

: RICHARD HARRIS

> WITH MANY THOUSANDS OF CAVES LITTERING THE NULLARBOR, IT WOULD BE A LIFETIME'S WORK TO VISIT AND EXPLORE THEM ALL. BUT THERE ARE A FEW THAT ARE SO SPECIAL THEY ARE DEFINITELY ON MY BUCKET LIST. ONE OF THE STARS OF THE SOUTH AUSTRALIAN NULLARBOR IS A PROTECTED SITE THAT HOLDS AMAZING SECRETS BOTH ABOVE AND BELOW THE WATER...

When Ian Lewis first snorkelled the small lake in Warbla Cave on the Nullarbor in 1969, he had no way of knowing what an amazing cave system lay just beyond the glow of his small torchlight. In fact, he was probably concentrating closely on keeping the end of his snorkel above the heavy layer of bat guano that floated on the water surface! Fascinated by the potential of what he saw, he went back to Adelaide to do his scuba course then returned to the Nullarbor over the ensuing five years with divers like Phil Prust, Dave Warnes, Rob Turnbull, Ron Doughton and Keith Dekkers to make the first exploratory dives in many of the area's now famous sites. On one of those trips, Keith Dekkers made the first dive into Warbla with a single 72 cubic ft cylinder and laid 60m of line. Thus began the gradual discovery of many hundreds of metres of brilliant white limestone phreatic passage and arguably the most beautiful of the Nullarbor Caves.

As the significance of the vast Nullarbor karst became apparent, extraordinary finds of



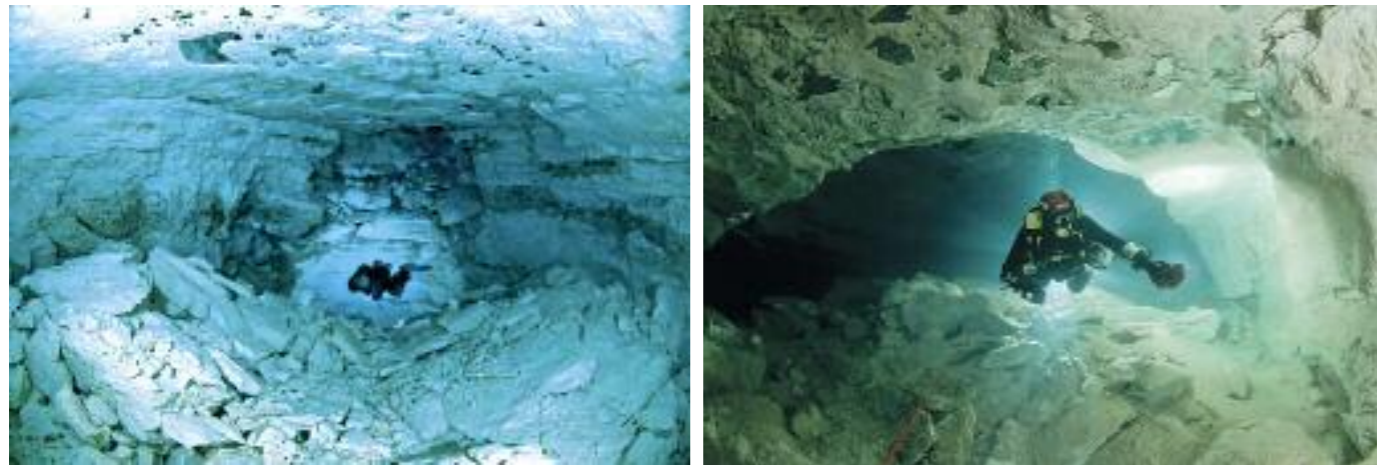
Left page: There's only one way in and out of the dry doline at Warbla, and that's on the end of a rope. Abseil down and SRT (Single Rope Technique) up. I never put on weight while on the Nullarbor!

Top: Ken Smith and Grant Pearce enjoy a relaxing swim through one of Australia's most beautiful caves.

Left: Looking up as divers descend from the lake chamber of 'First Lake' is a stunning sight.

Above: Looking more like dirty brown algae, one of the many types of bacterial growth in the cave clings to the walls. Many places like this in the cave were marked as reference points and photographed to compare with Peter's earlier images.

