

*Journal of the*

# Australasian Cave and Karst Management Association



# The ACKMA Journal

Official Publication of the Australasian Cave and Karst Management Association Incorporated.

Published quarterly in March, June, September and December.

The opinions expressed in the ACKMA Journal are those of the individual authors and not necessarily those of ACKMA Inc or its officers.

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Photos taken by the authors or editor unless otherwise acknowledged.

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ACKMA Inc is cross-affiliated or otherwise associated with:

Australian Speleological Federation, New Zealand Speleological Society, Australasian Bat Society, The WCPA Working Group on Cave and Karst Protection, Guiding Organisations Australia, Bat Conservation International, American Cave Conservation Association, International Show Caves Association, Cave Diving Association of Australia, The Malaysian Karst Society, The Jenolan Caves Historical & Preservation Society and the USA National Speleological Society Cave Conservation and Management Section

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**FRONT COVER: One of a group of three giant stalagmites in Xe Bang Fai—John Brush (see page 8)**

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# Editorial

This edition carries news of two longstanding Association life members. First, the news concerning one is conveyed with sadness, being a valedictory for one of our founding members, Chester Shaw. Andy's tribute to Chester appears later (although Andy has yet to explain to me how you can visit 0.8 of a cave!).

I first met Chester when I travelled to the Mole Creek Caves with Andy to act as an unpaid field assistant for his survey of Kubla Khan (having, as noted in the June 2019 edition, foisted myself on the survey as a condition of my releasing of Andy to the Tasmanian National Parks and Wildlife Service for this purpose).

Chester's enthusiasm for caves, and particularly his cave world in the Mole Creek karst area, was evident from the few short conversations I had with him on that occasion. I subsequently met him several times when taking my wife and, separately, my older children to the tourist caves at Mole Creek and to explore Croesus Cave. His enthusiasm remained undiminished. His loss is a sad one for our Association.

On a far brighter note, we also celebrate the recognition of our President in the 2019 Queen's Birthday Honours list. Andy has been recognised for his service to cave and karst conservation, not only in Australia but also internationally, by being made a Member of the Order of Australia. The notification to him of his award expressly noted (and recognises) the role he plays in our Association. The conferring of the AM upon him not only recognises his significant contribution over many decades, but also adds lustre to our Association.

As I noted in my report to the AGM, my ability to produce a quality Journal across the four editions since I became editor has been made possible, in no small part, because of contributions from Andy Spate, John Brush and Steve Bourne. That assistance continues for this edition, with significant contributions from each of John and Andy. In this edition, John writes about his travels in Laos and recent developments at Cotter Cave in the ACT.

In addition, we have an article from Mary Traves concerning Tantanoola Dolomite and I have written about the visits which my family and I made, in December 2018, to four World Heritage Neolithic sites on the island of Malta. Finally, we have several short pieces reported in the "Around the show caves" section.

## **The digital future of the Journal**

First discussed as a probability by a meeting of the ACKMA Committee in Margaret River in 2018, a decision was made at the recent committee meeting in Naracoorte, that, in light of increased production costs and slowly declining numbers of those wanting to receive a printed copy of the Journal, the Journal will cease print production and become an entirely digital publication with the June 2020 edition.

For my own part, having remained a print subscriber since the introduction of the digital option, and not having read any digital edition until I became your editor, I had not realised the dramatic qualitative improvement in my reading experience until I read my own-produced, first full-colour, digital edition. Seeing the images in colour was revelatory! Although my epiphany came about solely because of the necessity of the role I had agreed to undertake, having found the signpost to Damascus, there was no doubt in my mind that digital is the only way to go for the future.

However, rather than effecting this change abruptly, your committee considered it was appropriate to give a year's notice of the fact that this change will take place. Although there will be, undoubtedly, some nostalgia for those (like me) who have remained print edition subscribers, the time has come when we must embrace the (brave and not-so-new) digital world for our publication.

## **Back copies of the Journal**

At the recent AGM in Naracoorte, Steve Bourne and I completed the final element of his handover of the editorship of this Journal to me. This comprised my relieving him of the boxes of accumulated back copies he held, dating back over the period since the publication of Steve's first Journal.

Prior to handing over the four or five boxes of past editions, Steve gave those attending the AGM the opportunity to forage amongst the back copies to retrieve those which they might wish to take with them. Although this resulted in my load being considerably lightened, I was still left with a substantial number of back copies across an eclectic range of Journal editions. They have now been brought back to Sydney. I will be compiling a list of back copies that I now have in storage in my Chambers. I propose to publish a list of them in the September 2019 Journal and will make them available, on a "first in, first served", postage-free basis (either as individual copies or in sets) to those members who are interested to receive them.

## **The 2019 Guides' School and AGM at Naracoorte**

A survey was taken from those participating in the Guides' School and material concerning the results will be in the September. For this edition, Mark Delane provides a Shakespearean summary of the two events!

## **The 2020 Conference and AGM venue**

It is now confirmed that the 2020 ACKMA Conference and Annual General Meeting will be held at Jenolan between 2 and 8 May next year. Scott Melton gave a presentation on this to the Naracoorte AGM and several slides from his PowerPoint presentation are later reproduced. Further information will appear in forthcoming Journals.



## President's Report

### Andy Spate AM

**Well another year has come and gone, with many happenings** having been talked about in earlier President's Reports; in the minutes of meetings that John Brush circulated; and in the Journal.

