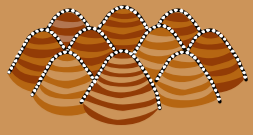


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PURNULULU
NATIONAL PARK
world heritage

PURNULULU NATIONAL PARK

 **World Heritage Area**

Liftout guide inside
including maps and facilities

Purnululu National Park – a place of enchantment

Towering rocky domes of the Bungle Bungle Range in Purnululu National Park have long enchanted people with their majestic beauty.

Aboriginal people of the Kimberley lived near and among the ethereal rock forms. They inhabited the region for thousands of years, living a hunter gatherer lifestyle, at one with the ancient landscape. Today about 44,000 people travel annually to this remote corner of the nation to experience the Bungle Bungle Range's astounding natural beauty.

And who could blame them? There is something incredibly special about this wild assortment of gorges, canyons and towering rocky domes.

From the air you can truly appreciate the beauty and vastness of the range. The beehive-shaped domes soar more than 250 metres into the air and stretch to the horizon in an intricate maze of rusty red rocks.

Deep gorges change colour as the sun progresses across the sky, from brown to red, orange and gold while palm trees make a striking green contrast to the deep orange of the rocks.

You can experience this geological wonderland in a variety of ways. Setting out on foot gives you the opportunity to feel at one with this bold landscape and the advantage of being able to spot some of the park's amazing native animal life. Look out for the echidnas, northern nail-tail wallabies or, if you look more closely, you might even see the common rock rat and rock hole frogs hiding deep within rock crevices. Alternatively, soar above the range in a plane or helicopter and view the complete beauty of this unique reserve.

Try camping at one of two camping areas to soak up the spirit of the park and enjoy the blaze of stars strewn across the outback's velvety black night sky.

Whether you choose to camp, walk, fly or drive around this World Heritage wonderland, be sure to allow enough time to savour its magic.

Spend some time here and find yourself captivated.




Australian Government

Department of the Environment, Water, Heritage and the Arts



Department of
Environment and Conservation

Our environment, our future 

HISTORY... past to present



Alexander Forrest (front row, third from left) and his expedition party, 1879. Photo courtesy Battye Library.

Dreaming tales, a quest for gold and a farming boom

The spectacular beehive-like domes of the Bungle Bungle Range in Purnululu National Park have formed an important part of Aboriginal life for 20,000 years.

Aboriginal people in the Kimberley passed on Dreaming stories about this sweeping expanse of ancient rocks and built legends around their creation throughout the millennia.

They hunted animals, gathered plants, roamed sweeping plains and adorned caves and rocky walls with their art.

Europeans first came to the Kimberley region late in the nineteenth century in search of natural resources and potential areas for farming. The first party of explorers arrived in 1879. Six Europeans and two Aboriginal people led by Alexander Forrest were on a mission to assess the potential for grazing, crops and gold.

It's unclear if they saw the Bungle Bungle Range but Forrest noted the region's grassy plains and grazing potential and at least one member of the party suggested there was "good reason" to hope for both gold and other minerals in the Kimberley.

Later, a party including a miner named Adam Johns set out to the region in the hope of striking it rich. Although they found traces of gold and became confident of the country's gold-bearing potential, their high hopes were spoilt by illness and a lack of water.

Geologist Edward Hardman was sent to the region in search of valuable minerals on a government-sponsored survey in 1884. Hardman also became optimistic about the area's gold-bearing potential and reported favourably on his return.

This report and a sequence of others paved the way for still more prospectors to follow. By 1885 a party led by a prospector named Charles Hall had found the first payable gold around the area now

known as Old Halls Creek, sparking the first gold rush in Western Australia.

Thousands of gold-hungry prospectors soon followed Hall in their quest for riches but the limited gold supplies, the lack of fuel and water and the remote nature of the region thwarted their attempts.

In the meantime, pastoralists had also begun setting their sights on the region.

Eastern states cattlemen drove huge mobs of cattle to the grassy plains. The first mob of 4,000 head

arrived in 1884 followed by 6,000 head the following year. Within five years the number of cattle had risen to 24,000, setting the foundation for a pastoral industry that continues in the region outside the national park today.

The region continued quietly throughout the 1900s until a national television documentary thrust Purnululu into the spotlight in 1983.

The consequent praise for the region, as well as recognition of the land's botanical importance and significance to its original inhabitants, prompted the Western Australian Government to establish Purnululu National Park in 1987 to complement the existing conservation reserve.

By 2003 the 239,723-hectare national park and 79,602-hectare conservation reserve were declared a World Heritage Area.

This World Heritage listing recognised the remarkable geology and striking beauty of the Bungle Bungle Range and further cemented the region's reputation as one of Australia's most iconic outback wonders.



A 1983 television documentary featuring the Bungle Bungle Range thrust Purnululu into the national spotlight.

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You are welcome here

Purnululu National Park World Heritage Area has many sites of cultural significance, evidence of a living cultural landscape that goes back at least 20,000 years.

Aboriginal clan groups are obliged by custom to 'care for country' and senior people – Elders in each clan group – 'speak for country' as traditional owners or traditional custodians.

Anthropological and archaeological studies are now documenting how Aboriginal people lived at Purnululu and how the people related to and used the land and resources.

Protecting Purnululu's Aboriginal heritage

Some archaeological items and artefacts are sacred to local Aboriginal people. Unlike European historical items, they are not placed in museums or inside glass cases. They are not identified and may appear insignificant. They are found in their resting places, out in nature. Please respect Aboriginal culture by not interfering with these items and sites. In this way you will show respect for the people and the land as integral parts of this cultural landscape.

Please don't go to places without permission from those who speak for this country and please respect restrictions. There are places that are closed to visitors because of cultural significance.

Take with you, when you leave, only your photographs and memories.

"If the visitors pick up a rock from the ceremonial ground they get sick, they get punished for that, if they pick up something and take it somewhere they get very sick and they die; might get paralysed and won't walk. Unless they are initiated to go into that place it's dangerous for them to go in there."
 Shirley Drill – Kija elder

Background painting by Marietta Bray, Warmun Art Centre.



The painting 'Purnululu - The Future' by Bessie Daylight (below).

Purnululu – the future

Painting by Bessie Daylight

Aboriginal artist from the Kija language group Bessie Daylight's vision is that everybody can work together for a better Purnululu.

Her painting depicts three groups of people: the tourists, the Government and Aboriginal people.

The Aboriginal people are represented by the black figure, the tourists by the brown figure and the Government by the white figure. The visitors are depicted by the colour brown as they are in the middle, between the Government and all Aboriginal people. The Aboriginal people advise the Government on ways to better manage the park and the rangers and tour guides explain this to the visitors.

The footprints represent the three groups together, in the future, walking around the domes.

"They are us looking after the place and working together as one," says Bessie.

When asked what the painting is called Bessie says: "Purnululu - The Future, that's what I call it. That's what I'm hoping to see in the future".

The painting was chosen to represent the Stepping Stones project, a Commonwealth Government project designed to recognise and protect the values of natural and cultural places, particularly those with Indigenous involvement.



Purnululu and joint management

Working with the Aboriginal people to manage the park...

Purnululu National Park is the first national park in the Kimberley to be managed by Aboriginal people and the Department of Environment and Conservation (DEC).

The joint management gives Aboriginal people a strong say in park decisions, and paves the way for similar management in other parks in the State.

Aboriginal people of the Kimberley with traditional and contemporary connection to the area take part in joint management of the World Heritage Area by sitting on the Purnululu Park Council. The park council meets regularly to consider all matters associated with the use and management of the park, and the policies that are applied within the park. It also provides advice to the Western Australian State Environment Minister on matters related to Indigenous culture within the park.

The system of joint management acknowledges Aboriginal people's traditional responsibility for care of country and the wellbeing of visitors.

How are Aboriginal people connected to country?