WARBLA WONDERWORLD



scientific value were made in many of the caves. Signs of early Aboriginal visitation, fossilised megafauna bones, bat colonies and large underwater growths of bacteria were documented. With increasing pressure from visiting cavers and divers during the 70s and 80s, a decision was made to try and preserve some sites as 'reference caves'. Primarily because of its value as a unique example of a large Nullarbor dry cave, Warbla was declared such a site meaning cavers could only visit if they had an appropriate scientific permit to perform research at the site.

So when an opportunity arose to visit the cave to further document the subaquatic bacterial colonies I jumped at the chance! I was planning to be diving and caving on the Roe Plain in late 2010

around the same time that Dr Peter Rogers would be performing a follow-up to his earlier survey work in Warbla. So after a wonderful trip to Burnabbie and Olwogin Caves with Paul Hosie and Peter's daughter Liz, I drove back into South Australia with Liz to meet up with the divers at Warbla.

On our arrival Peter and wife Cheryl Bass were already on site, setting up the cave to load in diving equipment. They had been joined by Adelaide cave diver Ken Smith who was hosting visiting US diver Forrest Wilson (the inventor of the commonly used line arrow and various other pieces of cave diving equipment). Also present, Grant Pearce, a cave diver from the Mt Gambier region. A great team and a week of glorious diving ahead!



Top Left to right:

In the vast chambers of the Nullarbor's flooded caves, it is often difficult to portray size and distance in photographs. The use of slave strobes carried by other divers helps illuminate more distant parts of the passage. In between photos of course, the passage are pitch black apart from the divers' torches.

Clouded water occupies the first few metres of the cave from washed in silt and guano. Once passed, the water is as clear as gin.

While most of the cave is large and spacious, there is still opportunity to check out a few nooks and crannies. Here Grant demonstrates the advantages of side mounted cylinders.

The Warbla dive team L-R: Liz Rogers, Ken Smith, Cheryl Bass, Peter Rogers, Grant Pearce, Forrest Wilson and the author.

Trip leader Peter Rogers is a veteran of cave diving in Australia, and has been researching the fascinating bacteria of the Nullarbor for many years.

Below left: Abrukurrie Cave is a worthwhile side trip for visitors to this area. Its massive dry chambers are similar to the flooded sections of caves like Cocklebiddy.



Like many Nullarbor caves, getting you and your dive gear to the water's edge is half the fun. The doline is sheer-sided, all gear must be lowered to the base, and all divers must abseil in and rope climb out. Once everything is in a big pile at the bottom of the doline, multiple hikes down to the water with all the gear

must occur. The walk takes about 30 minutes with a load and covers mixed terrain including large boulders, rubble and guano slopes and small vertical drops. Fair to say we were ready for a rest once everything was installed by the water's edge! To save carrying cylinders out after each day's diving, a high-



BACTERIAL COLONIES IN THE NULLARBOR KARST

The microbiology of the Nullarbor bacterial populations is as bizarre as it is fascinating. A paper published in 2001 in *Environmental Microbiology* ((2001) 3(4), 256-264) gives an insight into this remarkable phenomenon. Unique and isolated populations like these offer insight into how life systems on other planets might occur, based not on hydrocarbons but on other chemicals.

Like the sulphur-based life forms recently found in the deep oceanic vents and some remote Romanian caves, these bacteria may be 'lithoautotrophs'; that is, they take inorganic matter from the rock and convert it to organic building blocks for life and energy. In the Nullarbor, nitrite in the rock and water may be one of the critical building blocks.

Where the bacterial mantles grow, the limestone is often pitted to a depth of up to 5mm. Beneath the colonies, a snow-field of debris maybe found. This strongly suggests the bacteria are interacting with the rock. Maybe bacteria are also involved with the original genesis of the caves themselves?



Left: Part of any cave research involves accurately mapping the site. Ken Smith is well known for his use of radiolocation 'pingers' which once placed in the cave, can be accurately pinpointed with GPS on the surface. In this way, accurate reference points within the cave are identified. Ken recently received a science award from the American National Speleological Society for his worldwide work with this technology.

Below: Grant Pearce, a cave diver from the Mt Gambier area found plenty in common with one of the USA's best known cavers Forrest Wilson.



pressure gas line was run all the way down to the water from the surface compressor. It's definitely worth the initial effort to install this line.