We have a new committee – John Brush as Executive Officer and Tony Culberg as Treasurer have left, to be replaced by Kent Henderson and Dave Gillieson, respectively. Jodie Anderson replaces Ann Augusteyn as the third Committee Member. Our thanks to those who have retired.

At the AGM and the post AGM Committee Meeting, there was much discussion of the need for a strategic plan for ACKMA. I am too old to understand what this means, but we have a group on the Committee which will push ahead on this.

Perhaps the biggest news is that the AGM decided that there will be no more hard-copy Journals after the March 2020 edition. This is much to my regret, but the costs are just too high. So, you will need to set up a folder on your computer and save the Journals as they come through.

The next conference will be at Jenolan – it's likely to be expensive, unfortunately, so start saving now. This is inevitable, given the limited location in a deep valley away from population centres – and their current building program. Jenolan has only hosted one night and part of a day in ACKMA's 32-year career, so it's great

to be going back there – it is a wonderful place.

It seems as if we will be going to Wellington Caves in 2021 for the Guides' School and AGM. I have ideas for the Guides' School that I will discuss with Cathie Plowman and Ian Eddison. And back to New Zealand in the following year?

The Committee discussed whether conference registration should only be available to ACKMA members – it was resolved that registration would include the membership fee for non-members.

The Committee also discussed, without resolution, that in the future, we would apply a discounted membership fee (\$25) for guides attending a Guides' School.

At the AGM, a suggestion was made that there should be an Ann Augusteyn Award for Guiding Excellence. At the AGM, and in the subsequent Committee meeting, there were statements made saying "what a great idea for this remarkable woman". But also, there were others asking "where does this end – should every deceased member of ACKMA be recognised by an award"? I invite the members' views on this.

It is also appropriate to congratulate the Southern Tasmanian Caverneers (STC) on their recent connection of Growling Swallet and Niggly Cave in the Florentine Valley. It seems that this new depth record of 389 metres is unlikely to be broken. It has been suggested in the media that this Australian record is near the top of the deepest caves of the world. Unfortunately, there are many over a kilometre. I should also take this opportunity to pay tribute to STC's search-and-rescue skills.

## Vale Chester (aka “Cheddy”) Alan Shaw

(3 May 1947 – 19 March 2019)

### Andy Spate

The quote below is from ANDYSEZ #1 which described a trip around Tasmania with Kevin Kiernan in 1989. It was on this trip that I first met Chester and Kay.

“I can totally recommend the Western Tiers Tea Rooms as a caving base at Mole Creek ... Kay even turned the electric blankets on for you when you come home after dark!”

Way to go!

During that epic trip where we visited 2.8 caves on average (albeit briefly in most cases) a day for 10 days. The highlight was a through-trip of Kubla Khan with Chester as our guide. Fantastic cave. Fantastic trip!

Other than at ACKMA meetings, my interactions with Chester took place on three other significant occasions:

- In 1990, on secondment from NSW NPWS to the Tasmanian Park Service, together with Stefan Eberhard (and others), I researched Kubla Khan in depth and developed a management plan still in use today;
- In 1995, Lana Little and I rigged the fabulous Kubla Khan at Chester’s request for the ACKMA Conference; and
- Serendipitously, whilst on our sandstone research in Northern Australia in 2008 (with Ken Grimes, Rob Wray and partner Jayne Thomas, Ian Houshold and partner Jenny Dyring), we pulled into one of the roadside overnight camping areas somewhere in Queensland and proceeded to camp next to the grey nomads, Chester and Kay!

Kirsty and I were privileged to have them both attend our wedding in Blanche Cave, Naracoorte, in 2015. Chester was a quiet, unassuming man who set a fine example in his approach to his beloved caves and other wonderful landscapes in the Western Tiers of Tasmania.

I cherish his memory.

\*\*\*\*

The following is a newspaper article about Chester following his ACKMA Fellowship conferring in 1999. I have added a few comments in square brackets. Thanks to Dave Butler for handing this on.

The [Launceston] Examiner, May 21, 1999 – page 3

**“Underground landscape restoration leads to worldwide recognition. Chester praised for work in caves”**

By Kirsty Eade

After spending the past 32 years in the inner sanctum of the Mole Creek cave systems, a Tasmanian Parks and Wildlife ranger has received worldwide recognition for his restoration work.



Photo: Kay Shaw

This month, Chester Shaw was elected a Fellow of the Australasian Cave and Karst Management Association, which has a reputation as being among the world’s leaders in the planning and management of caves and karst (limestone formation) landscapes.

[Pat on the back there for ACKMA – thanks Chester.]

Mr Shaw, 52, was honoured for his dedication to the restoration work at the Marakoopa and King Solomon caves.

“You don’t do it for the recognition,” Mr Shaw said

“My main aim was simply to make people aware of the management and care that needs to be taken with caves. There’re not just holes in the ground; they are part of the landscape.”

Mr Shaw originally became involved in caves when a debilitating illness caused him to seek work not physically demanding.

[Through-trips in Kubla Khan and other tough caves and walks in the Walls of Jerusalem were not “physically demanding”?]

[Chester was a fine AFL football player until health issues forced him out. Later in life he was a basketball player and coach for many years.]

Originally a sawmiller, ulcers perforated his bowel and he was fitted with a colostomy bag.

After becoming involved as a tour guide, he accumulated a great deal of experience, from establishing the caves’ complex but unobtrusive lighting system to educating the public.

When asked how much time he has spent underground in his 30 years, he gently laughs: “Too much.”

“My friends have even started calling me troglodyte,” he said.