Aboriginal people have long traditions based on caring for the land. Purnululu's Aboriginal people can acquire interests in land through their father and father's father, and their mother and mother's father, through places of birth or conception, and through burial sites of close relatives. They also have responsibilities to care for resting places of spiritual ancestors.

For Aboriginal people, land is not simply a conservation resource. It is deeply interwoven with the animals and plants as the basis of their spirituality, and it is their home.

Aboriginal people make a wonderful contribution to park management because of their extensive and detailed knowledge of the land and its associated plants and animals.

Their wealth of cultural knowledge, mythology and bush survival skills gives visitors a new perspective in cultural information about the park.

Left: Park council meetings give Aboriginal people a say in the management of the park.



Where did the Bungle Bungle Range get its name?

The origin of the name Bungle Bungle has intrigued people for decades. So where did this name come from?

Research by historian Dr Cathie Clement showed that a pastoralist, Arthur Muggleton, started using the term Bungle Bungle in 1930 as the name of a station to the north west of the current park. Muggleton's mate Fred Terone told the Australian author Ion Idriess, in 1934, that they chose the station name because 'no man can find it who had not been there before'.

Officially the name Bungle Bungle Range came into use only in 1983 when the Department of Lands and Surveys named the range because of its proximity to the old Bungle Bungle Station. The name commonly appeared on maps after this time.

Here are some other theories:

- It is derived from the name of a common Kimberley grass – bundle bundle grass.
- Some believe it is a linguistic corruption of the Aboriginal name Purnululu which when spoken sounds like Burnululu.
- Others say that Sam Muggleton was mining salt at a place called Date Palm, to the north of the park, and he bungled the operation so the area became known as the 'bungle bungle'!

If you have any information on this intriguing tale please let us know.

Where does the name Purnululu come from?
 Purnululu is a Kija Aboriginal word meaning sandstone.



How to get to the park and how long it will take...

The park lies 304 kilometres by road from Kununurra and 160 kilometres north-east of Halls Creek. Most of the route is along sealed highway.

The last 53 kilometres into the park are via a four-wheel drive track which is only open to high clearance four-wheel drives and off-road trailers. The track is rugged and often badly corrugated. You will have to take it slowly and allow two to three hours for the journey. It is another 27 kilometres to the Domes from the visitor centre. Allow for at least 100 kilometres of driving in the park.

Travelling times

- From Kununurra it will take five to six hours.
- From Halls Creek it will take three to four hours.
- Allow two to three hours to complete the four-wheel drive track into the park.

When is it best to visit?

The park is open to drive-in visitors from 1 April to 31 December (weather conditions permitting). Unseasonal rains may result in temporary closure of the park during this time.

Climate

The park has a semi-arid climate with very hot summers and warm, dry winters. During the busiest period, from May to September, the days are characteristically clear and sunny with low humidity. Rain is rare during these months. Outside of these months temperatures are much hotter, the humidity is higher and there are usually fewer visitors.

The average daily temperatures for April are 20–34°C, July 12–27°C and November 24–38°C. Remember that temperatures can exceed these averages. Minimum temperatures can go below 0°C in July and August.

What do I need to take?

You must be well prepared for your trip. There is no fresh water, food, fuel or mechanical supplies available within the park. Untreated bore water is available from taps in the campgrounds. We advise that it be boiled before drinking.

The closest place for supplies is Warmun (Turkey Creek) or Halls Creek which are more than three hours away. Be prepared – stock up on the essentials.

Visitor facilities

The park only has basic facilities including a small visitor centre, bush campgrounds, walking trails and some commercial camping facilities.

Visitor centre

The visitor centre provides information about the park and activities available. There is also a shop where you can purchase cool drinks (non-alcoholic) and souvenirs. The visitor centre does not supply any food. Bring all supplies with you.

Here you will fill out your registration, pay your visitor fees and have access to information about the park. There is 24-hour self-registration available, so ensure you have change available if you arrive after hours.

Opening hours

The Purnululu Visitor Centre is open from 8am until 12 midday and from 1pm to 4pm from early April until mid-October. Check with DEC's Kununurra office (ph 08 9168 4200) for opening dates, times and park fee information.

Park fees

A one-off park entrance fee applies to all vehicles. An additional camping fee applies for overnight stays. Contact DEC for current prices.



Pets and native wildlife

Can I bring my pet into the park?

Dogs and other pets are not permitted in the park. Even the smell of an unnatural predator like your pet cat or dog can distress native wildlife.

All native flora and fauna are protected in the park. Trapping and firearms are not permitted. Please do not pick flowers. Feral animals destroy our native wildlife. Please remove all rubbish as it attracts wildlife.



Sharp corners and blind rises make the park access road hazardous. Take care!



Walking into Cathedral Gorge.

Cinderella didn't go to the Bungles...

Preparing for the heat..

We all know the Cinderella story – glass slippers, fancy frock and diamond tiara. It might look pretty but it's not the gear for roughing it in Purnululu National Park!

Conditions in the park are demanding and temperatures can get very **HOT** especially from April to May and September to December when temperatures may reach 50°C. You will need to be prepared.

In this sort of environment it pays to be practical. Dress for the heat. Wear lightweight clothing and a hat that shades your face and neck. Carry water with you and drink continuously even if you're not thirsty.



Camping in the park

Where can you camp and which campground is best?

There are two public campgrounds in the park, one in the north (Kurrajong) and one in the south (Walardi).

Both offer the same facilities (toilets, bore water and firewood) and are equally suited to vehicle-based camping either with tents or camper trailers. There are designated areas for those with portable generators and for larger groups.

Bellburn campground is a commercial campground with a higher level of facilities. Bookings are required. Contact Kimberley Wilderness Adventures (ph 08 9192 7022), East Kimberley Tours (ph 08 9168 2213) or your travel agent. If you have booked to stay at Bellburn, call into the visitor centre to pay entrance fees and collect a map to assist your navigation.

