

How did life begin? Are we alone in the universe? The answers to these big questions – and their impact on

**OUT**



**THIS**

space exploration – might lie in the ancient landscapes of Australia's North West, writes Sam McCue.



Photography by Tom Putt



“If you were to look from space onto early earth, you would have seen an alien-looking place – it was nothing like the blue-green marble we can see today,” says Professor Martin Van Kranendonk, a geologist and director of the Australian Centre for Astrobiology. “That was until the earliest primitive microbes learnt to harvest light to gain energy. The waste product of their metabolism was oxygen and that oxygen slowly accumulated until it changed the composition of our sky and our seas.”

I’m on Nyamal country in Western Australia’s Pilbara region with Big Questions Xpeditions (BQX; [bqx.com.au](http://bqx.com.au)), whose all-inclusive expert-led tours fund scientific research into early life, the universe and human consciousness.

As Van Kranendonk expounds, some of the group nod knowingly; the rest are gobsmacked. I’m in the latter category. We’re a disparate bunch: seven curious people, including two macadamia farm owners and their investor son; a Bangkok-based venture capitalist; a science teacher from a private school; and me, mining my memory for decades-old geography lessons.

Under a cloud-streaked sky, we’ve picked our way through spinifex tussocks up a gentle slope to a rocky red outcrop in a place that holds the vestiges of the oldest life on earth.

We’re on a seven-night adventure with BQX, learning to recognise and understand stromatolites, ancient rock layers formed by the growth of blue-green bacteria. In cross-section they look like little wrinkled mountain ranges.

Humble as they might sound, the Pilbara stromatolites are evidence of life 3.45 billion years ago, eons before humans, eons before dinosaurs and, in fact, eons before any multi-celled organisms evolved. It’s these stromatolites that point to where humankind might find life outside our world – on Mars, perhaps, which has much in common with our planet, including its age.

“As a scientist at NASA, I feel it’s my job to explain why we come here,” says NASA Mars Perseverance program scientist Mitch Schulte of the value of his visits. “A place like this helps people connect with what we’re doing and helps to bring it a bit more down to earth.” After leading a group of fellow Mars scientists on a trip to the Pilbara stromatolites in 2019, he’s planning a second visit by a NASA team in 2023.

Though I was introduced to Schulte and Van Kranendonk ahead of the trip, after BQX sent homework links to articles and interviews with the scientists, I’m a little starstruck to meet them both at the getting-to-know-you dinner in Perth on the eve of our expedition.

Next morning, along with BQX founder and director Darren Dougan and the company’s product manager and organiser-in-chief, Kerry Rainey, we fly two hours to Port Hedland in the north-west of Western Australia, where we’re divvied up between three 4WD vehicles and given burritos and fruit for breakfast on the go.

The following few days take us to Marble Bar, Karijini National Park, mining town Tom Price and Karratha through stretches of

**(Left) Weano Gorge in Karijini National Park; (previous pages) the Pilbara ranges from Mount Nameless (Jarndunmunha)**



**Kalamina Gorge in Karijini National Park**

mauve and yellow wildflowers splashed with scarlet Sturt's desert peas, iron-rich outcrops and escarpments. The plump termite mounds resemble giant cocoa-dusted chocolate truffles. I see the occasional caravan but they're outnumbered by 18-wheeler trucks hauling mineral treasures to port.

Despite recent rains that have painted the red earth green, this is tough country. Marble Bar is officially Australia's hottest town, having recorded our longest heatwave – 160 days over 37.7°C (no wonder these expeditions only take place in the winter months). For much of the year the Pilbara looks a lot like the terrain in images from Mars.

The experts read the landscape like Kelly Slater reads the waves – though the timeframe is vastly, almost inconceivably, different – and they're teaching us to do the same. "This has brought rocks to life for me," says veterinary nurse Justine Catto.

The region may be rugged but our digs aren't too shabby. On the first night we arrive at our private campsite on the Shaw River to find tents with stretchers ready for sleeping bags, a candle-lit linen-clad table under a canopy of fairy lights and another table topped with artfully arranged gum branches next to a cooler of chilled drinks (and a couple of toilet tents discreetly off to the side). Dinner is marinated chicken cooked over coals, baby potatoes, corn and salad, and we wake to a breakfast of yoghurt, fresh fruit and granola.

We spend a night at Marble Bar's Travellers Rest Motel and have dinner at the Iron Clad Hotel. No longer strangers, we chat happily over beers and pub food about – literally – life, the universe and everything.

Day four takes us to Karijini Eco Retreat where we settle in for a couple of days. We're in Karijini National Park to learn about



**Knox Gorge in Karijini National Park**

banded iron formations – BIFs to those in the know – but there’s also time to explore and appreciate, at our own pace, the spectacular gorges, falls and lookouts those formations create.

One morning I wake in my big comfortable bed to the sound of birdsong as the sun rises over the bush through the wide netted window of my timber-floored tent. That night we take chairs, drinks and snacks to the nearby Joffre Falls Lookout to watch the sun set as the full moon rises above the gorge wall.

Multimedia artist Helga Groves, who’s developing a new body of work based on this trip, brings an aesthetic perspective. “The Pilbara landforms are beautiful. Their colours are constantly changing throughout the day as the light shifts.”

To date, BQX’s work has supported a Masters student to complete her thesis on protecting stromatolites, Van Kranendonk to host a conference on astrobiology and PhD candidates Luke

Steller and Bonnie Teece to work with Aboriginal and Torres Strait Islander students from Hedland Senior High School. Upcoming international expeditions include trips to Chile’s Atacama Desert to visit telescopes that help us understand dark energy and dark matter and to Bhutan and Costa Rica, where science of consciousness studies are being undertaken.

For BQX founder Dougan, the enthusiasm and easy interactions between the experts and their guests are an important part of the pay-off. “It’s a great commercial way to provide funds for research and to create an ecosystem of curious Australians. And it’s also a lot of fun!”

In just a week, I’ve flown and driven more than 3500 kilometres across the country in a big loop from Perth to the Pilbara. In my mind, though, I’ve travelled across billions of years, as far as Mars and back. ●