“There is an air of mystery about caves.

“When I bring people down here and show them evidence that this was once a coral reef hundreds of thousands of years ago, I can almost hear their minds ticking over.

What we have here is a reminder of the Earth's evolution and the fragility of nature."

His work has also led him to the conclusion that the community must take responsibility for its actions, such as waste management.

"We have to be careful where we put our roads, for instance, and where we site different things so that we don't degrade these valuable underground landscapes," he warned.

**The following tributes to Chester were sent to Andy by ACKMA people:**

**Kevin Kiernan**

The very definition of a gentleman was Chester. Some of my fondest memories of him accrued during a year-long project I had recording, mapping and water tracing the karst and related things at Mole Creek back in the early-mid 1980s. Chester was spectacularly supportive, keen to be involved in all sorts of things both sensible and crazy, suggesting a number of the latter to sucker me into things wet and uncomfortable while also quietly sharing various of his personal gems.

Wonderful company and a great bloke. I spent much of that year living at the Marakoopa Parks Service base, firstly in a caravan and then later in the Parks Service's Single Men's Quarters, caving with Chester and Vic Fahey, and enjoying the hospitality of Minis and Lesley How. That was one of the best years of my life, with Chester always up for any trip or assistance he could offer.

His enthusiasm for caves and karst knew no bounds. Now, looking back over the years I knew him, it is his sincerity and generosity of spirit as a human being that most stands out in my memory. My employment in later years allowed far less caving than that halcyon year as essentially a professional caver, and life mostly took me in directions other than Mole Creek. There were still some great times had with Chester nonetheless, including some particularly fond memories while scoping out possibilities with him for an ACKMA conference he convened in the 1990s. It was only his health that faded in later years, not his interest in matters karstic or environmental, and nor his pre-eminent qualities as a gentleman.

Anne and I intended dropping in on Chester and Kay on our way to Cradle recently but, finding no cars around and their home seemingly deserted, we put the visit off until our return journey – and the following day we learned the sad news of Chester's passing. On our return journey, it was not only Chester's house that was now empty but, seemingly, all of Mole Creek; it felt a bit like the soul of the place had vanished, knowing that the linchpin of so many good memories there was no longer around. RIP mate, you are very sadly missed by so many, many people.

Chester certainly was a fine, very lovely gentleman. I am sure he will be sadly and greatly missed.

**Cathie Plowman**

Chester can only be described as a gentleman. I was privileged to work with him as a ranger at Mole Creek.

Whether at the caves or out in the bush, Chester was always polite, quietly spoken, unassuming, ever-helpful, never flustered and never fazed by any less than considerate behaviour from his workmates or members of the public.

While most ACKMA members would associate Chester, quite rightly, with the Mole Creek Caves, his duties also took him into the Walls of Jerusalem National Park and Central Plateau areas of Tasmania. He worked in these areas when management changes meant that some traditional uses such as horseriding, cattle-grazing and hunting were curtailed in favour of nature conservation. Chester's gentle nature was sensitive and considered toward his local community where these changes were not automatically accepted at the time.

But Chester's foremost love was the caves where he worked for several decades providing service, hospitality and countless tours to whomever visited. He loved being involved in ACKMA; meeting with ACKMA members; visiting other show caves; and bringing home ideas to help improve the management of the Mole Creek Caves.

In retirement, Chester continued to live at Mole Creek with his dear wife Kay, where he had to extend the house to cope with his ever-increasing collection of cave memorabilia. He delighted in bumping into cavers and hearing their stories about current projects and recent trips. Cavers and caves have lost a great friend with Chester's passing.

**Dale Calnin**

Chester Shaw was one of life's true gentlemen. He made us so much richer through his life and his legacy. A sad loss to all - but especially to the ACKMA family.

**Kevan Wilde**

This is the first I have heard of this awful news. Chester was such a great guy and a doyen of caves, in general, and of ACKMA.

Kent Henderson and Brian Clark each said

He was indeed a fine and gentle gentleman.

**Grant Gartrell, Dennis Rebbechi**

He was indeed a gentleman. Sad, but wonderful memories.

**Indonesian Speleological Society**

We're very sorry to hear that loss. Our deep condolences for Chester Shaw. May he rest in peace.

## Andy Spate AM

Andy Spate's first cave was Jersey Cave at Yarrangobilly, in about 1953. His second was Cotter Cave in the ACT a few years later (it was an occasionally operated show cave). Casteret's *Ten Years Under the Earth* was a powerful incentive – as it was for so many of that age group of cave people.

In the late 1950s, he started working at Wee Jasper in Dip and, mainly, Punchbowl Caves – at the pointy end of the measuring tape – with the late Dr Joe Jennings - as a member of the Canberra Speleological Society (CSS). After that, he moved to Melbourne University and became heavily involved in the Melbourne University Mountaineering Club and as a founder member of the Victorian Speleological Association. He worked, at this time, with the late Professor Elery Hamilton-Smith AM on the habits of bent-wing bats and with the late Dr Les Hall OAM on horseshoe bats. Back to Canberra and CSS, he served as Vice-President and as Conservation Officer of the Australian Speleological Federation.

From about 1971, he conducted karst hydrological and geomorphological research work at Coleman Plains and Yarrangobilly in Kosciuszko National Park, whilst working with CSIRO in association with the late Joe Jennings. In 1981, he joined the NSW National Parks Service as the Investigation Officer, Karst – the first professional karst position in the southern hemisphere, as far as we can ascertain. His research into karst continued.