Water and showers in the park

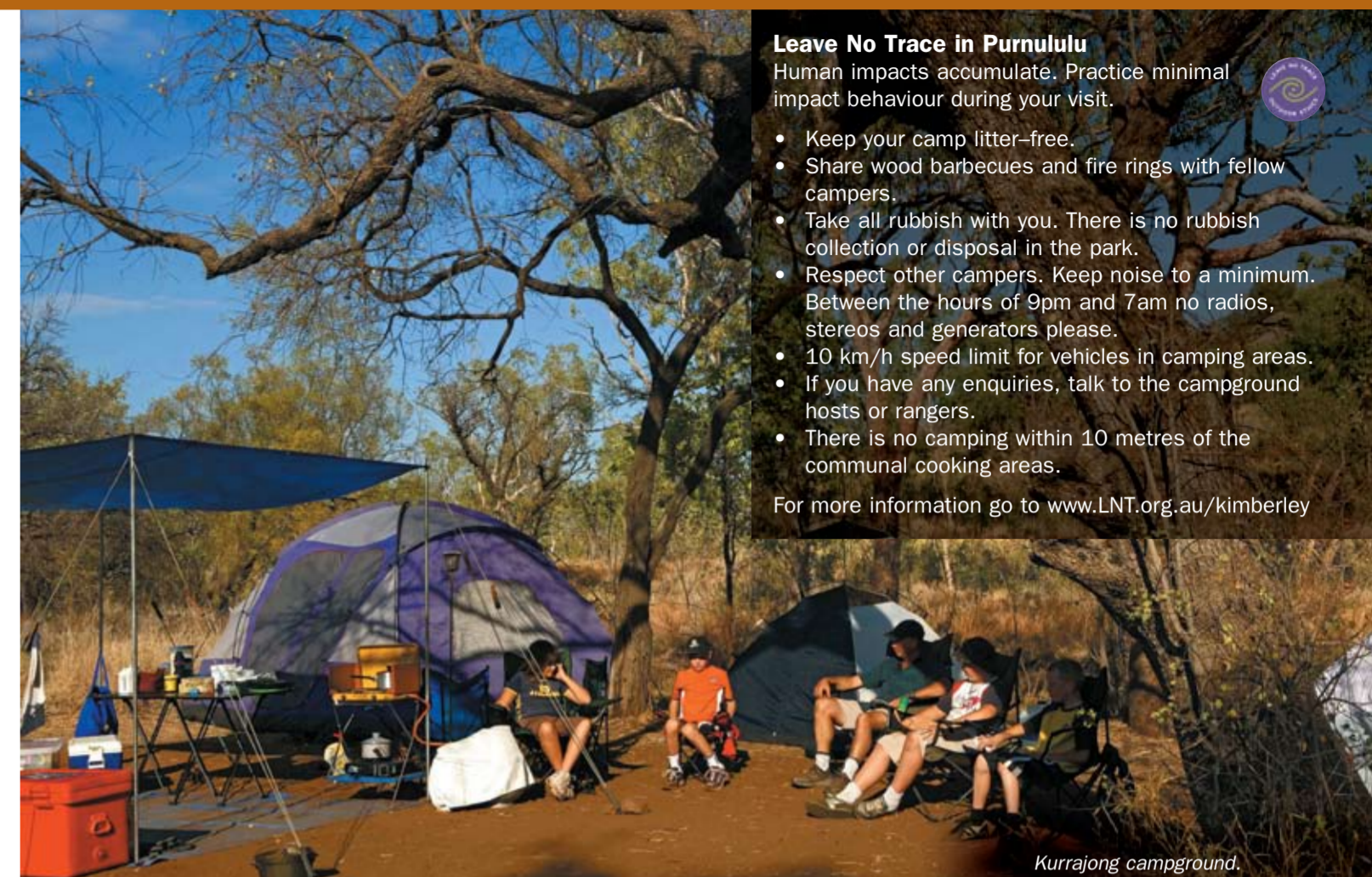
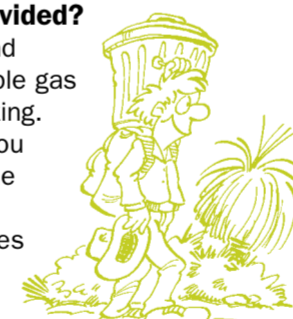
Untreated bore water is available from taps in the campgrounds. We advise that it be boiled before drinking. There are no showers in the public campgrounds.

Can I have a campfire?

Fires may only be lit in the designated fireplaces in the campgrounds. The firewood provided is limited so please use sparingly. Do not use wood from the park because it may be the home of native animals and therefore play a significant role in the local ecology. Remember to extinguish all fires before leaving your camp site. Fire bans are in place between **1 April and 15 May** and between **15 September and 31 December**, but can be extended in extreme conditions.

Are cooking facilities provided?

We recommend using a portable gas stove for cooking. Alternatively you can cook in the fire rings and wood barbecues in each campground.



Kurrajong campground.

Leave No Trace in Purnululu

Human impacts accumulate. Practice minimal impact behaviour during your visit.

- Keep your camp litter-free.
- Share wood barbecues and fire rings with fellow campers.
- Take all rubbish with you. There is no rubbish collection or disposal in the park.
- Respect other campers. Keep noise to a minimum. Between the hours of 9pm and 7am no radios, stereos and generators please.
- 10 km/h speed limit for vehicles in camping areas.
- If you have any enquiries, talk to the campground hosts or rangers.
- There is no camping within 10 metres of the communal cooking areas.

For more information go to www.LNT.org.au/kimberley

Suggested itineraries

Purnululu World Heritage Area has much to offer the visitor: spectacular gorges, remote bush camping, short walks and even overnight hikes, so it makes good sense to plan your time wisely. Here are some itineraries to help you plan your trip.

1. One-day run around

For such a beautiful place it would be a shame to only allocate one day for your visit but if that is all the time you have, we suggest that you arrive in the park early!

Morning: Visit the visitor centre to register and get park information, then walk into Cathedral Gorge (allow one to one and a half hours for the return trip).

Lunch: The Piccaninny Creek carpark is one of the park's most scenic locations. Enjoy lunch here in the shaded picnic areas.

Afternoon: Try the Echidna Chasm walk (allow one hour) or take a scenic flight over the park.

Remember to allow for travel times around the park (see map on page 12) and to get back to the Great Northern Highway (two to three hours).

2. Two-day excursion

Day one

Morning: Visit the visitor centre to register and get park information. You may want to use the public phone here to organise a scenic helicopter flight from the airstrip in the park. Take the Cathedral Gorge walk (allow one to one and a half hours for the return trip) and Domes walk (allow 20 minutes).

Lunch: Piccaninny Creek car park picnic area.

Afternoon: Scenic helicopter flight. Visit either Kungkalahay lookout or the excellent site close to Walardi Campground to view the sunset. Don't forget the picnic!

Evening: Camp in Kurrajong (the northern campground) which is close to the walks you will undertake the next day.

Day two

Morning: Mini Palms walk (allow two to three hours).

Lunch: Echidna Chasm car park.

Afternoon: Enjoy Echidna Chasm (for the midday sun). Exit the park by making your way out to the Great Northern Highway.

3. Three (or more) days' exploration (including an overnight hike into Piccaninny Gorge)

If you have some time and are fit and prepared, we suggest undertaking the overnight hike into Piccaninny Gorge. An itinerary which includes this walk is set out below.

Day one

Plan your day around options one and two above. Remember to register at the visitor centre for your Piccaninny Gorge overnight camp.

Evening: Camp at Walardi campground. It's closer to Piccaninny Gorge.

Day two and three

Take the Piccaninny Gorge track, camping overnight. See 'Hiking Piccaninny Gorge' (page 8) for a detailed outline of this walk. Start early to avoid the midday heat.

Day three (afternoon)

Deregister at the visitor centre and exit the park.



The western wall of the Bungle Bungle Range.

Emergencies...

Who should you contact?

For assistance in an emergency you can contact staff at the visitor centre. There is also a card operated telephone there to contact any of the numbers below. After hours, the ranger is available on site for **EMERGENCIES ONLY**.

Argyle Police Station: (08) 9167 1292
Halls Creek Police Station: (08) 9168 6000
Broome Police Station: (08) 9194 0200
Kununurra Police Station: (08) 9166 4530

Emergency freecall 000 from anywhere in Australia

WALKING IN THE PARK

The walks

There is nothing like standing in a 200-metre deep sandstone gorge and taking in the awesome scenery.

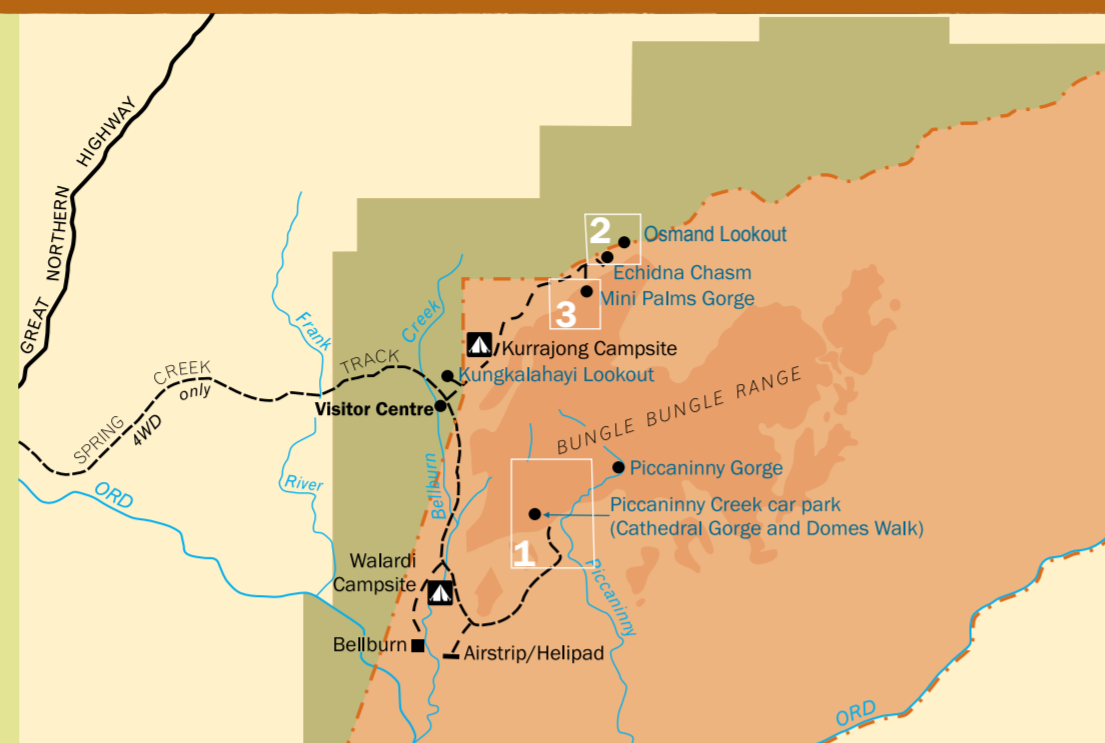
This is the sort of experience you can have if you put on your hiking boots and take the time to explore the park's beautiful landscape. From spectacular Cathedral Gorge with its almost 360 degrees of vertical sandstone walls, to the wonderment of making your way along Echidna Chasm as it narrows to its end, there is something special about Purnululu's walks.

