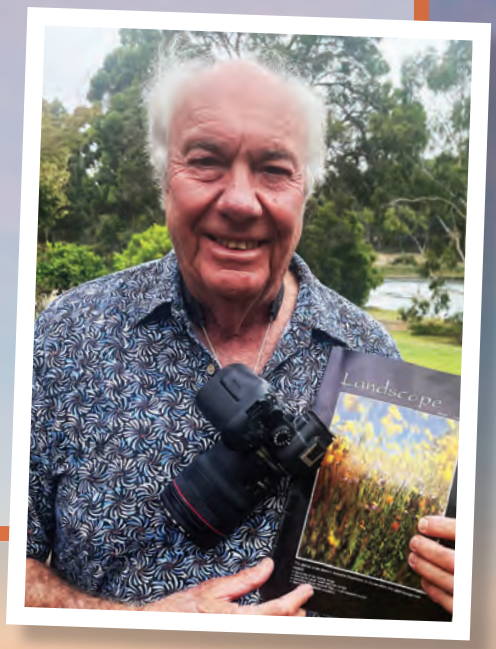
Above left Examining entomological specimens along the Canning Stock Route.
Photo – Andrew Spiers

Above Expedition members on the Montebello Islands.
Photo – Kevin Coate



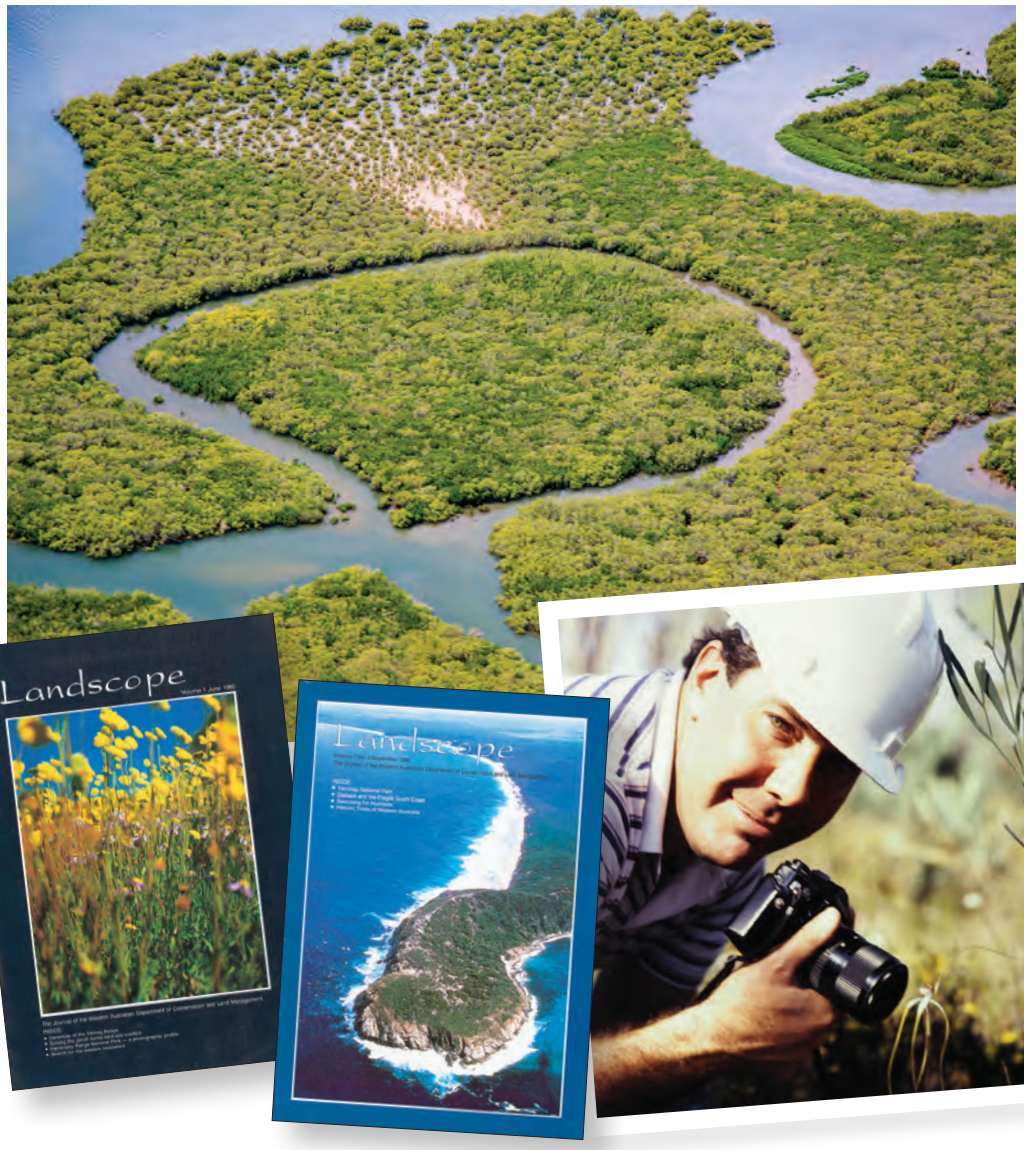
Hannah Beaney is an undergraduate student at Curtin University studying a Bachelor of Communications.

40 years contributing to LANDSCOPE



Since the age of nine, Cliff Winfield has been capturing images of the natural world around him. With a keen eye and some amazing mentors, he has developed a good reputation in Western Australia's nature photography community and his stunning images have featured in almost every edition of *LANDSCOPE* magazine since its inception in 1985.

words and photos by Cliff Winfield



For as long as I can remember I have been fascinated by the natural world around me. So, interpreting nature and landscape through photography just seems to come naturally. I'm not a gear junkie; I just see cameras as tools to capture what I'm seeing and feeling about what is in front of me.

My sister gave me my first camera when I was nine, an Agfa box brownie equivalent. We lived on an orchard in Parkerville in the Perth Hills on the edge of John Forrest National Park, surrounded by jarrah bush and granite outcrops. I'd walk to school through the bush.

In the early 1960s, a young schoolteacher and his family bought the house in the bush block over the road—Eric McCrum OAM, was ABC radio's 'bird man', known for his incredible knowledge of birds and his ability to accurately vocalise bird sounds.

I would spend hours in the bush with Eric, absorbing his bushcraft, wildlife observation, and the science of photography with his ground-breaking 35-millimetre Praktica; one of the very first single lens reflex (SLR) cameras.

I was hooked. When I was 14, I worked over Christmas school holidays in Albert's Bookshop in Perth to earn money to buy my own SLR. Thus began a life of exploring my relationship with nature and interpreting it through a lens.

In another amazing photographic coincidence, my girlfriend's family were great friends with Richard Woldendorp who became arguably Australia's greatest visual interpreter of the Australian landscape. Richard and I became lifelong friends, and I absorbed the art of landscape photography from him.

Previous page
Main Broome sandstone on the shores of Cape Leveque.
Inset right Cliff today with his first cover from 1985.

Above Mangroves seen from the air are stunning works of art. These are on the Pilbara coast.

Insets above (from left) *LANDSCOPE* covers featuring Cliff's photos, Cliff in the early 1980s.

BLOSSOMING CAREER

I left home aged 17 and took a 'gap decade', travelling north to Derby, and then on to Broome to work in the cattle industry. When I returned home during the wet season, my storytelling 'slide show' photography blossomed, showing the largely then-unseen Kimberley landscape, people and cultures.

I entered competitions and won prizes for my photos. However, I never pursued photography as a career, rather as a means of telling stories. I then studied Applied Science-Biology.

My studies led me to get a job with the Western Australian Forests Department as a seed collector. I travelled all over the State collecting native plant seed for nurseries. Of course, I took my camera and told more WA landscape stories through slide shows.

Eventually this caught the eye of the department's Forest Focus magazine editor, and I was invited to contribute on a regular basis. This took me out of the seed store into a role in community liaison.

LANDSCOPE BEGINNINGS

When the DBCA predecessor, Department of Conservation and Land Management (CALM) was formed, amalgamating (somewhat controversially initially) the Forests Department, the wildlife arm of Department of Fisheries and Wildlife, and the National Parks

Boab trees are an endless fascination for me and emblematic of my 60-year connection to the Kimberley. These are foregrounding Cockburn Range, proposed national park.

"...my storytelling 'slide show' photography blossomed, showing the largely then-unseen Kimberley landscape, people and cultures."

Top The aptly named graceful honeymyrtle (*Melaleuca radula*) at Lesmurdie Falls in Mundy Regional Park.

Top right Tannin-stained creek flowing through the dunes at Conspicious Cliff.

Above right Boabs in the Kimberley.

Right Punurrunha (Mount Bruce), Karijini National Park.

Inset above Cliff in Benger Swamp 1986, taking pictures of the birds for the article on the release of the management plant.

Punurrunha (Mount Bruce) in Karijini National Park featured in the very first edition of LANDSCOPE. With an impending monsoon storm brewing, this image was taken from the road to Hamersley Gorge.

The eerie black skeleton shows the fire defence system of the marri – thick fibrous bark insulating it, whilst the karri is shedding its singed outer thinner bark revealing the new pink bark beneath

Authority, I was on the first editorial committee of the proposed new corporate magazine. I was even involved in the debate about the name—*LANDSCOPE*. Thus, I became a foundation contributor to the magazine including its first few cover photos and photo essays.