He has also conducted research work in Antarctica on Holocene climate change and landscape development, as well as the habits of skua gulls and the role of salt wedging in the development of small-scale landform features.

He left the NSW National Parks Service after 20-odd years and established his consultancy firm, Optimal Karst Management. His consultancy has provided advice in all Australian States and Territories, New Zealand, Papua New Guinea, Vietnam, Taiwan, Indonesia, Sarawak, South Africa and, most importantly, South Korea.

Cave Tourism and Management Conferences had been conducted by the Australian Speleological Federation Inc (ASF) from 1973 until 1983. A conference was held at Waitomo, New Zealand in 1985 – clearly not orchestrated by ASF. By this time, Elery and Andy realised that there was a need for a separate organisation that represented others interested in caves and karst – cave guides, karst area managers, scientists and others not well-served by ASF's constitution and aims. The Seventh Cave Tourism and Management Conference (hosted by the NSW National Parks & Wildlife Service) visited all six show cave areas in New South Wales and voted the Australasian Cave Management Association (ACMA) into existence at Yarrangobilly Caves in 1987. ACMA became the Australasian Cave and Karst Management Association (ACKMA) at the following conference held at Punakaiki, New Zealand.

Since then, ACKMA and its members have conducted conferences, annual general meetings, guides' schools, and provided advice and submissions to governments across our region. Andy has been a continual supporter of our Association, serving as President, Vice-President, Executive Officer and Committee Member, on and off, since 1987.



**Andy Spate AM**  
**(Supplied)**

# Cave and karst touring in Laos

(with a few management observations)

**Text and most photos by John Brush**

**Canberra Speleological Society Inc**

In February 2019, five members of the Canberra Speleological Society Inc (CSS) spent 8 days enjoying a range of cave and karst experiences in the Khammouane Province of central Laos before heading on for more of the same in northwestern Thailand. While our focus in Laos was on three large river caves (Xe Bang Fai, Konglor and Nam Non caves), we took the opportunity to also visit several smaller caves and spectacular surface karst features close to where our travels took us.

Our party (Neil Anderson, Marjorie Coggan, Giles Thomson, Caitlin McCluskey and me) was joined by Terry Bolger (a current ACKMA member and former CSS member), who now lives in Laos, and his partner Noi.

To maximise our time in the karst areas, and based on Terry's advice, we engaged Green Discovery Laos, an adventure travel company, to develop an itinerary for us. After extensive email negotiations, we ended up with an almost all-inclusive package that included transport from (and back to) Nakhon Phanom Airport in Thailand, a driver, an English-speaking guide, accommodation, drinking water, access fees and most meals. As 4WD transport is needed to access the Xe Bang Fai area, midway through the trip our minibus was exchanged for a 4WD twin-cab ute and we all squeezed into that and Terry's 4WD.

Much of our route coincided with The Loop, a 450 kilometre road trip through the rugged karst and sandstone country of central Laos. Lao authorities are actively promoting The Loop as a 4 to 6 day trip and many of the listed features of interest are caves and karst scenic sites, along with a smattering of cultural and archaeological sites. There are basic guest houses and restaurants along the route but other facilities are limited and road conditions are variable. Consequently, The Loop trip appears to be most popular with young foreign backpackers wearing shorts and T-shirts riding rented step-through motorcycles. Think in terms of lots of exposed skin.... or bandages). Interestingly, the only site we saw along The Loop where foreigners appeared to spend much time was at Konglor Cave.

There are no designated National Parks in Laos, but the Government has set aside 20 National Protected/Biodiversity Conservation Areas covering about 14% of the country's land area. Most of the features described below are in the Phou Hin Phoun or the Hin Nam No Biodiversity Conservation areas.

Green Discovery met us at Nakhon Phanom Airport and drove us across the Mekong River bridge into Laos. After completing border control procedures, we met up with Terry and Noi and commenced our Lao journey by heading north from the delightful river-side town of Thakhet. The plan was to travel through Khammouane in a clockwise direction (the official Loop route goes in the

other direction). The features described below are in the order in which we visited them.

## **Khoun Kong Leng**

Khoun Kong Leng (Evening Gong Lake) is a scenic karst spring and lake located about 50 km (or 1 hour) from Thakhet. The lake is apparently revered by locals who believe it has mystical powers and the ability to ring a gong on full-moon evenings. The lake is about 50 metres in diameter and is fed by an underwater spring that is also the source of the local river. The lake is a blue-green hue and sits amongst shady trees with a stunning backdrop of rugged limestone cliffs.



**Khoun Kong Leng karst spring and**

Facilities are limited to a walking bridge across the head of the river, a short walking track around the lake and basic picnicking and toilet facilities. Swimming is allowed in the river but not in the lake. The area is very popular with locals but does not appear to attract many foreigners, perhaps because it is not well signposted and word has yet to filter out that the access road is now completely sealed. While the lake is within the Phou Hin Phoun Biodiversity Conservation Area, there is not much evidence of active management. There are signs prohibiting swimming and fishing in the main spring area of the lake, a prohibition which visitors appear to respect.

## **Limestone Forest Viewpoint**

Located beside Highway 8 in the far north of Khammouane Province, this viewpoint provides expansive views of jagged limestone ranges in the Nam Hinboun National Protected Area. There is a paved viewing point within a few metres of the road and from there, a path and concrete steps lead a short distance to the top of a hill where there is a substantial roofed pavilion with seating. Nearby, there is an elevated steel viewing platform.