New walks

DEC and the park's traditional owners are working together to plan and develop new walks. Ask at the visitor centre for details.

Safe walking

The tracks are generally along uneven creek beds where rock surfaces and paths may be rough underfoot, so ensure that you wear adequate footwear such as closed shoes. Slip-on shoes are not supportive and dangerous because of the undulating nature of most of the walks. Please do not climb on the beehive domes. They are fragile and rocks may dislodge if disturbed. Remember to carry lots of water and drink regularly.



View from Kungkahayi Lookout.

Kungkahayi Lookout

Location: Three kilometres along the track from the visitor centre.

Distance: 500 metres return. Allow five to 10 minutes.

Grade: Easy gradual climb.

What you will see: Panoramic 360-degree views of spinifex-covered ridges flowing to the majestic cliffs of the western escarpment of the Bungle Bungle massif and the 500 million-year-old limestone ridge. At sunset these blaze in brilliant reds and yellows against a backdrop of purple hues from the evening sky.

Facilities: This is a great place to go for pre-dinner drinks. There are several seats located at the top of the lookout area and a picnic table in the car park.

Echidna Chasm walk

Location: Begin at Echidna Chasm car park 20 kilometres north of the visitor centre.

Distance: Two kilometres return. Allow 45 minutes to one hour.

Grade: A moderate walk with a challenging short climb near the end.

What you will see: A spectacular long narrow chasm, which yields striking colour variations depending on the angle of the sun beaming into the chasm, with *Livistona* palms waving from the 200-metre-high ridges above. Popular for photography.

Facilities: Toilets and shaded picnic areas in both car parks.

Osmand Lookout Walk

Location: Starts at the Echidna Chasm car park.

Distance: 500 metres return. Allow 15 minutes.

Grade: Easy gradual climb.

What you will see: Take in the grandeur of the Osmand Range and the sweep of Red Rock Creek as it drains into Osmand Creek.

Facilities: Toilets and shaded picnic areas in car park.

Mini Palms walk

Location: Begin at the Mini Palms car park 19 kilometres north of the visitor centre.

Distance: Five kilometres return. Allow two to three hours.

Grade: It is initially easy but then becomes challenging as steep slopes and large blocks of fallen rock have to be negotiated.

What you will see: Pebbly, dry creek beds lead to high cliffs, undulating over fallen blocks of cliff face before an ascent to the first viewing platform reaching a vortex of rocks and palms. Another ascent leads to the top platform for an awe-inspiring view into a high, narrow amphitheatre – the Mini Palms Gorge.

Facilities: Toilets and shaded picnic areas in the car park.

Cathedral Gorge

Location: Begin at Piccaninny Creek car park 27 kilometres south of the visitor centre.

Distance: Three kilometres return. Allow one to two hours.

Grade: Moderate. There are some short steep slopes and narrow ledges to be negotiated.

What you will see: Striped sandstone beehives, creek beds and potholes, looming cliffs, evidence of waterfalls that cascade down steep rock faces during the wet season, honeycomb weathering, opening into a huge amphitheatre.

Facilities: Toilets and shaded picnic areas at Piccaninny Creek car park.

Domes walk

Location: Begin at Piccaninny Creek car park 27 kilometres south of the visitor centre.

Distance: One kilometre circuit trail. Allow 10 to 30 minutes.

Grade: Easy, relatively flat walking surface mostly along firm creek beds.

What you will see: This trail winds around sandstone domes that rise majestically from the spinifex-covered sand plains.

Facilities: Toilets and shaded picnic areas at Piccaninny Creek car park.

Piccaninny Creek Lookout

Location: Begin at Piccaninny Creek car park 27 kilometres south of the visitor centre.

Distance: Three kilometres return. Allow one to two hours.

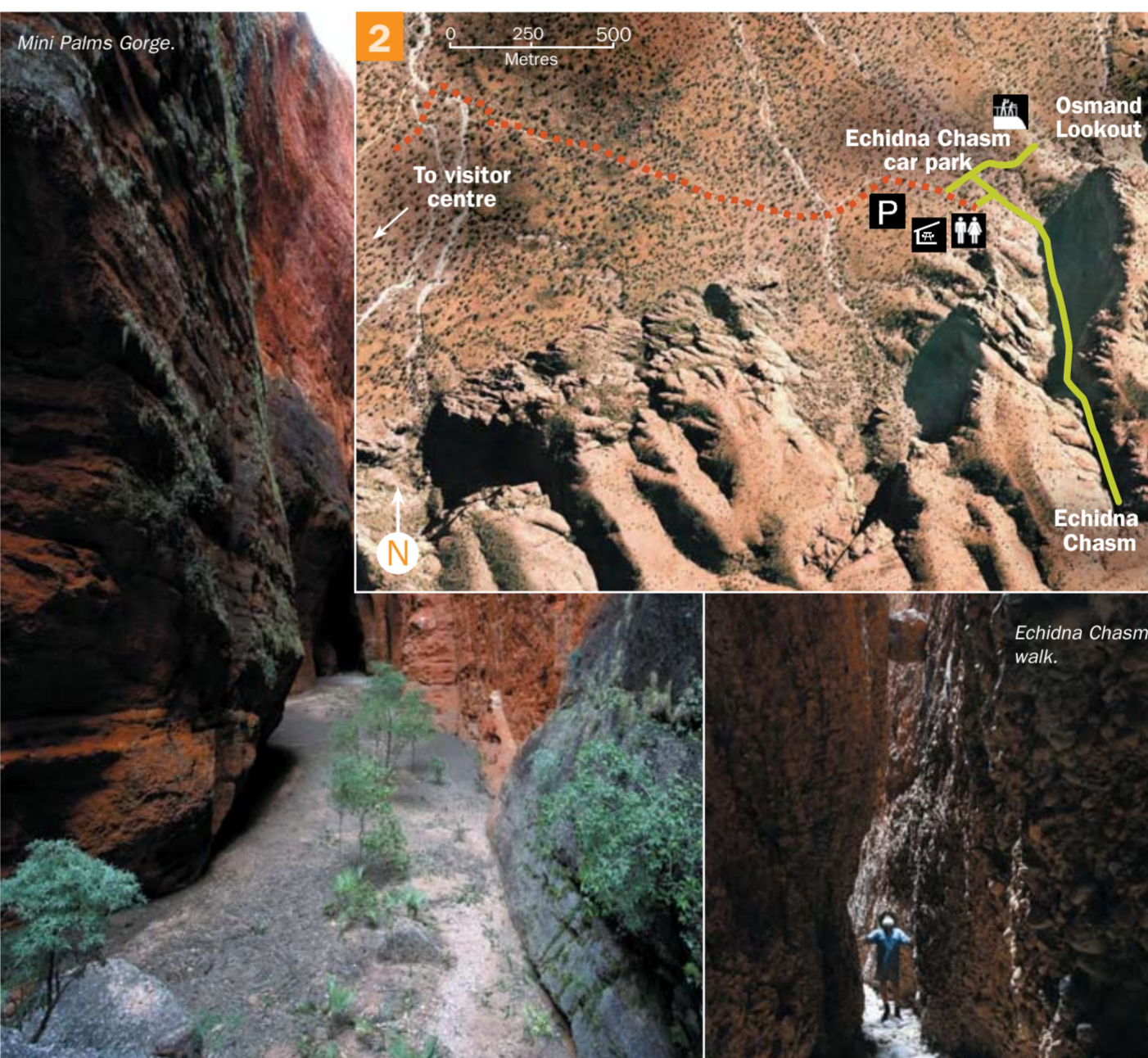
Grade: Moderate. There are some short steep slopes and numerous ledges to be negotiated.