My assigned mission was to "bring them together". What a mission! What a privilege! I was given license to travel the State to gather stories and images about management of national parks, forests and nature conservation research. I got to go on expeditions with the locals all over the State (see '*Lasting adventures*' on page 12). I got to see a problem crocodile moved in the lower Ord and the first national park signs put up in Purnululu.

I became interested in writing and started studying it at university. My career morphed into interpretative signage—combining writing and photography—mostly visitor introductions to recreation sites, complemented by factual, stimulating explanatory information.

That shift took me to karri country as Regional Leader of Visitor Services in Manjimup for 15 years, and finally for three years in the Pilbara Region in national park management.

A DIFFERENT LIGHT

I retired from the department in 2009 to return to our farm at Smith Brook amongst the karri forest. I continue to visit national parks and nature reserves in remote places all over the State and so remain an invited contributor to *LANDSCOPE*.

I confess I was a little tardy moving from film to digital and I'm a bit of a purist. I still don't do creative editing apart from minor colour correction. New cameras are smarter, lighter, comparatively cheaper, and the image quality is sensational. I get most satisfaction these days from producing abstract images of nature and landscape, especially aerials of deserts and coasts.

I meet new people in wild places and introduce myself and get "I know your name—where would that be from?" and often it's traced back to *LANDSCOPE*. It gives me a great sense of satisfaction and pride that through the images I've created of the environment in Western Australia and its conservation over the forty years, my own legacy is worthy.

These days I look forward to receiving the texts and image requests for the next edition of *LANDSCOPE*. I see it as a challenge to interpret what the author is saying so that readers get it too.

Above left This image was taken in December 2021 after a bushfire Boranup forest in Leeuwin-Naturaliste National Park.

Top A sand crab at 80 Mile Beach reflected in dusk light on the sand of an outgoing tide.

Above Pilbara mulga ants collect phyllodes from mulga trees to line the entrances to their nest. The volcano shape may be a preventive measure against flooding in thunderstorms.

Below From the air, the Wheatbelt salt lakes have the same artistic fascination as the mangroves of the north. This one is near Lake Moore.

Cliff Winfield commenced work as a seed collector with the Forests Department in 1977 and retired as Acting Regional Manager, Pilbara DEC (now DBCA) in 2009. He lives on his orchard and timber plantation at Smith Brook in the karri country. He is actively involved in local government and has served on several government advisory committees and boards. He tries to do at least a couple of photo field trips each year to different parts of the state. He can be contacted at winfield06@iinet.net.au

SO MANY TURTLES, SO LITTLE TIME

In memory of Dr Anton D Tucker 1957–2025

Dr Tony Tucker came from a generation of scientists that pioneered conservation research. Over time, his dedicated and thorough brand of science made him a leader and a mentor amongst his fellow scientists. Tony's discoveries and contributions about freshwater crocodiles, freshwater turtles and marine turtles are globally recognised, and have driven positive conservation outcomes for freshwater and marine reptiles across the world.

by Clodagh Guildea

On a summer day in 1957, Anton (Tony) Tucker was born in leafy Washington County, Georgia USA. An adventurous, inquisitive and intelligent child and a naturalist by nature, Tony would explore the woods near his home looking for box turtles and established his first 'capture-mark-recapture' study using his mother's nail polish before the age of 10. This sparked the beginning of what would be Tony's life-long passion—researching and monitoring freshwater and marine reptiles all around the world.

Tony came from a generation of scientists that pioneered conservation research, where many of the world's largest long-term population datasets originated. His dedicated and thorough brand of science was crafted by experiences working with renowned ecologists.

AUSTRALIA-BOUND

In 1991, Tony and his partner Nancy FitzSimmons, a conservation geneticist, travelled to Australia where they worked alongside Dr Colin Limpus tracking loggerhead turtles (*Caretta caretta*) using VHF technology at Mon Repos turtle rockery in Queensland—a revolutionary tracking technology at the time—before Tony and Nancy both began their PhDs.

Tony worked as a freshwater turtle biologist for two years after completing his PhD, which would influence future decisions about water management in south-east Queensland.

From 1999 onwards, Tony and Nancy have spent several weeks each year paddling out in a canoe and snorkelling through creeks in remote areas of the Kimberley, conducting capture-mark-release studies of freshwater turtles that were previously understudied.

This mostly self-funded research resulted in a dataset that significantly contributed to conservation management in the region and is a legacy of Tony's dedication to freshwater turtle research. So great is Tony's legacy, that a newly discovered species was named after him in 2009—the *Camallanus tuckeri*—an intestinal parasite of side-necked turtle species in the Kimberley!

Previous page
Main Flatback turtle on Eighty Mile Beach.
Photo – Heather Bewsick
Inset Dr Tony Tucker, Kensington 2023
Photo – Clodagh Guildea/DBCA

Top Applying satellite trackers to loggerhead turtles.
Photo – DBCA

Above left and right Tony collecting turtle genetic samples and bones in Camden Sound, 2014 (left) and Cassini Island, 2015 (right).
Photo – Blair Bentley

Inset left Weighing turtles on the shore.
Photo – DBCA

SHARING KNOWLEDGE

In 2013, Tony began his role as Senior Research Scientist with the North West Shelf Flatback Turtle Conservation Program at the then Department of Parks and Wildlife. The flatback turtle (*Natator depressus*) was an exciting species for him to work on, given how little was known about their biology, behaviour and populations.

Tony's background in stable isotope analysis was vital to the team, enabling them to understand flatback turtle diets without having to catch feeding flatbacks in the wild—a feat accomplished a few years later in Yawuru Nagulagun Roebuck Bay Marine Park with Tony at the helm.

Throughout his career at the Department of Biodiversity, Conservation

Listen to scientists talk about turtles

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

and Attractions and its predecessor agencies, Tony played an integral role in discovering the distribution and density of flatback turtle nesting sites across the Kimberley through the Western Australian Marine Science Institute (WAMSI) Kimberley Turtle Project, which involved many weeks camping at remote beaches 'ground truthing' aerial surveys with Traditional Owners.

At Eco Beach and Eighty Mile Beach, Tony regularly trained and worked with Aboriginal rangers during the nesting seasons, carrying out tagging and satellite tracking programs. Tony loved exchanging knowledge with Aboriginal rangers and delighted in learning more about Aboriginal culture and history wherever he travelled.

A LASTING LEGACY

Throughout his career, Dr Tony Tucker became renowned in his own right, publishing more than 150 peer-reviewed scientific papers and book chapters about freshwater crocodiles, freshwater turtles and marine turtles. His expertise spanned many ground-breaking concepts, where he collaborated on projects including methods to age long-lived reptiles through skeletochronology (bone growth rings) and the calculation of epigenetic clocks, revolutionary VHF radio and satellite tracking techniques, applications of stable isotope analysis, and determining population genetics and dynamics of several species.

Tony was an invaluable mentor to the next generation of researchers, an expert reviewer for more than 50 scientific journals, and a dedicated member of many professional groups including the International Union of Conservation of Nature (IUCN) Sea Turtle Specialist Group and International Sea Turtle Society.

Tony's discoveries and contributions are globally recognised and have driven positive conservation outcomes for marine and freshwater reptiles across the world. Tony would famously say "so many turtles, so little time", but he didn't waste a minute.

Top left Tony applying a satellite tracking device to a flatback turtle with Karajarri and Nyagumarta Warrarn IPA Rangers at Eighty Mile Beach 2015.
Photo – Erina Young

Top right Tony Tucker with a foraging flatback turtle caught in Yawuru Nagulagun Roebuck Bay Marine Park, 2019.
Photo – Jenna Hounslow

Above left Flatback turtle hatchling on Barrow Island.
Photo – C Rings

Inset above Tony presenting his skeletochronolgy research.
Photo – Tristan Simpson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DR TONY TUCKER

1976–1990 USA

Lifeguard at Jekyll Island in Georgia, where he became interested in nesting loggerhead turtles on the beaches.

Volunteer in a turtle monitoring program, Little Cumberland Island.

Undergraduate degree in Biology, Georgia Southern University.

Monitoring feral animals in Haiti.

Masters degree in Zoology, University of Georgia, where he studied leatherback turtles at Culebra in Puerto Rico, and worked on a leatherback project in French Guinea.

Herpetology research assistant at Savannah River Ecology Laboratory studying diamondback terrapin freshwater turtles.

1991–2001 Australia

Tracking loggerhead turtles, Queensland Department of Environment and Heritage.

Doctor of Philosophy (PhD) in Zoology, University of Queensland, studying freshwater crocodiles in North Queensland.

Senior Conservation Officer studying freshwater turtles, Queensland Department of Environment and Heritage. This work has since influenced weir development and freshwater management.

Earthwatch program founder with his partner Nancy on Australian freshwater turtles.

Statistician and part-time lecturer, University of Canberra.

2002–2003 Western Pacific Ocean

US Geological Survey, Guam. Studying the impacts and management of the invasive brown tree snake.

2004–2013 USA

Senior Scientist at Mote Marine Laboratory and Aquarium, Florida. He worked on several species of marine turtles and initiated many important long-term projects that continue today.

2013–2025 Australia

Senior Research Scientist for the North West Shelf Flatback Turtle Conservation Program, Department of Biodiversity, Conservation and Attractions. He worked across the state with industry, university, government and Indigenous partners to research flatback turtle populations, biology and behaviour.