Rubbish and recycling bins have also been provided. However, to our disappointment, we watched someone empty all the bins, separate the recyclables (cans and PET containers), stuff the rubbish into garbage bags, walk to the edge of the shrubby hilltop and dump the bag contents over the side. The sight down-slope was not pretty and suggested the bin-emptying ritual was a well-established procedure. The detritus amongst the shrubbery also indicated the area is frequently used as a toilet.

If local development plans come to fruition, it will soon be possible to take a long zip line ride across the valley, affording close-up views of the jagged karst (and the rubbish!).

### **Konglor Cave**

Konglor is a huge river cave that can be traversed from end to end (about 6 km) in a long tailed boat.



**The busy boat-launching area in Konglor Cave**

In earlier days, a decade or so ago, cavers who had been there regaled eager listeners with stories of a remote village that could only be accessed by taking a boat trip through the cave. Food, farm produce and people all had to go in and out by boat. Sadly, that was stretching the truth. The Natane village has roads, vehicles, farm machinery and even a shop selling cold beer. So, there is, and for many years has been, a road connection to the outside world, albeit a long and tortuous one.

In theory, Konglor Cave is within the boundaries of the Phou Hin Phoun Biodiversity Conservation Area. However, according to interpretive signs near the cave ticket office, the cave is managed by the Konglor-Natane Ecotourism Association. The signs also note the first through trip of the cave was by rowing boat in 1920. Today, the trip in a petrol-engined long tailed boat takes

about an hour. The cave is a major tourist attraction and many local villagers derive direct income from the cave by offering boat rides. Other locals benefit by providing accommodation, meals and drinks or by selling handicrafts. There is an entry fee to the area of 2000 Kip (about 30 cents) per person and a round trip by boat (carrying 3 people) costs 100,000 Kip (about \$16).



**Man-handling boats through a cascade near the upstream entrance of Konglor Cave**

In the cave, the water is clear, the stream passage is big (mostly 20-30 m wide and 10+ m high) and there is some good decoration in a high level area that has been electrically lit and fitted with protective handrails. Both were results of a New Zealand aid project, which I seem to recall involved a couple of well-known ACKMA members.

Konglor is an impressive cave, but our trip through it was a little disappointing. The boats were noisy; the air was thick with exhaust smoke; and, apart from several short sections where we had to get out of the boats to cross gravel banks, there were few opportunities for closely inspecting the main stream passage.

It was also disappointing to see that lampenflora is taking hold in the decorated area – the lights appear to be left on all day.

### **Tham Nam Non**

Tham Nam Non (Tham = cave) is a complex river cave system with a huge, intermittently active stream level and extensive upper level passages.

French cavers have mapped nearly 30 km of passage and it is reputed to be the second longest cave in Laos. It is located about 12 km northwest of Konglor Cave. Terry and Neil had visited the cave before.

As our group sat in the restaurant of our very comfortable guesthouse (Spring River Resort) one evening, we planned our trip over a cold Beer Lao or two using an A4-sized map of the system. The guest house owner (Thomas, a Swiss national), overheard our discussions and asked if he could join our trip the next day. We happily agreed to this.

Next morning, our arrival at the cave was delayed by the need to pick up food for lunch; obtain entry permission from the local village chief; and arrange and pay for the obligatory village guides. We scored 3 'guides' ('guides' as they proved to offer nothing by way of guiding services), swelling our group to 11 participants. This was a little large for my liking but, as the cave was reputed to be quite spacious and free from bottlenecks, group size was unlikely to be an issue.

From where we left our vehicle, it was a very easy 10-15 minute walk to the entrance – an immense gaping hole at the base of an imposing limestone wall. Inside, the stream passage was at least 30 m wide and 30-40 m high. At the time of our visit, the passage was dry, apart from a few residual pools a kilometre or two in. The streambed was mostly large water-tumbled cobbles that were quite tiring to walk over, for kilometre after kilometre.



**Walking up the dry streambed in Tham Nam Non**

Daylight penetrates into the cave about 400 m and it was only at that point we realised our local guides were completely devoid of lights. Here, one guide turned around and headed for home, Thomas lent one of his spare lights to another and the third, an elderly gentleman, just followed along in our pools of light. He continued in that way for more than 2 km. Then, at the start of a climb to a series of upper level passages, he refused to continue despite our urgings and indicated he would sit and wait until our return. He was very pleased

to see us return several hours later.

There is no way anyone could visit all passages in this immense cave on a single day trip. During our planning session the previous evening, we had decided to aim for the Gallery of Gours, which none of our party had previously seen. What an inspired choice it was! The passage is about 500 m long and contains an immense variety of gours in all shapes, sizes and colours.



**A view along the Gallery of Gours, Tham Nam Non**

Some were large, flat and shallow, others cascaded down steep slopes and some were just thin crusts of calcite on orange-coloured clay. They were spectacular and would be even more so when filled with water during the monsoon. As our trip was towards the end of the dry season, there were just a few remnant pools - one of which contained a hungry-looking pink-coloured crab.

At the base of a huge rock pile near the end of the gours passage, our party split into two. Several people, including me, decided to return to the main stream passage to take photos.

The rest opted to continue up the rock pile towards the Gallery of Pearls. Unfortunately, they had to pass through the aptly named Hall of Fog where they became geographically embarrassed. They could not locate the onwards route in the thick fog. Before long, the return route also became elusive, much to the consternation of the Green Discovery guide and the one remaining local 'guide', who later reluctantly admitted he had not previously been to that part of the cave.