For me, camping on the Nullarbor and enjoying this pristine wilderness is as much fun as the diving itself. Being able to contribute to some science whilst enjoying these surroundings is a real bonus. Peter's original research demonstrated that over 30 species of bacteria colonised the rocks in this and other flooded local caves. Some of them

are scientific curiosities, which appear to feed on the rock itself.

While tagging and imaging the myriad colonies in the cave, we also got to explore and enjoy all the nooks and crannies that make up this intricate site in the process. The images here hopefully convey the beauty of this site, and demonstrate why such places need to be protected. Video of some of our diving can also be viewed at www.vimeo.com/16351007

> LINK: www.divedoc.net

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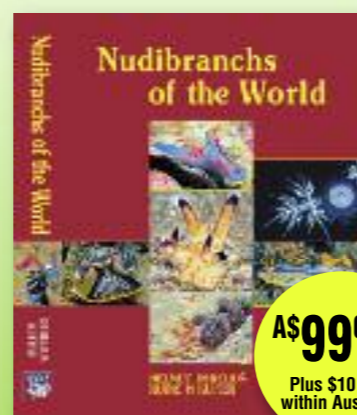
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Cruising the reefs in the Maldives Southern Atolls, I came across this honeycomb moray peering from its coral castle. I recognised a perfect wide angle macro photo opportunity, exactly what I was looking for as my camera system was set up for this genre. I had to move carefully into position to avoid spooking the moray and to add another degree of difficulty, a slight current from behind me threatened to push me onto the animal. Any sand I disturbed would also float into my picture area and create backscatter. I just hate this scenario. I much prefer currents from the opposite direction – any sediment I stir up will spoil some other photographer's pictures!

After taking a number of successful images, it was clear the moray was very accommodating so I took advantage of my wife Cherie, who was filming nearby and exploited her underwater modelling skills as well. During this process a cleaner wrasse swam in and also obliged. This allowed me to create a multi subject image. The difference being, an image that is made rather than just taken!

Image by Kevin Deacon. Location: Maldives, Southern Atolls.
Genre: Wide Angle Macro.

Photography Data: Nikon D200, Nikkor 10.5 lens + 1.4 Teleconverter, Seacam Housing, Seacam Fisheye Macro Dome, Dual Seacam Strobes, Manual Exposure Mode. ISO 100. Exposure f8 @ 1/100th second.

Photo Hints: Managing the current and coordinating the camera simultaneously was key to achieving the image. I have a useful tool I encourage all my UW photography students to use – a heavy duty stainless steel probe on a retractor clipped off on my BCD. It's excellent for maintaining contact with the seafloor, avoiding contact with sediment or delicate corals and as a sand spike in currents or where stability is required. Yes, these are one of the UW photo accessories you'll only find at Dive 2000.

Cherie my model is also invaluable; she knows how to position herself within the constraints of various lenses, how to cheat her face so the strobes don't cast severe shadows, techniques for controlling her hair and most of my often incomprehensible hand signals!

Equipment Comments: Although any wide angle dome port can be used for this genre,

KEVIN DEACON ON SITE:

CHERIE AND THE HONEYCOMB MORAY



Seacam (with technical and field development by exceptional Seacam photographer Jurgen Freund) produced a breakthrough port – a mini dome of perfect quality optical glass optics that reduces the overall size of the camera system and allows a photographer to work much closer to the subject and the seafloor. The Seacam mini dome let me shoot from well below the moray and include Cherie in frame at a suitable upward angle – an angle impossible to achieve with most domes.

Interesting Facts:

The honeycomb moray's beautiful pattern extends all the way into its mouth. This is one of very few moray eels that can grow to 2 metres. Morays are often seen with the mouths agape, this is a breathing posture, not a threat. Although generally not aggressive they can inflict serious wounds so be careful if you're close to them. A very gentle approach will normally be tolerated; sudden movements by you will create water pressure motion that marine animals feel and react to.

Kevin Deacon is one of the pioneers of Australian underwater photography. His images have been published worldwide in prestigious books, magazines and advertising media. Kevin and Cherie Deacon along with their team of scuba and photo instructors, dive masters and tour guides operate Dive 2000 in Sydney, Australia's most experienced dive, travel and underwater photographic equipment centre. www.dive2000.com.au Dive 2000 is also the Australian importer, distributor and service centre for Seacam Products. www.seacam.com