Mentors and mates

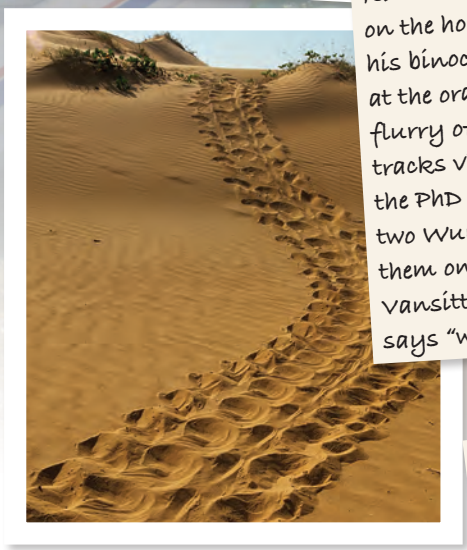
Tony worked with Dr Jim Richardson monitoring loggerhead turtles on Little Cumberland Island in Georgia as a young adult in the 1970s. As a postgraduate master's student, he was supervised by Dr Whit Gibbons, conducting research on leatherback turtles and diamondback terrapins at the Savannah River Ecology Laboratory. In Australia, fellow crocodile-wrangler and turtle enthusiast Dr Colin Limpus co-supervised Tony's Phd with Hamish McCallum at the University of Queensland, becoming a lifelong mentor and friend. Tony's expertise was valued by Steve Irwin, with whom he collaborated at Australia Zoo in the 1990s.

Above Colin Limpus (left), Tony Tucker (centre), Mark Read (right) weighing a freshwater crocodile after being captured in the Lynd River as part of Tony's PhD research in Northern Queensland, 1993.
Photo – Keith Springfield

Left from top
1) Tony Tucker during a diamondback terrapin survey in Kiawah Island.
2) Tony Tucker (centre) during a diamondback terrapin survey in Kiawah Island, circa 1989.
Photo – David M. Barron/Oxygen Group Photography
3) Tracking loggerhead turtles using VHF technology in Queensland, 1992.
4) Tony holding a freshwater crocodile with Colin Limpus and research assistants, 1993.
Photos – Colin Limpus
5) Tony Tucker with a Kemp's ridley turtle while working at the Mote Marine Laboratory and Aquarium.
6) Tony Tucker with a juvenile flatback turtle, 2015.
Photo – Corrine Severin/DBCA

TALES FROM THE FIELD

The sea plane flies through the bright blue Kimberley sky, large fluffy clouds forming on the horizon. In the cockpit, Tony holds his binoculars to his eyes and squints down at the orange beach passing below. He feels a flurry of excitement as he spies several turtle tracks visible in the sand. He turns to Blair, the PhD student he is supervising, and the two Wunambal Gaambera rangers assisting them on this ground truthing expedition in Vansittart Bay. With a glint in his eye, he says "we've got turtles."



Feeling the night air, hot and humid against his skin, Tony holds his torch higher, scanning the surface of the water for the glow of eyes watching from below. Although clear, the constant sound and movement of the river keep Tony's adrenaline racing as he wades through waist-deep water, on high alert and ready to jump on the next freshwater crocodile with Dr Colin Limpus and his team of keen undergraduate students.

Turning his head to survey the landscape, all he sees are red cliffs, golden sand and turquoise water. The sounds of waves lapping, seabirds screeching and brush rustling fill his ears. The sides of his mouth rise in a small smile, barely visible underneath his beard. This is where he loves to be, doing what he loves to do—remote fieldwork in the rugged Kimberley, making new discoveries about marine turtles. For Tony Tucker, this is what it means to live.

The weight of the small swiss army knife is felt in his pocket as Tony walks through the dunes. He knows there is the body of a deceased flatback turtle somewhere around here. He smells it before he sees it, the shell and bones partially covered in sand underneath a scraggly bush. Carefully, he draws his knife and scrapes some of the skin from the exposed flipper, collecting the sample for genetic analysis. He digs in the sand and extracts the humerus bone, putting it in a plastic zip-lock bag. "Another bone for your growing collection, Tony?" laughs Scott when Tony is finished, knowing he would never miss an opportunity to collect more bones for his turtle ageing skeletochronology research. Tony smirks back and gives Scott a quick nod.

Main Tony Tucker standing on a beach in the remote Kimberley after disembarking a float plane, 2015.

Inset top Tony counting flatback turtle eggs, 2015.
Photos – Blair Bentley

Inset above Flatback turtle tracks.
Photo – Jiri Lochman

Below Loggerhead turtle.
Photo – DBCA

Clodagh Guildea *is* a Science Communication and Education Officer for DBCA's North West Shelf Flatback Turtle Conservation Program. She can be contacted at clodagh.guildea@dbca.wa.gov.au or (08) 9219 9757.

The author would like to acknowledge the generous contributions and shared memories of Nancy FitzSimmons, Scott Whiting, Sabrina Fossette, Blair Bentley, Mat Vanderklift, Colin Limpus, Mark Hamann, Jenna Hounslow, Erina Young, Tristan Simpson, Natasha Samuelraj and James Gee. Thank you for sharing your photographs and heartfelt, funny and honest stories of Tony.

THE HUMBLE Hakea

While fellow Proteaceae family members Grevillea and Banksia are well known and popular, the humble Hakea with its 180 species (and subspecies) holds its own as an impressive genus in this large family.

by Leah Seabourne

For a lesser-known member of the Proteaceae family, there are certainly a large number of species of Hakea. More than 180 species (and subspecies), in fact, across Australia, in every state and territory. The Proteaceae family also includes Grevillea, Banksia, Petrophile, Isopogon, Adenanthos and Conospermum.

Aboriginal peoples know the beauty and uses of Hakea plants and flowers. The strong wood of *Hakea arborescens* can be used to make spears and boomerangs, and water can be extracted from the roots of *Hakea leucoptera* when water is scarce.

Several species of Hakea are popular bush tucker plants because the flowers are laden with nectar. Noongar peoples in the south-west of Australia roasted the woody fruits of *Hakea prostrata* in hot ashes and ate the seeds.

The genus Hakea is named after Baron Christian Ludwig von Hake (1745–1818), a German patron of botany. The first collections of Hakea by the scientific community were made by Joseph Banks and Daniel Solander in 1770, with the genus Hakea formally described in 1797 by Schrader and Wendland.

DIVERSE HAKEA

Hakeas are endemic to Australia and 128 species occur in Western Australia, from *Hakea chordophylla* in the Kimberley region in the north, to *Hakea ruscifolia* in the south-west.

It is an extremely diverse genus, from low spreading shrubs to small trees. Hakeas have flowers that look very similar to Grevilleas but can be differentiated by their persistent woody fruits.

Fruits vary from large, round cricket-ball-sized, as seen in *Hakea platysperma*, to the small, pointed fruit of *Hakea smilacifolia*. Many fruits have a beak and/or horns, which can be helpful in identification.

While many Hakeas have thick pungent (sharp) foliage, the leaves vary considerably in form and size, from terete leaves seen in *Hakea adnata* to large broad amplexicaul (stem-clasping) leaves with undulating prickly toothed margins seen in *Hakea amplexicaulis*. Perhaps the most spectacular foliage is seen in *Hakea victoria*, which has very large, multi-coloured leaves with distinct venation and prickly undulating margins.

Another species, *Hakea trifurcata*, has two completely different leaf forms on the

Hakea petiolaris

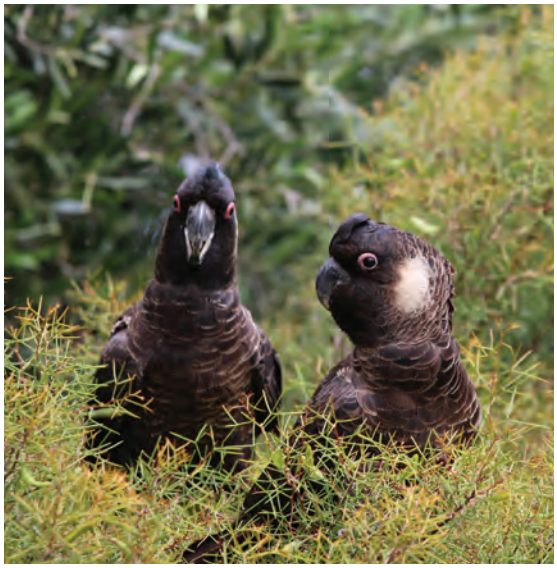
Common name Sea urchin Hakea
Height and habit Erect shrub to 2m or tree to 9m (depending on subsp.)
Flower colour Pink and cream, globular cluster
Foliage Grey-green spathulate to narrowly elliptic, with entire margins
Soil type Loam, clay or gravel on granite
Flowers March to July
Unique feature Stunning globular flowers resembling a Sea-urchin
Natural distribution From the Perth Hills east to Dragon Rocks Nature Reserve near Hyden

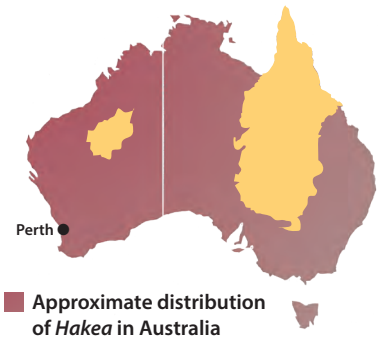
Previous page
Stunning globular inflorescences of *Hakea laurina*.
Photo – Sallyanne Cousans

Above left Potter wasp (*Eumeninae*) on *Hakea ruscifolia*.
Photo – Marie Lochman

Above Cricket-ball-sized fruit of *Hakea platysperma*.