Fortunately, Terry soon calmed everyone and set about methodically searching for the way out. Some hours later, both parties safely emerged from the cave for a late lunch just as the sun was setting.

Tham Nam Non also lies within the Phou Hin Phoun Biodiversity Conservation Area. However, there is no sign of any on-site management, other than the access controls provided by local villagers.

The cave attracts few visitors compared to nearby Konglor Cave and is in excellent condition. The delicate upper level areas are reasonably well protected as they lie more than 2 kilometres from the entrance and only a few cavers find their way there. The robust main stream passage is visited by a few intrepid travellers as well as by the locals who go there to collect birds' nests and for fishing.

### **'Hospital' Cave**

The entrance to Hospital Cave (so named by Terry) lies just a couple of hundred metres off Highway 8 about half way between Tha Bak and Lak Sao. Even from the nearby vehicular access track, the entrance and weathered concrete steps leading to it are not very obvious.

The cave is relatively small but has a spacious entrance chamber, some attractive decoration in side passages and a lower level pool. It is largely unremarkable except for the fact that it was used as a hospital during the Vietnam War. The entrance chamber is dominated by modern concrete steps leading to a well-kept Buddhist shrine. At first, there are few obvious signs of the cave's hospital days, but on closer inspection the rocky floor in an inner chamber is littered with small glass phials, broken medicine bottles and mysterious metal objects. In one area, a few phials left on a flat-topped stalagmite are becoming fixed in place.



**Glass phials, relics of the Vietnam War, in 'Hospital' Cave**

It is fair to assume that walls constructed above the pool date from its hospital days and were designed to increase water storage capacity in the cave.

The war-era relics in the cave have local heritage significance. Fortunately, the cave is not signposted and is well hidden from the nearby highway. It appears to be carefully looked after by local villagers.

### **Dragon Cave**

Located just a few kilometres from Hospital Cave, Dragon Cave is much easier to find. It is well signposted and the ticket office and parking area are right beside Highway 8. The cave has been developed as a self-guiding show cave and has been equipped with paths and lighting. The ticket price is 10,000 Kip (about \$1.50). From the ticket office, concrete steps, paths and bridges lead a short distance through forest and across the valley to the entrance.



**Self-guiding path to Dragon Cave**

Initially, the in-cave experience was not very pleasant as there was a stench of hydrogen sulphide (rotten egg gas) emanating from a bubbling and near stagnant section of the cave stream. Quickly moving on, things improved. Further upstream, the water was flowing and odourless.

The visitor route then continued along an abandoned stream passage and into a large chamber with a massive fluted column. This was lit with alternating displays of white, red, magenta, green, yellow and blue light. A colour to suit every taste. On the far side of the column, a well-used informal trail ascended towards a daylight hole. It appeared possible to exit the cave that way, but as we were pushed for time, we returned to the main entrance. On the way back to the carpark we made a short detour to a Buddha cave – an overhang cave, decorated with one large Buddha, several smaller ones and a profusion of prayer flags.

Dragon Cave has some interesting passages, a few noteworthy speleothems and the infrastructure is of a reasonable standard for self-guiding visitors. Moreover, we did not notice any lampenflora even though the lights appear to be left on all day. The entry price is reasonable and cave is worth a quick stop if passing by. If only the hydrogen sulphide problem could be addressed!

### **Xe Bang Fai Cave**

Xe Bang Fai is arguably one of the most spectacular and spacious river caves that can be visited anywhere. A canoe trip through the cave from one entrance to the other and then back again involves about 13 kilometres of paddling and several portages around breakdown piles.



**The party with their inflatable canoes about to head upstream in Xe Bang Fai Cave (Marjorie Coggan photo)**

Several side trips, involving climbs high about river level to spectacular speleothem areas are also possible. It takes a full day, 6 to 9 hours or more (depending on the number of photo stops) to experience all of this. Our party spent 2 days at the cave – a shorter trip exploring the lower 2 km on the first day and a return through-trip on the second.

As the cave has been described in detail in two recent Journal articles (by Terry Bolger in *ACKMA Journal 109*, December 2017 and by Steve Bourne in *ACKMA Journal 114*, March 2019), there is no need to do so again here. However, to repeat a few basic statistics from those articles, the cave has about 14 km of passage, of which more than 6 km is the active river passage, averaging 76 m in width and 53 m in height, with a 200 m maximum width and maximum height of 120 m.

The cave is located in the Hin Nam No Biodiversity Conservation area in rugged country close to the Vietnamese border. Road access, even in the dry season, is not good and requires a 4WD vehicle. The last 12 km of 'road' from Bualapha to Nong Ping, the village near the cave entrance, takes about 1 hour. There is only one basic guest house and a small shop in Nong Ping and tourist brochures advise visitors to bring their own food, just in case. However we thought meals at the guesthouse were excellent with a good range of menu options. And there were ample supplies of cold Beer Lao. The local shop also sold foul-tasting rice-based spirits that could be purchased for \$1.25 to \$1.80 a bottle, depending on brand. Our group could not agree on whether Coca Cola improved or detracted from the palatability.

Local villagers run trips in unpowered wooden boats from the first set of rapids at the cave mouth to the next series about 1.5 km in. On the way back, there is a stop for visitors to climb concrete steps to the Dragon Passage. This decorated upper level passage loops back to the main stream passage, ending at a balcony offering spectacular views down to the river and out to the entrance about 300 m away. Some of the decorations, including gours and draperies in the Dragon Passage, are delicate and highly susceptible to damage by careless and/or uncaring visitors. At Terry's urging, villagers have marked a route with rope strung between metal poles to limit visitor impacts. Unfortunately, examination of photos on the Internet indicates that not all foreign visitors stay behind the ropes.