What you will see: Trail follows Piccaninny Creek, spurs off through domes to lookout over Piccaninny Creek.

Facilities: Toilets and shaded areas at Piccaninny Creek car park.



Cathedral Gorge.



Mini Palms Gorge.

Echidna Chasm walk.



An overnight walk into Piccaninny Gorge, the longest and most spectacular gorge in the park, is a highly rewarding experience – one that will be remembered for a lifetime.

The walk

The gorge has no marked track and no defined end point so hikers must rely on their own navigational skills to complete the walk. The track can be divided into two sections – a seven-kilometre walk in relatively open terrain along Piccaninny Creek to the entry to Piccaninny Gorge (the Elbow) and the walk within the gorge system itself, a total of more than 30 kilometres.

The track grading is generally easy up until the gorge entrance. It then becomes moderately difficult in the gorge itself, with hikers having to negotiate around fallen boulders and loose rocks along creek beds.

Visitors wishing to undertake a shorter walk can follow Piccaninny Creek until it reaches the entrance to the gorge at the Elbow. This unmarked trail is a return distance of 14 kilometres.

Features of the gorge

The gorge was formed by the forces of erosion acting on the sandstone of the Bungle Bungle Range. The result is a complex series of side gullies and gorges, which extend like the fingers of a hand into the sandstone massif. Hikers can explore the system, walking past fallen blocks of sandstone beneath towering sandstone cliffs. *Livistona* palms dot the gorge walls and small waterholes are found deeper in the gorge system. Further up into the system there are sheltered side gorges containing large waterholes and lush vegetation.

How long will it take?

To walk to the entrance of the gorge and return will take a full day.

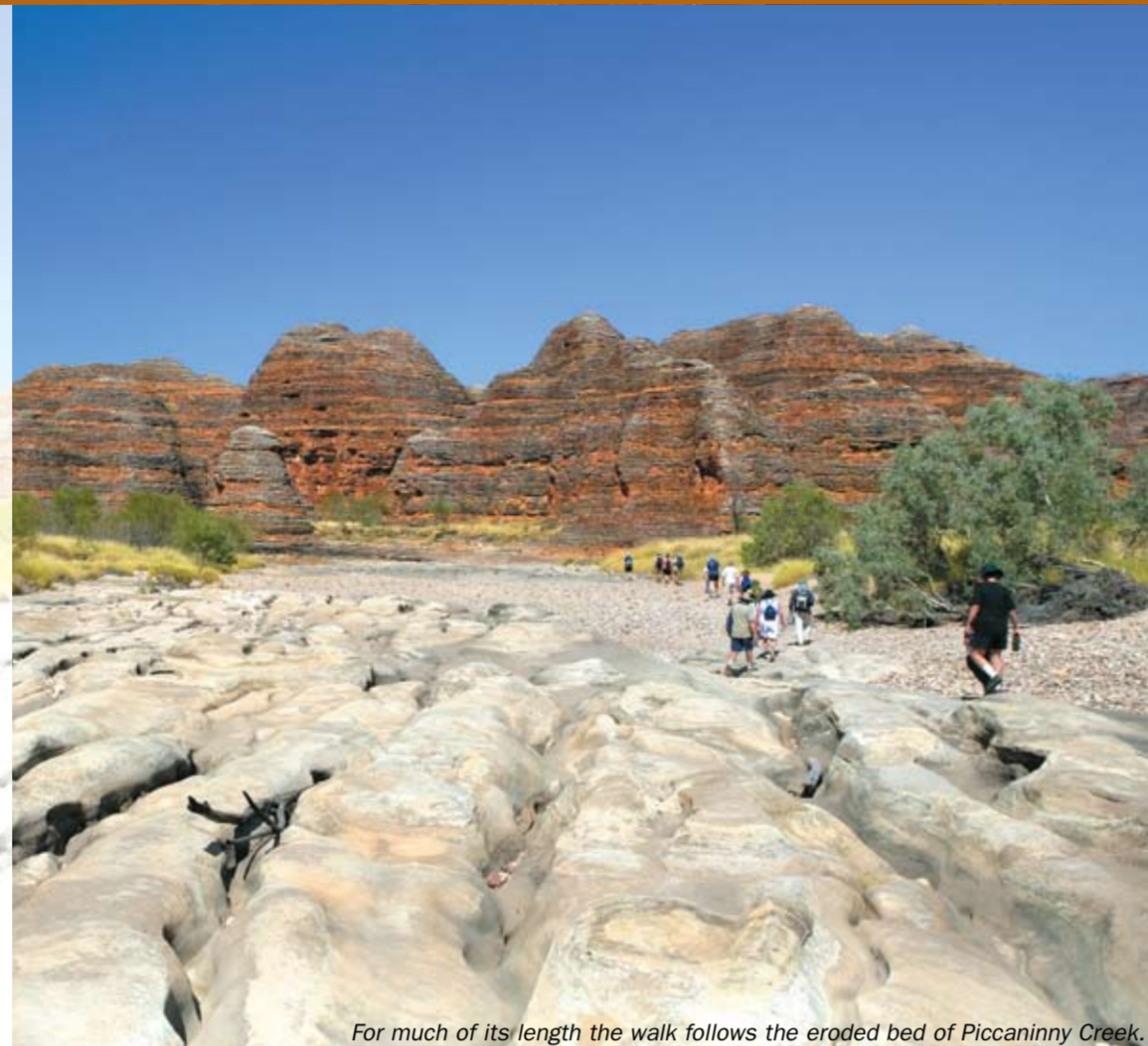
To explore the entire gorge system, hikers need to camp for at least one night. There are several 'fingers' to the main gorge and those with plenty of time can explore them at will.

The essentials

- Register at the park visitor centre (open daily from 8am to 12 noon, and from 1pm to 4pm) before heading out.
- Carry out all rubbish including toilet paper.
- Bury human waste at least 150 millimetres deep and 30 metres from water.
- Be aware that flash flooding can occur at any time during the season. Swimming or washing in stagnant pools is not recommended for health reasons.
- Wear supportive footwear, adequate clothing, a hat and sunscreen.
- Do not put detergents, soap or food scraps into waterholes.
- Helicopters regularly pass over the gorge. Do not wave to them as this indicates an emergency.

You will need...

- Allow five to eight litres of water per person per day. There is no reliable water along the route.
- Adequate food.
- Fuel stove for cooking. Fires are not permitted.
- Warm clothing and sleeping gear – temperatures can go below zero degrees at night.
- First-aid kit.
- EPIRB (emergency locator beacon).
- Maps or GPS.



For much of its length the walk follows the eroded bed of Piccaninny Creek.



Beehive domes of the Bungle Bungle Range.

Piccaninny Creek.