Left *Hakea petiolaris*.
Photos – Rachel Walmsley





Approximate distribution of *Hakea* in Australia

Hakea bucculenta

Common name Red pokers
Height and habit Up to 4.5m, rounded bushy shrub
Flower colour Red, elongated raceme (spike)
Foliage Narrow linear leaves
Soil type Loam or clayey sand
Flowers August to September
Unique feature Stunning large red inflorescences
Natural distribution From just south of Denham in the north to Geraldton in the south

Top left Carnaby's cockatoos (*Zanda latirostris*) on *Hakea trifurcata*.
Photo – Rachel Walmsley

Above The first collection of Hakea by the scientific community was made by Banks and Solander in 1770.
Photo – WA Herbarium

Inset above right Magnificent red inflorescences of *Hakea bucculenta*.
Photo – Dave Blumer

Right The vulnerable *Hakea megalosperma*.
Photo – Steve Hopper

Hakeas under threat

There are two Hakeas listed as threatened under the *Biodiversity Conservation Act 2016* (BC Act)—*Hakea aculeata* (EN - endangered) and *Hakea megalosperma* (VU - vulnerable).

In addition to this, there are 12 species listed as Priority 1–3 species by the Department of Biodiversity, Conservation and Attractions, which are species that may be threatened, but they do not meet the criteria for listing under the BC Act because of insufficient survey and a lack of data. These are:

- *Hakea acuminata*
- *Hakea brachyptera*
- *Hakea chromatropa*
- *Hakea cygnus* subsp. *needlei*
- *Hakea lasiocarpha*
- *Hakea longiflora*
- *Hakea oldfieldii*
- *Hakea oligoneura*
- *Hakea pendens*
- *Hakea rigida*
- *Hakea scoparia* subsp. *trycherica* and
- *Hakea sp.* Great Victoria Desert (L. Cockram LAC 139).

"Hakea flowers produce large quantities of nectar, providing a valuable source of food to nectar feeding birds, such as honeyeater."

same plant. The first type is terete with a sharp tip, while the second type is wide, short and oblong shaped. The second type mimic the shape of the fruit, acting as a decoy to seed predators.

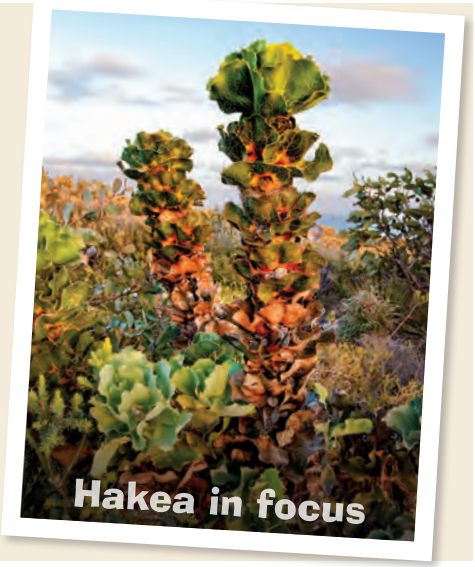
The bark of most Hakeas is smooth, however some of the northern species, such as in *Hakea lorea*, has thick corky bark, which provides insulation from heat, enabling this species to withstand fire, re-shooting from epicormic buds in the trunk.

GARDEN FRIENDLY

Planting some stunning native Hakea species in your garden provides habitat and foraging resources for a variety of species. Hakea flowers produce large

Hakea victoria

Common name Royal hakea
Height and habit Up to 3m, with a columnar habit
Flower colour Cream, partially hidden by foliage in the leaf axils
Foliage Large, broad and concave with leathery texture. Prickly-toothed undulating margins
Soil type Sand over granite or limestone
Flowers July to October
Unique feature Extremely large leaves change colour from green to yellow to orange to red
Natural distribution South coast of WA, particularly common in Fitzgerald River National Park



quantities of nectar, providing a valuable source of food to nectar-feeding birds, such as honeyeaters, and insects.

Insects provide important pollinator services to smaller-flowered species, whereas some small mammals, such as the pygmy possum, are thought to pollinate some of the larger flowered species. Black cockatoos are also known to forage on woody Hakea fruits, targeting the seeds and the larvae of wood-boring insects, as seen in *Hakea prostrata*. Hakeas are an important food source for the endangered Carnaby's cockatoo (*Zanda latirostris*) in particular.

Hakea's spectacular flowers are predominately white, cream, yellow, pink or red. However, there are exceptions, with *Hakea lehmanniana* being a very unusual purply-blue colour.

While Hakea inflorescences (group of flowers) all arise from the buds in the axils of leaves, they appear in three main configurations—a spike (an elongated raceme) like in *Hakea francisiana*, a globular cluster like in *Hakea petiolaris* or in small clusters in the leaf axils like in *Hakea erecta*.

The individual flowers of Hakeas have a perianth—the non-reproductive part of the flower—where the calyx (sepals) and corolla (petals) have merged to form a curved tube which sometimes splits open as the flower develops, the style terminates in a pollen presenter, which is an important diagnostic feature.

Kings Park and the Western Australian Botanic Garden have a range of beautiful Hakeas within their living collections, with approximately 100 different species growing throughout the gardens and bushland.

Hakeas flower mostly in winter and spring, but since Hakea fruit is as intriguing as the flowers, any time of the year is a good time to visit the gardens.

Kings Park Favourites

The Kings Park Favourites are a selection of native plant species that have been selected by horticulturist experts at Kings Park as being particularly hardy and ornamental.

Four Hakeas are included in this group—*Hakea francisiana*, *Hakea invaginata*, *Hakea laurina* and *Hakea multilineata*. Consider adding these gorgeous species to your garden so you can enjoy their spectacular displays and their resilience over many years.

Kings Park Favourites will also provide positive environmental benefits such as habitat and food for a variety of urban fauna including beneficial insects and native birds, making them an excellent choice for wildlife friendly gardens. Once established these plants will not require extensive fertilisation or watering.

Top left Honey possum (*Tarsipes rostratus*) on *Hakea victoria*.
Photo – Janine Guenther

Inset above left Colourful foliage of the extraordinary *Hakea victoria*.
Photo – Sallyanne Cousans

Above *Hakea francisiana*.
Photo – Eddy Wajon/Sallyanne Cousans Photography

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

Taxonomic shock in frogs

A new taxonomic revision of Australasian frogs means well-known 'tree frog' names belonging to the *Litoria* genus have been changed. These frogs, also known as pelodryadids, belong to the family Pelodryadidae (formerly part of a much larger Hylidae).

In an effort led by Stephen Donnellan (South Australian Museum), Stephen Richards (South Australian Museum), Michael Mahony (University of Newcastle) and others, *Litoria*, and two other related genera—*Cyclorana* (arid and tropical burrowing frogs) and *Nyctimystes* (north-eastern Australian 'lacelids')—have been revised.

A high-powered genetic approach rigorously integrated these results with the frogs' shape, colour and sound to arrive at a much more informative taxonomy. Even tadpoles were included! The revision also included pelodryadids from Indonesia, New Guinea and neighbouring regions.

The resulting taxonomic revision that has been published in the *Zoological Journal of the Linnaean Society*, describes or redescribes 33 newly recognised genera within the former *Litoria*. *Cyclorana* and *Nyctimystes* are also supported, and the latter redefined. Many of the 'new' names are resurrections of older names from the 19th century, all the way to the 1980s.

The south-west's beloved motorbike and spotted-thighed frogs receive the relatively old name of *Ranoidea* ("*Rana-like*", based on similar-looking frogs in Europe and North America): *Ranoidea moorei* and *R. cyclorhyncha* (although the two may actually be just one species).

The other common south-western species, the slender tree frog, becomes *Coggerdonia adelaidensis*.

The charismatic Kimberley green tree frogs will take the older name of *Pelodryas*: *P. caerulea*, *P. cavernicola* and *P. splendida*. The gracile grass frogs, with their ratchet-like calls, will be *Carichyla bicolor*, which is a brand new name. More obscure species, like the diminutive rockhole and buzzing frogs, will now be classified under *Mahonobatrachus*, while the laughing tree frog will have a new genus and species name: *Pengilleyia ridibunda* (formerly *Litoria rothii*, newly named last year). The tropical and arid little red tree frogs will now be *Coleeneremia rubella* and *C. larisonans* (a newly described species), respectively.

The original *Litoria* are the rock and rocket frogs—a diverse group of eight species in the Kimberley. The distinctive *Cyclorana* also stays the same.

Ultimately, genus-level taxonomy aims to accurately reflect evolutionary relationships and group similar species under a single name. *Litoria's* massive size and diversity may explain why such a comprehensive revision was so long in the making. Now, with state-of-the-art genetics and all the available information on appearance and calls, we can benefit from having a robust, stable and informative generic classification for our amazing climbing, burrowing and leaping pelodryadid frogs for years to come.

Rather than causing 'taxonomic shock' by making changes to generic names, taxonomists aim to fine-tune the names of animals and plants so that there is a greater appreciation for the true diversity within groups. This, in turn, makes it easier for everyone to celebrate the ecological and evolutionary marvels of our wonderful native fauna and flora.