Although the wooden boat trips appear to be reasonably popular, only a small number of visitors attempt the through trip. A detailed breakdown of visitor numbers is not available but, according to Terry, in 2016 a total of 2700 people visited the cave - of which 390 (14%) were foreigners. The cave obviously has great potential to become a more popular travel destination, which will help to boost the local economy. However, for that to happen, significant improvements in road infrastructure and accommodation and other facilities for travellers will be needed.



**The upstream entrance of Xe Bang Fai Cave is reached after about 2½ hours of paddling**

The excursion into the downstream section of Xe Bang Fai Cave, which can be done with local villagers, is truly spectacular. However, the full magnificence of the cave can only be appreciated by continuing up-river beyond the second rapids and on to the upstream entrance. Gigantic passages, immense stalagmites, extensive cascades of gours, hexagonal oolites up to 70 mm across and a gour pool 60 m long and around 3 m deep (reputed to be the world's largest), are just some of the features that can be seen. Undertaking such a trip requires lightweight inflatable canoes. For those that do not have their own canoes, it will be necessary to engage the services of an adventure travel company. And Green Discovery appears to have a monopoly on this.



**An impressive gour cascade in Xe Bang Fai Cave – note the flood levels indicated by stranded debris on the gours (arrowed)**



**The big gour in Xe Bang Fai Cave. At 60m long, it is thought to be the world's largest**

## Hin Nam No Nature Trails

Towards the northern end of the Hin Nam No area, the Lao Government has developed several walks, one of which leads to three caves. On the caves walk, it would take most of a full day to see all three caves, which involves a round trip walking distance of about 12 km. In the time available to our group, we were able to visit the first two caves, involving a round-trip walk of about 8 km.

The walk to the caves starts at Ban Thongxam (Ban = village) but it is not signposted and the first section across paddy fields is not at all obvious. This is probably intentional as information on Hin Nam No states that local guides are essential for going to all cliffs and waterfalls and for entering caves. A guide can be readily hired at Ban Thongxam for a reasonable price.

The first cave, Tham Pak Tham (Cave Mouth Cave) is about 2.5 km from the village. It is an active outflow cave and it is possible, according to Terry, to swim right through and then continue up the surface stream to the second cave, Tham Nok Aen (Swallow Cave). We chose a drier but hotter and more enervating route over a ridge and down into a large blind valley. It is a through cave.



The view through Tham Nok Aen (Swallow Cave)

It is possible to wade through at stream level, but there is also a dry bypass, which looks like it also takes water at periods of high flow. The downstream end is about 30 m wide and up to 10 m high and is a delightful place for lunch on a hot day and for casual explorations. On one side, the stream cascades through a side arch. On the other, there is a huge (but relatively short) dry passage that is reputed to have housed 3000 North Vietnamese soldiers during the Vietnam War.

## Pha Katai Viewpoint

On the outskirts of Gnommalat, the Pha Katai (Rabbit Cliff) karst walkway gives visitors the opportunity of climbing a near vertical limestone cliff and to inspect closely the highly fluted and razor-sharp karst surface at the top. From a pavilion on the summit, there are 360 degree views of the karst and surrounding country and down to Gnommalat. The entry fee is 10,000 Kip (about \$1.50).

The elevated steel walkway up the cliff is an impressive welding and engineering feat. It starts just behind the ticket office and ascends steeply (nearly 100 m over about 350 m) to the summit viewing pavilion. There are many steps and a couple of ladder climbs along the way. About halfway up, the route even goes through a short cave. The summit pavilion looked like it should have had a roof and sure enough, we soon saw sheets of crumpled roofing metal scattered among the fluted limestone; the result of strong winds, most likely. Unfortunately a lot of rubbish, mostly drink bottles and snack packets, has also been scattered amongst the karst, but strong winds cannot be blamed for that. Cleaning it up would be a challenge.

From Pha Katai, our group continued westwards on Highway 12 towards Thakhet for the final night of our trip. The highway meanders along flat valleys with limestone ridges and isolated karst towers on either side. There are caves in the area but regrettably, we did not have time to stop for a closer look.



View from summit of  
Pha Katai karst walk  
near Gnommalat

## Conclusions

Our brief visit to Laos focussed on known caves. Many changes have taken place, especially in remote country areas, in the 20 years since I last visited Laos. However, for those who are prepared to spend more time and to push into more remote areas, there are good prospects for making new discoveries, especially if they have local knowledge or assistance. Mains power was virtually everywhere, the mobile coverage was good and most houses, even in small villages, had satellite dishes.

For some of the sites we visited, it would have been relatively easy to make our own arrangements. However, we also benefitted greatly from Terry Bolger's local knowledge and assistance. In addition, engaging Green Discovery enabled our group to fully experience Xe Bang Fai Cave and to travel through Laos in an easy and efficient manner. The road network has expanded and the main highways are in good condition. However, many secondary roads are in poor condition, lack bridges and are likely to be impassable during the monsoon season. It is also likely that accommodation and transport facilities and services will not meet the expectations of many international visitors.

The caves we saw are in pretty good shape but careful management will be required to ensure that they do not suffer as Laos becomes a more popular tourist destination. Nevertheless, Laos is a wonderful destination for travellers interested in caves and karst. There is so much to see and do.