Erosional forces have shaped the sandstone of the Bungle Bungle Range.



Purnululu's striking geological features are universally significant and led to the park gaining World Heritage listing.

Purnululu's striking beauty and remarkable geology

The striking landscapes of Purnululu National Park are so stunning that they have earned the prestigious title of being listed as a World Heritage Area.

The World Heritage listing came about in 2003 thanks to two main features – the region's incredible natural beauty and its outstanding geological value.

You need only take a scenic flight above the towering beehive-like domes of the park's Bungle Bungle Range to understand the reasons behind the first criteria.

From above you can see the incredible natural beauty of this geological oddity.

A maze of striped majestic domes sweeps across the landscape, soaring up to 250 metres above the surrounding plains.

A network of narrow gorges runs through these domes, creating a seemingly endless series of twists and turns through a city of rock sky-rises.

The range is particularly lovely in the golden glow of the late afternoon light when the sun's dying rays cast a lightshow in colours ranging from brown through to purples, reds and golds.

The range's colour also changes with seasons, especially after rains. Monsoonal downpours spark natural waterfalls and create pools throughout the intricate maze of rocky domes.

The waters also feed the majestic *Livistona* fan palms which grow in striking size and colour throughout the range.

Combine each of these factors and you have a natural landform which exudes an almost mystical quality – more than enough reason to meet the World Heritage listing criteria for "superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance".

But of course this World Heritage listing is not just about looking nice. It's also about the Bungle Bungle Range's remarkable geology.

The ranges were created after 20 million years of sculpting by the hands of Mother Nature, who created the right mix of geological, biological, erosional and climatic phenomena to fashion this geological masterpiece.

Geologists are interested in the Bungle Bungle Range because of its beehive-like domes, known as cone karst formations, which are regarded as the world's most exceptional examples of cone karst formation in sandstone.

Geologists are fascinated because it was shaped within such an ancient and stable landscape through a combination of dissolution, weathering and erosion – all at just the right mix for these natural wonders to occur.

The result of this geological masterpiece and its stunning nature is a natural phenomenon of universal appeal. Indeed, such is the nature of the park that visitors are encouraged to journey to this far flung corner of the nation to explore its striking beauty.

Why is Purnululu World Heritage listed?

To become World Heritage listed, a site must be of outstanding universal significance and meet one of UNESCO's 10 natural and cultural criteria. Purnululu was granted a listing based on two natural criteria.

It contains superlative natural phenomena or is an area of exceptional natural beauty and aesthetic importance.

It is an outstanding example representing major stages of the Earth's history, including the record of life, significant ongoing geological processes in the development of landforms, or significant geomorphic or physiographic features.



For bookings and further enquiries
 Slingair Kununurra:
 (08) 9169 1300 or 1800 095 500
 www.slingair.com.au
 Alligator Airways Kununurra:
 (08) 9168 1333 or 1800 632 533
 www.alligatorairways.com.au
 Heliwork Turkey Creek (Warmun):
 (08) 9162 7337
 Heliwork in Purnululu National Park:
 (08) 9168 7335

Up, up and away... See the Bungle Bungle Range from the air

So you want to see the beehive domes from the air, maybe take a bird's eye view of Piccaninny Gorge or see what the Bungle Bungle massif looks like in its entirety?

Well what better way to do it than from a small plane or helicopter flying above and around this amazing 360 million-year-old rock formation!

Plane or helicopter?

What's best for you...

So what is the difference between fixed wing and helicopter flights? The helicopter is a close-up look – a thrill ride – a real WOW factor – doors off, wind in your hair.

The fixed wing aircraft gives a wider view – a look at a vast expanse from a higher aspect rather than a smaller area close up. Both are great for photography.

Choosing a flight

You have several choices which can be divided into the following three categories:

1. Helicopter flights from the park

Helicopter rides are available from Bellburn Airstrip situated within the park. They operate from April to November. For self-drive visitors, call into the booking office at the airstrip

on your way to Piccaninny Creek carpark. Options include the standard 30 minute scenic flight, an 18 minute 'Domes Special' and a 60 minute 'Long Look'.

2. Helicopter flights from Turkey Creek (Warmun)

Heliwork in Turkey Creek operate all year (except Christmas Day and New Year's Day) departing from the Turkey Creek roadhouse – a great choice for those with two-wheel drive vehicles, caravans or less time. Because of the extra distance they are slightly more expensive than flights in the park but cover more ground. Flights take about 45 minutes.

3. Plane flights from Kununurra

You can take a scenic flight over the park, combine a flight with a four-wheel drive tour or even organise a drop off or pick up after an extended, overnight stay in the park. The choice is yours!

Flights operate all year round and depart from Kununurra airport. A flight out and back to the park takes around two and a half hours but can be extended to a full day tour or even longer when a ground tour is included.

An added bonus is that the flights take in the Argyle diamond mine and Lake Argyle.

Photographing the Bungle Bungle Range

Tips for better photography

- Purnululu's impressive scenery is a magnet for those who enjoy photography. Here are some tips that will help you get the best holiday snaps.
- The light can be harsh in the Kimberley. Take your photos early or late in the day when the light is softer. Consider using a polarising filter to cut the glare.
- In some cases, midday can be the best time for taking photos. More light penetrates Echidna Chasm in the middle of the day, giving you the opportunity to take photographs that can, at other times, be too dark.
- What looks big and impressive to your eye can often turn out small and unimpressive in a photo. Try

- putting something in the photo to show the scale of the object you are photographing.
- When photographing from the air remember that helicopters and planes vibrate. Adjust your shutter speed to a higher setting to avoid blurry photos.
- Haze can be an issue especially when taking photos from the air. The best conditions are early in the dry season (May/June) when the air is clearer.
- If you plan on taking photos that include pools of water and stunning reflections forget turning up in September! Many postcard shots are taken very early in the dry (April/May) before the water has evaporated.



A photographer in action at Cathedral Gorge walk.

The geology of the Bungle Bungle Range

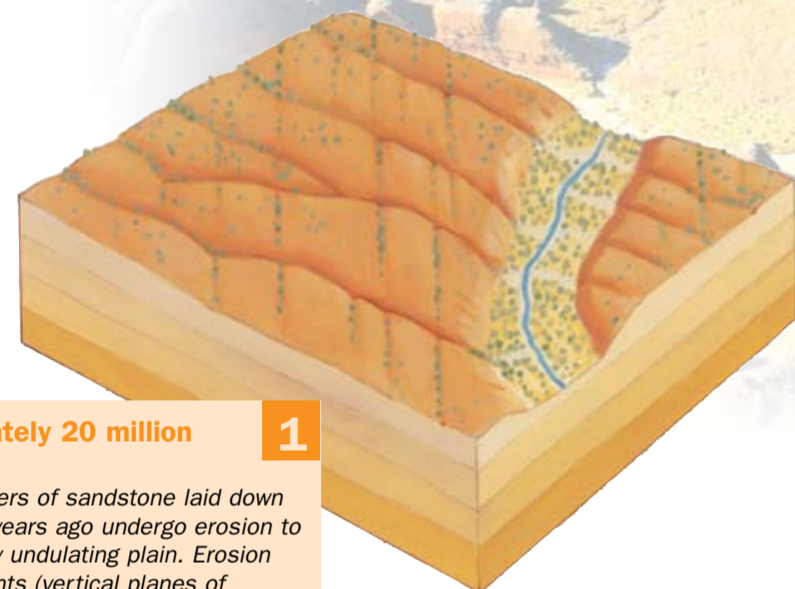
The geology of the Bungle Bungle Range is a complex story set over hundreds of millions of years. The story is much too complex to attempt to handle in the space available here, so rather than cover the whole story we have attempted to answer one of the most commonly asked questions – 'How did the Bungle Bungle Range and the beehive domes form?'

The Bungle Bungle building blocks!