Above Motorbike frog (*Ranoidea moorei*). *Photo – Jiri Lochman*

SEAWEEK AT PERTH ZOO

Students from John Curtin College of the Arts visited Perth Zoo during SeaWeek. Jasmine Browning and her friends heard from scientists and zoologists about the issues affecting WA's marine environment and wildlife.

by Jasmine Browning

On 5 March 2025, I attended an event for SeaWeek at Perth Zoo with my school's Roots and Shoots Club. Prior to the event, I hadn't heard of SeaWeek, but I soon found out that it is a national campaign to bring awareness and education about marine environments to all Australians. The event brought both to my attention; I was more aware of the issues that face our seas and oceans, and I learned a lot more about the organisms that live in them.

The event was split into four parts, starting with an introductory talk by Dr Thomas Holmes, who is the leader of the Marine Science Program at the Department of Biodiversity, Conservation, and Attractions (DBCA).

In this talk, we learned that there are 24 marine parks, management areas, and nature reserves in Western Australia, making up about 50 per cent of our waters! There are different levels of restrictions in these marine parks, each helping to protect these ecosystems and allow different types of use for people.

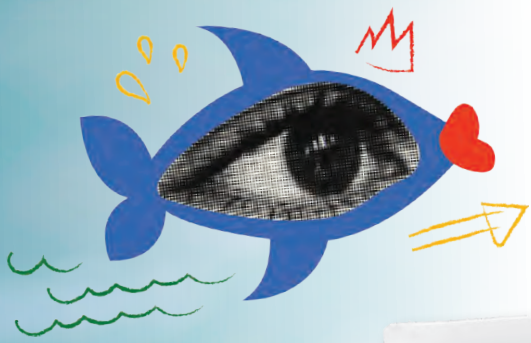
The next activity was a panel with Research Scientist Dr Molly Moustaka and Technical Officer Daisy Church, who both work at DBCA. It was a very relaxed and open atmosphere, and many questions were asked about what marine biologists and researchers do for work, their field experiences, and the pathways you can take to enter these careers.

TURNING UP THE HEAT

DBCA Science Communication and Education Officer Clodagh Guildea presented the next workshop, which was about flatback turtles, a species that is endemic to Australia. We walked to the crocodile enclosure where we learned that all reptiles, including turtles, are ectotherms, and use heat in the environment to regulate their body temperature.

Through an interactive activity, we explored how the temperature of the sand in a turtle nest influences the sex of the turtle hatchlings when they are incubating in the egg.

A few of us received printed out pie graphs expressing the ratio of males to female in a clutch of eggs at different sand temperatures, which we placed on a graph on the floor.



Opposite page
Main Little penguin (*Eudyptula minor*).
Photo – Marco Taliani /Adobe Stock
Inset Students at Perth Zoo.
Photo – Peta Scorer

Inset photos – Miles Brotherson/DBCA

DBCA's Clodagh Guildea presented to the students.

Students doing an activity exploring the ratio of males to females in egg clutches.

Learning about turtles.

DBCA's Tom Holmes talks to the students.

Students engaged in a workshop.

Top Flatback turtle hatchling making its way towards the ocean.
Photo – C. Rings

Inset photos – Miles Brotherson/DBCA

It really helped us visualise the relationship, and we could see how sensitive the hatchlings are to small temperature changes (see 'The heat is on: flatbacks and a changing climate' *LANDSCOPE* winter 2021). Across WA's Pilbara beaches, the average sand temperature is 30°C, and these beaches produce around half male and half female hatchlings. However, an increase of just one degree could mean mostly females are produced, and if nest temperatures become higher than 32°C, the hatchlings will experience heat stress and could die.

We discussed ways to manage the impacts of increasing temperatures on turtles. Suggestions included sprinkling water on the sand and installing shade-sails on beaches.

A more labour-intensive option is to translocate the eggs and incubate them at controlled temperatures, so the ratio between male and female hatchlings would be sustainable. Some of these solutions might be needed at Pilbara beaches, where 30 per cent are at high risk of being too hot by the end of this century.

I wasn't aware of how turtles are impacted by climate change in WA before this workshop, and it was very compelling to learn about and discuss these issues.

PENGUIN PERIL

The final workshop by Research Scientist Kevin Crook covered little penguins (*Eudyptula minor*), which reside around southern Australia and New Zealand. WA has the most northern, and therefore hottest, penguin colonies, making them vulnerable to climate change.

We learned that one of these colonies is on Penguin Island, less than 700 metres off the coast and halfway between Perth and Mandurah. It has been well studied since the 1980s, but since 2008 the penguin population has experienced a sharp decline, with an estimate of only 114 penguins in 2023. This could be due to several reasons, but we explored the lack of food as a key cause.

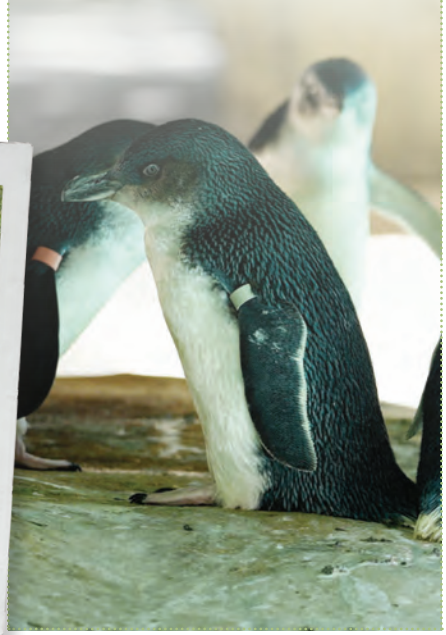
When raising chicks, adult penguins travel around 30 kilometres away from home each day to hunt for food, bringing it back at night to feed to their chicks.

Discover more about SeaWeek at Perth Zoo

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

Students get hands-on learning about fish populations.

Interactive activities help with understanding the issues facing marine life.



Do it yourself

Where is it? Perth Zoo, 20 Labouchere Road, South Perth

What's on? Perth Zoo has a range of animal encounters, talks and kids programs.

For more infomation perthzoo.wa.gov.au

Perth Zoo
SAVING WILDLIFE

"I wasn't aware of how turtles are impacted by climate change in WA before this workshop, and it was very compelling to learn about and discuss these issues."

However, if they don't collect enough food for both themselves and their chicks, they will prioritise themselves.

This can lead to a smaller population of chicks because although the breeding success of penguins is consistent through the years, if there is less food available, more chicks will perish.

We explored this scenario through an activity; we were each a 'penguin parent' with a chick, and 'fish' were scattered across the lawn. We were given a dedicated amount of time to forage enough fish for ourselves and our chick, but we would have to prioritise ourselves if we didn't collect enough.

After each round, the sea temperature increased, and fewer fish were available in the environment. It was fun and sobering at the same time, and an effective way to experience how challenging it is for real penguins to live with the impacts of climate change.

I was recently able to watch penguins come onshore to their chicks in Tasmania, so it was especially engaging for me to be able to link that experience with all the knowledge I learned in this workshop.

AN UNFORGETTABLE EXPERIENCE

I learned a lot during SeaWeek at Perth Zoo. It was very captivating to hear from professionals about their field of work, and eye-opening to learn about the issues affecting our marine ecosystems right here in WA.

It was amazing to be able to walk around the zoo and observe the animals we were learning about, especially the little penguins. I gained a lot of awareness about the roles of DBCA, marine parks, and the impacts of climate change on our marine life, and I looked forward to coming back next year if I am given the chance!

Top left and above Little penguins at Perth Zoo.
Photos – Miles Brotherson/DBCA

Jasmine Browning is an environmentally passionate high school student at John Curtin College of the Arts, with a love for nature and conservation.

A brush with nature

After discovering a talent for drawing at a young age, Philippa Nikulinsky has been enchanted by Western Australia's native species and has spent a lifetime illustrating them along with her husband and fellow artist, Alex. Philippa's artwork graced the covers of *LANDSCOPE* magazine for 22 years and earned her an Order of Australia medal.

by Lauren Cabrera

Having spent her childhood in Kalgoorlie, in close proximity to the harsh lands of arid Australia, young artist Philippa Nikulinsky began illustrating the natural environment around her. She was drawn to plants that were able to survive in the dry landscape and found an admiration for the strength of species that grew back despite the most severe conditions.

Previous page
Main Caustic bush (*Cynanchum viminale*) with butterflies, autumn 2006.
Right Red-eared firetail (*Stagonopleura oculata*), summer 2000–01.
Inset Philippa at her studio.
Photo – Peter Nicholas/DBCA

Left Brush-tailed phascogale, summer 2001–02.

Below Philippa's first cover, spring 1992, woylie, winter 1994 and Leafy sea dragon, winter 2002.

The intricacy of Philippa's depictions of native wildlife is well regarded in the scientific community for its accuracy and finesse. Having spent years travelling the country with fellow artist and husband, Alex, she pours over her subjects, working meticulously to get the details just right.

From 1990 to 2012, *LANDSCOPE* was fortunate enough to have Philippa's artwork grace the covers of the magazines. The iconic beauty of her work made the publication stand out on the shelves and quickly become a collector's item.

GETTING THE CALL

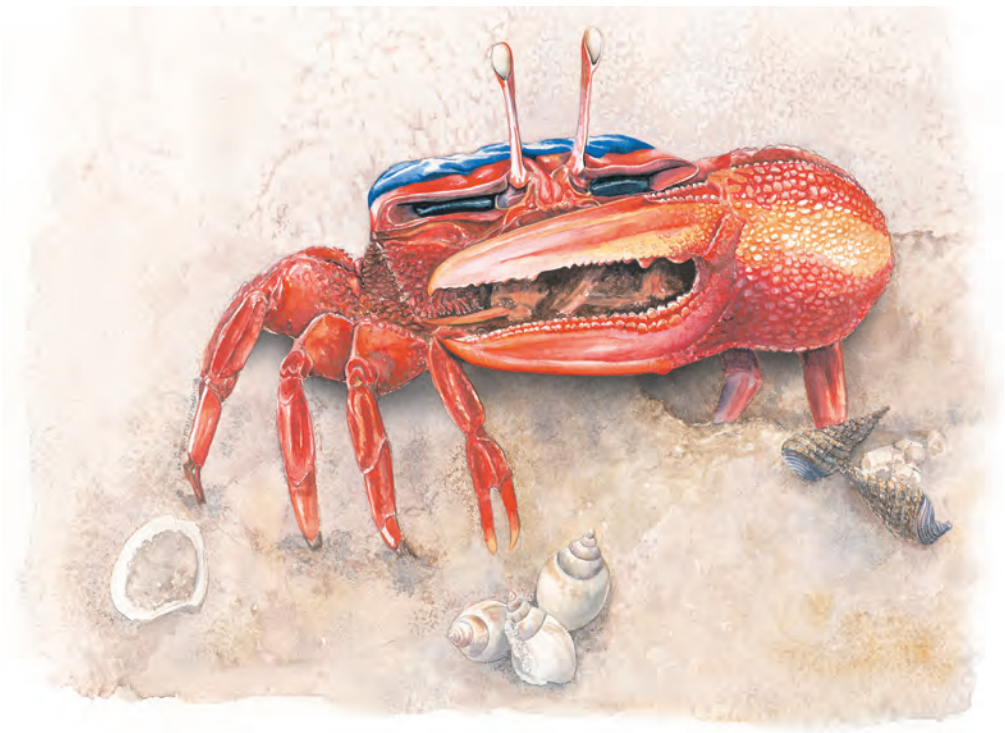
"I was known as a botanical artist back then and someone from *LANDSCOPE* contacted me to illustrate one of the covers," Philippa said. "I was asked to paint some flowers for the spring 1991 edition, back when the cover artwork was set inside a frame in the centre."

"Later, when they asked me to paint a bird, I'd never done that before, having mainly illustrated plants. It was a challenge, but I love birds, so I was happy to do it.

"I went to the zoo and studied the birds; their feet, their beaks and their wings. When they asked me to paint a seahorse, I went to the aquarium and sat in front of the tank, watching them move for hours."

The *LANDSCOPE* team would contact Philippa ahead of each issue and ask her to illustrate a subject from one of the articles of the magazine. She generally had around a month to produce the artwork.

"Sometimes I had free reign to illustrate what I wanted, but mostly the team let me know the species they were after.



"I always had creative input though, no matter how prescriptive the task was."

Philippa credits her time with *LANDSCOPE* to the development of her skills. One moment stood out when she was asked to paint a woylie.

"I had never painted fur before!" Philippa said. "I thought, how on earth am I going to do that? So, I took a close-up photograph of my cat's fur and then used that to develop my own way of painting fur so it looked more life-like."

"If I didn't have the time pressure to get the artwork done for *LANDSCOPE*, I may not have ever developed that technique."

COVERGIRL

After years of designing covers for the magazine, Philippa became quite well known as the *LANDSCOPE* cover artist.

"*LANDSCOPE* was a really important part of my career," she said. "I had an exhibition at the Lawrence Wilson Art Gallery and had an entire wall dedicated to my cover artwork, which shows how important it is to me.

"Last year I had an open day at my home studio, it was a ticketed event. I had four groups of 30 people come through and more than half of them

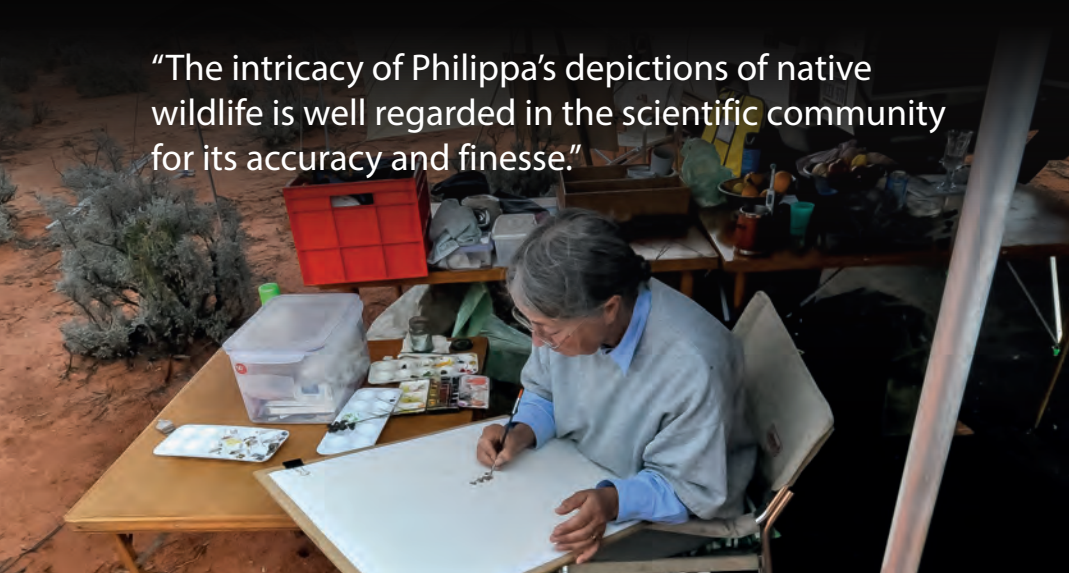
Top A wall of *LANDSCOPE* covers at Philippa's 2019 exhibition.
Photo – Angela Nikulinsky

Above Flame-backed fiddler crab, summer 2003–04.

Far above right and right Philippa's initial sketches for the winter 1992 cover, featuring forest red-tailed black-cockatoos.
Photos – Peter Nicholas/DBCA

Discover more about Philippa's life and art

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



would have mentioned that they knew my artwork from the covers of *LANDSCOPE* magazine. A lot of people collected them.

"One young woman told me that she became a botanist because she was inspired by the covers of *LANDSCOPE*. So many people know me for the covers."

LASTING LEGACY

Over her 55-year career of painting and illustrating, Philippa has authored a number of books that compile collections of her botanical drawings, including 'Wildflowers of the Eastern Goldfields' that was presented to Queen Elizabeth II on her visit to Perth in 2011.

One of Philippa's earlier books, 'Western Australian wildflowers in watercolour', was the first colour book published by Fremantle Press, which has since asked her to create a new book for the 50th anniversary in 2026.

Philippa also had the pleasure of taking a number of participants on *LANDSCOPE* expeditions (see '*Lasting adventures*' on page 12). They fondly remember their time out in the bush, learning skills and techniques to capture the beauty of WA.

"People loved the expeditions," Philippa said. "Some came out with me several times!"

"We camped or stayed in the homesteads. Some of the group came with me to paint flowers, and the others went with Alex to paint the landscapes. It was such fun."

In 2016, Philippa was welcomed as a member of the general division of the Order of Australia for 'significant service to the visual arts as a botanical painter and illustrator, to professional associations, and as an author'. In 2019, she earned an Honoray Doctorate from the University of Western Australia for her art.

Her four children are all creative, pursuing careers from furniture design to music, teaching, architecture, and graphic design. She has 11 grandchildren and four great-grandchildren, who all visit Granny most Sundays for lunch in her studio home.

At the age of 83, she still draws and paints every day and is still just as captivated by Western Australia's plants and animals as she's always been.

Above left Philippa has travelled most of WA observing and drawing wildlife. *Photo – Alex Nikulinsky*

Above A Queen of Sheba orchid, winter 2005.

Left Australian pelican (*Pelecanus conspicillatus*), summer 2006–07.

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

You can find out more about Philippa and shop her collection at nikulinsky.com.au

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Making ripples for conservation

The beauty and popularity of the Swan Canning Riverpark mask the challenges faced by this iconic symbol of Perth. The health of the rivers evokes passionate advocacy from scientists, conservationists, wildlife carers and ecologists who all came together to raise public awareness of the river system at the second annual River Guardians Festival.

by Hannah Beaney

The Swan Canning Riverpark is a symbol of continuity for an everchanging community. The river system holds immense cultural significance for the Whadjuk people of the Noongar nation, who have lived in the area for at least 40,000 years. It's a vital source of sustenance, a spiritual connection, and a gathering place for ceremonies and ritual.

Today, the Riverpark remains a staple of Perth for its resident wildlife, locals and visitors. There's a growing community of people who care for the rivers, devoting their time to their conservation and upkeep (See 'Love of the river runs deep' *LANDSCOPE*, spring 2024).