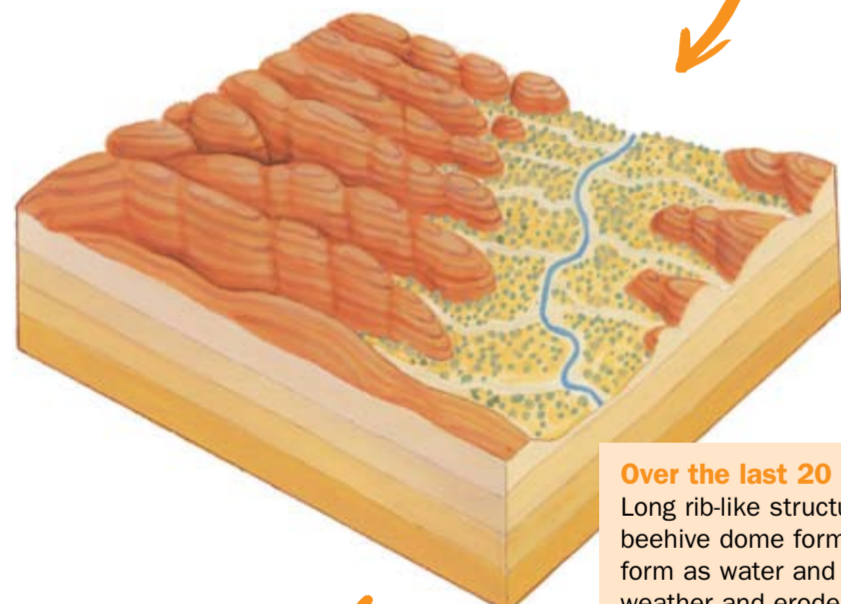
The Bungle Bungle Range you see today is the remains of a large sedimentary rock mass laid down about 360 million years ago. Over millions of years large braided rivers deposited layers of sediment that, with the weight and pressure of more and more sediment upon it, eventually turned into sandstone and conglomerate. These rocks were to become the building blocks of the Bungle Bungle Range we see today.

Once formed, the sandstone of the Bungle Bungle Range underwent massive changes. It was first uplifted to form a mountain range, resulting in joints within the sandstone. Weathering and erosion then began to strip away the overlying younger sedimentary layers.

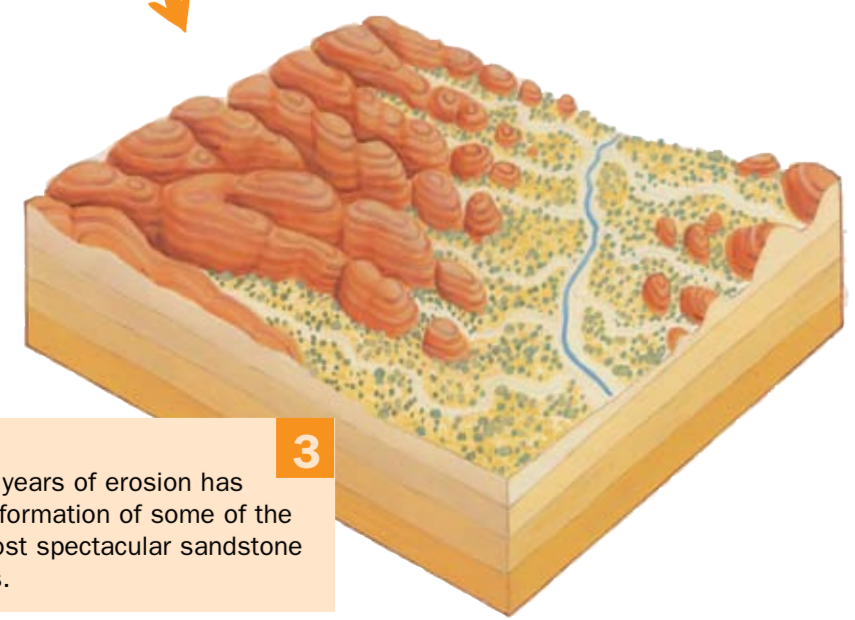
In the last 20 million years weathering and erosion has accelerated to produce the features we see today.



1
Approximately 20 million years ago
The thick layers of sandstone laid down 360 million years ago undergo erosion to form a gently undulating plain. Erosion along the joints (vertical planes of weakness) within the sandstone, cause rivers such as the ancestral Piccaninny Creek to incise the plain.

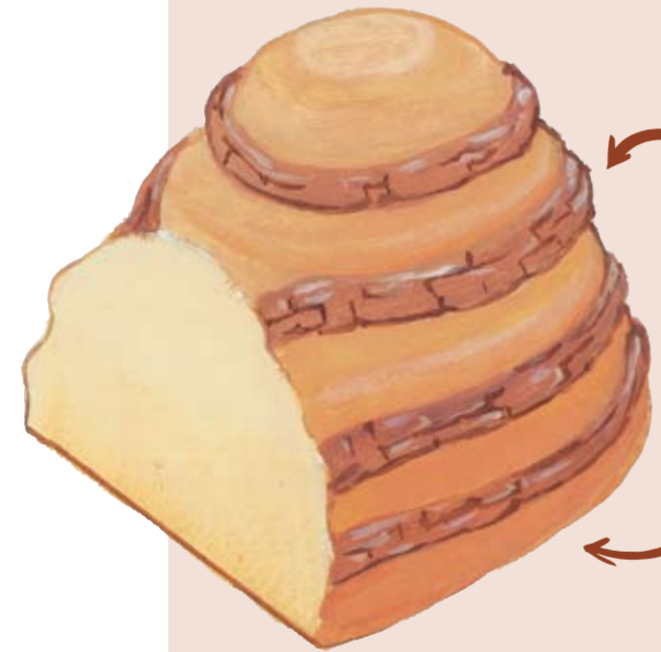


2
Over the last 20 million years
Long rib-like structures and beehive dome formations begin to form as water and wind preferentially weather and erode the joints and other areas of weakness.



3
Today
20 million years of erosion has led to the formation of some of the world's most spectacular sandstone formations.

Where does the banding come from?



Layers of sandstone with higher clay levels support cyanobacteria. These organisms only inhabit the top few millimetres of the sandstone but this is enough to provide a coating that protects it from erosion.

Clay-poor sandstone is more porous and dries more quickly, creating conditions that don't favour cyanobacteria growth. The orange colour is due to oxidation of iron in the sandstone.

Rust or cyanobacteria!

The sandstone that makes up the beehive formations was laid down by ancient river beds, forming sedimentary layering in the sandstone. These layers are evident as either grey or orange bands, each with different physical properties. Dark grey bands indicate the presence of cyanobacteria that grows on sandstone layers with higher clay levels and an ability to hold moisture; conditions that are conducive to the growth of the bacteria. Orange bands are evidence of sandstone with lower clay content and higher porosity. This results in the sandstone drying out quicker, a property which doesn't enable the cyanobacteria to grow in these bands. Without the bacteria the sandstone surface is left bare and becomes oxidised to form a rusty orange colour.



Darker layers of sandstone indicate the presence of cyanobacteria.

Shaped by extremes of climate and diversity of habitat

Purnululu National Park World Heritage Area is a place of extremes.

The park's semi-arid climate is typified by a short, wet summer during which almost all of the year's 600 millimetres of rain falls, followed by a prolonged winter dry season when little or no rainfall may be recorded for up to seven months. These extremes of climate and the location of the park in a transition zone between wetter tropical areas to the north and deserts further south, have resulted in a remarkable mixture of wildlife.

Plants

The park's diverse habitats, ranging from sheltered gorges to open semi-arid plains, provide for a wide variety of plants. More than 600 species have been recorded, some of which are only found in the park.

Across the Kimberley most of the vegetation types fall into the category of open woodland with a grassy understorey. This is the typical tropical savannah of northern Australia and for much of the flatter country of Purnululu this habitat type dominates. Typical tree species include bloodwoods on the sand plains and the snappy gum (*Eucalyptus brevifolia*) in the rocky spinifex-covered hills, while dominant species of the understorey include numerous spinifex species. Purnululu has 13 species of spinifex, more than anywhere else in Australia!