Previous page
Main top View of Perth City from the Swan River.
Main below Many dolphins call the riverpark home.
Inset Fun activities at the Festival.
Photos – DBCA

Above 1) Panelists at the festival.
2) Natasha Bowden showing the SERCUL catchment model. **3)** Wildlife Advocacy stall.
4) Cockatoos at the Carnaby's Crusaders stall.
5) Kids activities at the festival.
Photos – DBCA

Those working towards the sustainability of the rivers came together at the festival, which saw an array of engaging workshops, stalls and activities.

The River Guardians program started in 2009 by the Swan River Trust as a vehicle for engaging the community around the health and protection of the rivers and is now managed by the Department of Biodiversity, Conservations and Attractions (DBCA).

"The festival is a chance for the community to come down and learn more about the Swan Canning river system and all the great organisations that help protect it," DBCA's Senior Officer for Behaviour Change and Public Participation Jason Menzies said.

OPEN TO ALL

With 16 stalls, a live stage and workshops encompassing a variety of sustainable subjects, the festival was open to all members of the community. There were interactive workshops for the children, including building native bee hotels, as well as practical demonstrations for the adults, such as what to do when a bird is entangled in a fishing line.

"People often have a misconception about how many species call the river system home. It's not just swans and ducks," Wildlife Advocacy South Perth volunteer Veronica McPhail said.

"Events like this festival are great for engaging children, especially since children are the key to protecting future wildlife.

"It's great for people to get involved and care for what we have already so we can leave it to the next generation."

GETTING INVOLVED

An unfortunate side effect of having humans and wildlife sharing a space is seeing wildlife in distress.

"Anyone can get involved in looking after wildlife, even if you're not a volunteer," president of WA Seabird Rescue Matt Watson said.

"Picking up fishing litter, such as discarded lines, hooks and bait bags, is a great place to start as this helps to reduce entanglements."

WA Seabird Rescue is a volunteer-led organisation that focuses on dealing with sick and injured birds.

"While there is no such thing as a typical rescue, being able to predict the behaviour of the bird is essential to the process," Matt said.

Discover more about the River Guardians Festival

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

> "Putting in a second bird bath, building a frog hotel or planting native plants are all ways people can be conservation conscious from home."

When the birds are injured and vulnerable, they will be very nervous, so they'll be flighty.

Having a range of specialised equipment helps with the rescues, even if it's using a kayak to gently guide a swan to shore. The rescued birds are then taken to a vet for further treatment.

Another focus at the festival was bringing nature back into Perth gardens. Josh Byrne, from 'Our Gardens, with Josh Byrne' (see 'Down the garden path' *LANDSCOPE*, autumn 2024) held a workshop on 'river wise' gardening practices.

The workshop focused on educating the gardening community about the impacts garden practices can have on the health of the river system, as the fertiliser runoff ends up in the stormwater drains and then deposits into the rivers.

Panel sessions held on the main stage continued this topic. Discussions ranged from backyard and neighbourhood-scale greening initiatives to what can be done at a broader landscape and city scale.

SHARING KNOWLEDGE

South East Regional Centre for Urban Land Care (SERCUL) Education and Promotion Manager Natasha Bowden said festivals are great for attracting audiences who wouldn't necessarily come to a standalone event.

"A lot of people that come to standalone events have a passion for that particular topic," Natasha said.

"But here, you might get people who wander in who have no idea about the impacts of the fertiliser they put on their lawn, on the river."

Natasha said she hoped people would leave the festival with increased knowledge of riverwise gardening.

"It's important people know that anything that goes down the drains is going to end up in your local wetland or river. Sharing this information is a step towards successfully reducing the nutrient load of the river."

DBCA's Principal Scientist for Rivers and Estuary Science Dr Kerry Trayler said it's this abundance of nutrients in the rivers that causes algal blooms and fish kills.

While the rivers have faced some challenges, the Swan Canning Riverpark is still healthy and able to be enjoyed by the community.

"We've got quite a number of spaces that are natural shorelines," Dr Trayler said.

"To compare that with places like the Thames or Sydney, you will know how beautiful our waterway is."

A program of the Perth Natural Resource Management (NRM) agency, ReWild Perth, follows along with this initiative. ReWild Perth is focused on encouraging people to bring nature back into their outdoor spaces.

"I want people to see that it doesn't matter how small an action it is; every action helps," Perth NRM Stakeholder Engagement Manager Ingrid Sieler said.

Putting in a second bird bath, building a frog hotel or planting native plants are all ways people can be conservation conscious from home.

"Empowering people to know they can make a difference is essential for giving hope to the community."

Alongside the enjoyment of the rivers comes a collective responsibility to ensure they continue to flourish.

Above left Dolphin Watch FinBook.

Inset above Volunteer Sue Harper, Education Officer Naomi Adamczyk and researcher Dr Delphine Chabanne.

Above Josh Byrne presenting for ABC Radio Perth.
Photos – DBCA

Become a River Guardian

Whether you're interested in river history, dolphins, birds, insects, water quality, oxygenation and other scientific issues, or simply just want to know more about our beautiful Swan Canning Riverpark and how to help protect it, River Guardians has a variety of different projects that may be of interest to you. Visit riverguardians.com for more information.

Hannah Beaney recently completed an undergraduate degree at Curtin University receiving a Bachelor of Communications.

Enchanted by Australian wildlife

After fleeing Czechoslovakia in the 1970s, Jiri and Marie Lochman sought refuge in Australia and were instantly enchanted by the fascinating landscape and its intriguing wildlife. After saving enough for a camera, their creative instincts took over and they forged a path for themselves as successful nature photographers. *LANDSCOPE* magazine has been lucky enough to feature their photos in almost every edition since 1985.

words and photos by Jiri and Marie Lochman

We spent two and a half years travelling around Australia, mostly camping in national parks and wilderness areas, exploring our new home country and photographing everything that caught our interest.

In 2006, Australia Post published a $5.00 stamp using my [Jiri's] kangaroo paw photograph, which was taken on that splendid, dewy morning in October 1981 when we decided to settle in Western

Previous page
Main right Helena Aurora Range, Great Western Woodlands.
Left Marie and Jiri Lochman in 1989.
Insets (from left to right) Biodiversity of Karara Rangeland; monjon (*Petrogale burbidgei*); gimlet (*Eucalyptus salubris*); red and green kangaroo paw (*Anigozanthos manglesii*); Banks Rock, Great Western Woodlands; northern quoll (*Dasyurus hallucatus*).

Top Common brushtail possum (*Trichosurus vulpecula*).

Top right Crossing Mistake Creek in Queensland in 1980.

Above right Biodiversity of the heathland north of Perth.

Inset above $5.00 Australian stamp featuring Jiri's 1981 photo of a red and green kangaroo paw.

My wife Marie and I were born in the 1950s in the Czech part of the country then known as Socialist Czechoslovakia. Neither of us had ever owned a camera there, but we were both artistically inclined. While studying mathematics, Marie was also interested in and practised visual arts.

My world, in the meantime, revolved around three interests: animals, music and writing. While working in a zoo, I studied an applied science course in exotic animals' husbandry. My first song was published when I was 17 and my first short story when I was 18.

However, the brief period of a relative political and expressional freedom abruptly ended with the occupation of Czechoslovakia by the Soviet Union and it did not take long before all my songs and everything I had ever written, no matter how well meant, naïve, or innocent, was banned there.

So, we quit the country by running away from a well-guarded organised tour to Yugoslavia then fled at night through the mountains to Austria, where we were granted political asylum. We got married in a refugee camp and after 11 months of waiting departed for Australia.

A NEW HOME

We arrived in Sydney in 1978. From our first trips to the Blue Mountains where we saw our first wild possums, brush-turkeys (*Alectura lathami*) and sugar gliders (*Petaurus breviceps*) gliding between tall eucalypt trees, we were absolutely enchanted by the Australian bush and longed to photograph what we saw.

We saved for our first camera, a few reference books and a car. We then left our jobs and took to the road to circumnavigate Australia. We travelled from one national park to the next, photographing everything we were able to catch a glimpse of.

Our encounter with the smallest macropod, the elusive monjon, was not an accident. It was a six-weeks-long struggle to take the first pictures of this never-before-photographed rock-wallaby.

Above left Walsh Point on Port Warrender coast, Kimberley.

Above Monjon (*Petrogale burbidgei*).

Far left Bee fly (*Choristus* sp.) feeding on cotton bush (*Ptilotus obovatus*).

Inset Marie and Jiri Lochman on the shore of Admiralty Bay, Kimberley in 2010.

After two and a half years on the road, spent mostly in the drier parts north of the Tropic of Capricorn, we were heading to Perth. We arrived quite late and knowing that it's best not to enter a city at night, we pitched our little tent somewhere north of Bullsbrook. When we woke up the next morning, we were surrounded by kangaroo paws and other wildflowers, and everything was covered in dew. We felt like we had woken up in paradise and there-and-then we realised that we had found our new home. Years later, we got confirmation that it was a good decision, when a photograph I took on that memorable morning of a kangaroo paw ended up on a $5.00 Australian stamp.

At the time when I approached *LANDSCOPE*, I was working in the Perth Zoo nocturnal house. I loved my job there, but I was already restless to establish myself as a photographer. I had an occasional photograph published here and there and I also wrote articles, which we submitted to various magazines accompanied by our pictures.

The breakthrough came after I wrote an account about how I took the first photographs of the monjon (*Petrogale burbidgei*), a small rock-wallaby that had never before been photographed. My article titled 'Night Drummer on Centre Stage' was not just accepted and published, but the subscribers of the GEO Magazine voted it the best feature article of the year.

After that, and after our first photography assignment for *LANDSCOPE*, we thought that we should no longer procrastinate. Our last doubts were assuaged when a veteran freelancer consoled us by saying, "Don't worry what the future brings; starvation is the greatest motivator," so we quit our jobs for the second and the last time.

A NEW BUSINESS

In the early days it wasn't always a smooth ride, but fortunately we never needed to be motivated by lack of food. As we slowly expanded our clientele it got better and better. Then one day a client requested a range of underwater photographs, which we did not have, so we recruited several underwater photographers and thus the photographic agency Lochman Transparencies was born.

It was a pivotal moment for us, but it was a tricky one. We did not want to lose any clients and at the same time we did not want to become mere administrators. We longed to be in the bush photographing wildlife, and the business was not yet strong enough to employ a librarian. But we somehow managed to balance the two.

For part of every year we lived our dream, exploring the natural wonders of Australia. After a hike to Prince Regent River Nature Reserve on assignment to

Although we originally established oursevles as photographers of Australian mammals, we have largely switched our attention to the "happenings" in the miniature world of insects.

We believe that our photographs should benefit the animals we capture on film. We first photographed numbats in 1983, when they were in severe decline. Our photographs helped to bring awareness to the numbats' plight, while also catching attention of publishers.

Above Hover flies (*Simosyrphus grandicornis*) mating on the wing.

Above right Jiri preparing to photograph mulgaras in the Gibson Desert in 2014.

Right Numbat (*Myrmecobius fasciatus*).

photograph the book *North-West Bound*, we were inextricably drawn to Kimberley.

We realised how exceptionally stunning this part of WA is, but we also understood that it remained one of the greatest wildernesses on Earth thanks to its taxing climate and often impassably rugged terrain. But we were ready for the challenge. We made numerous hikes to the Kimberley wilderness, the longest one 21 days away from our vehicle. On that occasion, a tour guide noticed our car hidden among the bushes and when he returned with the next tour and found it still there, he alerted the Derby Police thinking that we must have been lost. Fortunately, the Derby Police had been made aware of what we were doing, so there was no search.

At that time, the Kimberley was still teeming with wildlife, including our favourite animal the cheeky northern quoll (*Dasyurus hallucatus*), which was another reason why we kept returning. Our first encounter with the northern quoll happened on Cape York Peninsula in Queensland in 1980 during our initial around-Australia trip.

Our little, canvas-covered Daihatsu had neither openable windows, nor air conditioning, but it had a little opening under the windscreen that allowed fresh air in during driving. One night we were woken by a racket as a quoll was trying to drag a chicken, which we had bought the previous afternoon, through that slit. The quoll was small enough to get in, but the slit was too narrow for the chook.

A NEW CHALLENGE

The back page of early issues of *LANDSCOPE* was dedicated to wildlife photographs under the heading 'Looking Back'. The first issue was published with an appeal to readers: 'Looking Back is the place for your photographs of Western Australian wildlife.'

We rose to the challenge and organised a presentation of our work to the *LANDSCOPE* staff. Thus began our relationship with several generations of editors and design artists spanning the entire 40 years of the printed *LANDSCOPE* lifespan.

During this time we had photographs in every issue of *LANDSCOPE* save for the three in the first volume; altogether 2212 photographs taken by one of us. We have also contributed 960 photographs taken by other photographers on whose behalf we acted as agents.

Among the many highlights of our careers was receiving the coveted Australian Geographic Award for Excellence in Photography. In the Australian Geographic they wrote "what was a loss for Czechoslovakia was definitely a gain for Australia".

Jiri and Marie Lochman
are renowned Australian wildlife photographers. Their photographs have featured in all but three *LANDSCOPE* magazines ever published. They can be contacted at lochman@iinet.net.au

by Dominic Castledine

kaleidoscope
kids exploring nature

Polyphagous shot hole borer (PSHB)

PSHB is a small beetle from Southeast Asia that has made its way to Perth and become an invasive species. The beetle tunnels into trees creating galleries and grow a fungus that kills our plants and trees.

The Department of Primary Industries and Regional Development asks for your help to keep a look out for these beetles and report any signs of infestation.

Learn how to help protect our trees and plants from PSHB.

B	R	X	G	C	V	H	Z	M	F	K	F	Z	D	N	O	A	V
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The following words all relate to PSHB. Find them in the word sleuth:

- beetle
- box elder maple
- dieback
- frass
- fungus
- galleries
- my pest guide
- PSHB
- quarantine area
- shot holes
- staining
- traps

Polyphagous shot-hole borer infects a tree.

Did you know adult PSHB are only 1mm wide and 2mm long?

Actual size!

Small cards with a ruler edge and a clear window used to report sightings of PSHB. *Photos – DPRID*

Spot the **difference**

See if you can find all five differences between these two beetles!

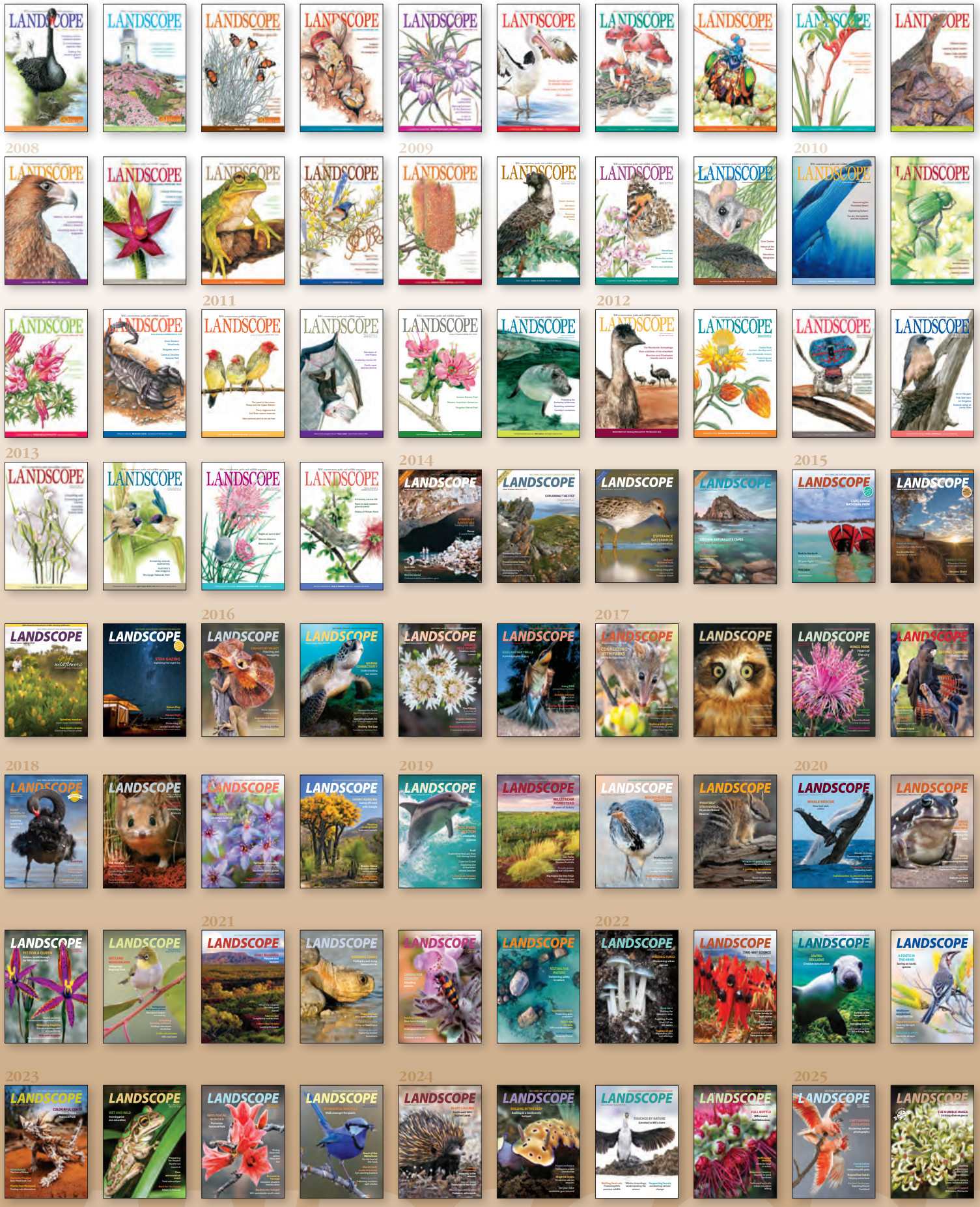
LANDSCOPE's **Kaleidoscope kids exploring nature** page is an exciting regular feature for kids.

Variegated fairy-wren (*Malurus lamberti*)

The variegated fairy-wren (*Malurus lamberti*) is one of several species that rely on the prickly, straggly branches of kurara (*Acacia tetragonophylla*) for shelter and protection. The fairy-wren occurs across much of Australia in moderately dense shrubland. The male takes on a spectacular blue colouring on its head during breeding season in spring. Breeding groups nest with a core pair and sometimes several additional members, mostly males.

Illustration by Philippa Nikulinksy

Illustration first appeared on the cover of *LANDSCOPE* Summer 2008–09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