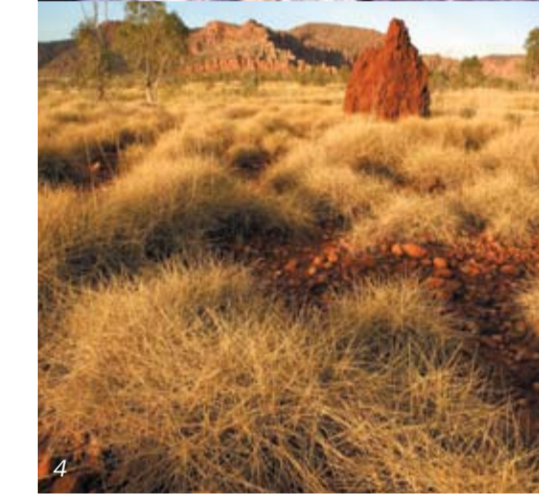
Away from the flatter country, the park's sheltered gorges protect the most southerly patches of rainforest found in the Kimberley region. This habitat is home to several rare or restricted species some of which are found nowhere else in the world. Many of these are relics from much wetter climates and include vines, figs and ferns such as the Morse fern (*Taenitis pinnata*), a species otherwise only known from distant northeast Queensland and the Pacific Islands. The fan palm *Livistona victoriae* commonly seen throughout the park is another relic that is found in Purnululu, the east Kimberley and other sandstone areas near the Victoria River in the Northern Territory.

Animals

More than 149 bird, 85 reptile, 32 native mammal and 12 frog species have been found within the park. Unfortunately most of these animals are difficult to find, but if you are patient and spend a little extra time you may be gifted with a rare glimpse.

Birds are the park's most commonly seen wildlife and you can very easily find a wide variety of honeyeaters, doves, woodswallows and finches. More elusive species include the white-quilled rock-pigeon, which you may encounter if you walk quietly among the park's beehive dome formations.

The Australian bustard, or plains turkey, has declined over much of its range. The Kimberley region remains a stronghold and if you are



1) Spinifex pigeon. 2) The park's sand plains support many plant species that are typical of the desert including the prickly grevillea (*Grevillea wickhamii*). 3) Short-eared rock-wallabies, found on the park's rocky slopes, are rarely seen. 4) The park supports 13 species of spinifex – more than anywhere else in Australia! 5) The fan palm (*Livistona victoriae*). 6) The magnificent tree frog (*Litoria splendida*) is only found in the Kimberley region.

lucky, you may sight one. The male's impressive breeding display is a particularly spectacular sight as he inflates his huge throat pouch with air, flips his tail up over his back, raises his head in the air and roars loudly.

The park also supports a wide variety of mammal and reptile species, including many species which are present at the northern or southern limit of their range. The park boasts at least one endemic

lizard, *Lerista bunglebungle*, a small skink only found on the top of the Bungle Bungle massif and so rare that it has never been photographed!

The diverse animals and plants of Purnululu are at risk from fire, feral animals and weeds. You can help by leaving your pets at home, extinguishing your campfire, taking all of your rubbish with you and ensuring your clothes and equipment are free of weed seeds.

To burn or not to burn?

Fire in the park

Mention the word fire to most people and it immediately conjures up thoughts of danger and destruction.

Much of the vegetation across northern Australia is tropical savannah, an open forest type with a grassy understorey. This habitat has evolved in the presence of regular fires and many plants and animals rely on fire for their survival.

There are other species that are killed by fire and will only survive in areas excluded by wildfire. For example the desert mouse lives in dense, long, unburnt spinifex while native cypress (*Callitris* sp), once present in the park but now locally extinct, is killed by fire.

Is fire necessary and if so how often should we burn?

Trying to provide a fire regime for all

animal and plant species is a difficult proposition and raises the question: *When should we burn and how often?*

There is no straightforward answer, but what is becoming clear is that regular large fires in the latter part of the dry season may be destructive to wildlife. These fires can generate intense heat and burn large areas of country, killing many fire sensitive species and, in time, resulting in habitats consisting only of a few fire tolerant species.

The Top End is subjected to these hot, late-season fires and now many land managers are trying to revert to a more diverse burning regime to provide for the fire sensitive species. A prescribed burning program in the early dry season is thought to more closely mirror the past burning practices of Aboriginal groups.

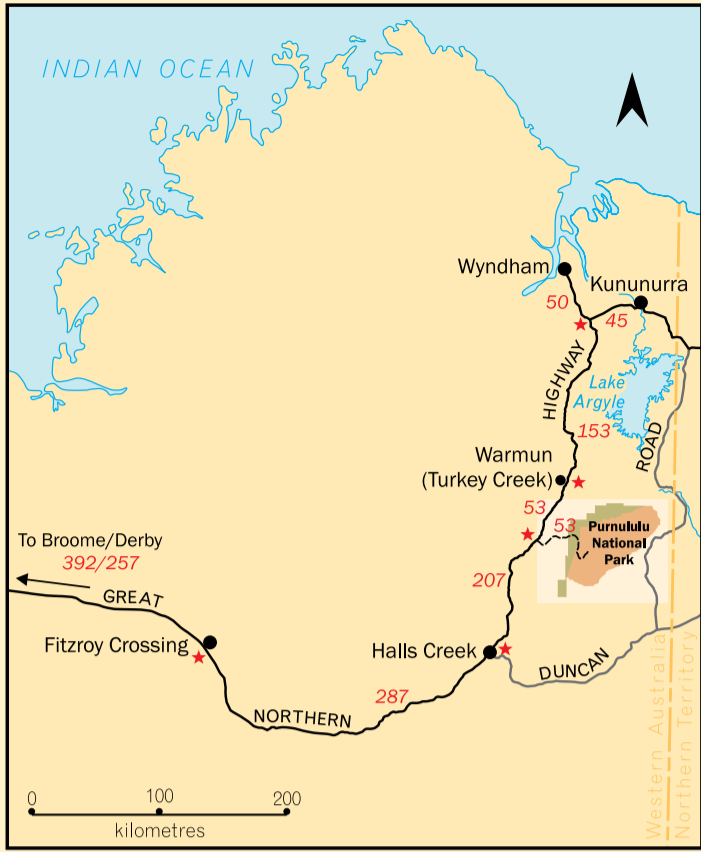
This practice aims to produce smaller 'cooler' fires that break up the country and provide natural barriers against larger, late-season fires. Their effect is to provide a mosaic of habitats that range from recently burnt to unburnt patches and therefore provide habitats for all species.

In practice, creating a mosaic of habitats has proved to be difficult because of a lack of resources available to managers and the presence of other influencing factors. Lightning strikes and fires lit by a careless camper or smoker can ruin a planned burning program.

You can help by observing the fire bans in the park and ensuring cigarette butts don't start a wildfire.

Right: A wildfire in the Kimberley.





Travelling times and distances from Purnululu National Park Visitor Centre

	Distance	Time
Airstrip and helipad	18km	30min
Bellburn	15km	25min
Echidna Chasm car park	20km	35min
Kungkalahayi lookout	3km	10min
Kurrajong campground	7km	15min
Mini Palms car park	19km	30min
Osmand Lookout	21km	35min
Piccaninny Creek car park (Cathedral Gorge and Beehive domes)	27km	45min
Visitor centre to highway	53km	2hr
Walardi campground	12km	20min

Contacts

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Kununurra Visitor Centre
 Coolibah Drive
 Kununurra WA 6743
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Halls Creek Visitor Centre
 71 Thomas Street
 Halls Creek WA 6770
 Ph (08) 9168 6262

Purnululu National Park Visitor Centre
 Ph (08) 9168 7300 (April–December)
 Ph (08) 9168 4200 (January–March)

Visit DEC's NatureBase website at www.naturebase.net