## New Zealand Vice-President's report

### Peter Chandler

First, I would like to congratulate Andy on his recent AM award. I recollect first meeting Andy at the 1987 travelling conference. Since then, we've come to appreciate him as a "living treasure" on all things caves and karst as well as a great friend and mentor.

It seemed somewhat extravagant to travel to South Australia for the AGM weekend, but it was required, really, when assuming my new role as New Zealand Vice-President.

It really was great to catch up with everyone (and meet some new members too), and introduce my son, Kieran, to the organisation he grew up with (and had last attended the AGM at Mulu).

At the AGM Committee meeting, I suggested that the 2022 conference be held in Takaka, the principal town of Golden Bay on the South Island. Pre-conference and possibly part of the conference would be on the Nelson (airport) side, at Motueka.

As well as Ngारua Cave, entire mountains of marble and hills of limestone, and - rare for NZ - dolomite, there are also the renowned Te Waikoropupu Springs. This is the largest freshwater spring in the southern hemisphere and the spring water is equal to the clearest. The Springs are part way through gaining some protection, as land use in the catchment threatens the purity of this natural treasure.

It would then be time for a Waitomo conference in 2028 (or thereabouts) as coming up on the calendar about then is the expected handing back of the Waitomo Glowworm Cave operation to the Ngati Ruapuha and Ngati Uekaha Hapu Trusts in June 2027.

## The Guides' School and AGM at Naracoorte — May 2019

Some 30 people attended the Guides' School whilst slightly more than that number attended the AGM. A survey has been conducted of those attending the Guides' School and an analysis of the results will be published in the September journal. As Ian Eddison indicates in "Around the show caves", these survey results will assist with the preparation for the 2021 Guides' School to be hosted by Wellington Caves.

The AGM was generally uncontroversial with the new committee membership featuring many continuing faces (as noted on the inside cover). Tony Culberg, in his final set of annual accounts, noted ACKMA's healthy financial position and reported on the consolidation of the Australian and New Zealand accounts - a consolidation which leaves a modest amount in a New Zealand account for working purposes but transfers the surplus to Australia.

There was also discussion at the AGM about the desirability of establishing a strategic plan for ACKMA. Jodie Anderson volunteered to set up a working group of members (not confined to members of the committee but also volunteers from the broader membership) to progress such a project. Members will have received, by now, an email from Jodie seeking volunteers for this. The strategic planning outcome will be reported to the 2020 AGM — as will committee deliberations on any amendments arising from a review of the ACKMA constitution I am currently undertaking for committee consideration.



**Tim Moore**

**A post-AGM  
group photo**

## The Naracoorte Sonnet

### Mark Delane

The call of ACKMA was passed around, with those in attendance coming from across the land  
50 years to rejoice, to celebrate, plus an AGM and Guide school all combine  
the allure of Fossils, World Heritage, Dr Liz, Steve and Nick as lead of this band  
the gathering new and old to share, to learn and to partake was truly divine.

Looks of amazement, bewilderment and intrigue start the guides off with Andy's walk around karst  
Marvel, curiosity and Christmas Day joy soon took over with Dr Liz and her fossil collection and stories of  
encounters

The nights life was brief compared to past years, but alas this was replaced by the flutter of bats as they went past  
with a blast

Cave animal of the year was next on the tongue, as too was the words of the new tours the guides had cast as  
announcers

Then there was Flint, a professor by name, well to many he was a shot of reality, a spark to inspire of was that just  
my cognitive bias?

He had us singing and clapping, laughing and pointing, but try and try he might Nick Heath just would not hit top  
speed in the Dinosaur stampede!

The sessions were engaging, the setting was surreal, but the impact was powerful as too was vision of the duck in a  
new light! Which now sits atop of the dais

Then came the AGM, short and too the point, some positions changed, some stayed the same, but we now have a  
new Fellow, well deserved indeed

After some caving, some crawling and sharing and failed attempts to get the songs out of one's head  
The time had come to say goodbye, until Jenolan, in the year ahead.



# The 2020 ACKMA Conference

As noted in the Editorial and in the President's report, the Naracoorte AGM gratefully accepted an offer from Jenolan to host the 2020 ACKMA Conference.

Reproduced below are the first four slides from the PowerPoint presentation given to the AGM by Scott Melton. Scott is the Conference Convenor for 2020 and a Senior Guide at Jenolan.

Further details will be provided in the September edition of the Journal.



## Around the show caves

### An update on the new Visitor Experience Centre at Wellington Caves, NSW

**Ian Eddison reports**

Construction of the Wellington Caves' Visitor Experience Centre has had an impact on the day to day operations of the site with unscheduled cuts to phones, internet, power and water. Like any site with heritage infrastructure, the services were not where they were expected to be and although care was taken, several disruptions have occurred. The staff adapted and responded to each challenge and minimal disruption occurred to the public.

The first slab of concrete was laid on 3 May 2019. This was a week and a half before Wellington staff descended on Naracoorte in South Australia for the Guides' School and ACKMA 2019 AGM.

On the 28 May, the first uprights and beams were being placed. Despite some disruptions to the day to day operations while getting the new services in the ground, the project is on track and should be open late in 2019.

The Visitor Experience Centre will fulfil a multitude of purposes including the initial enquiry area and cave tour ticket sales as well as caravan park check-ins, a small café, souvenir shop and a Megafauna display (some 10 x 11m in size). All other offices and amenities will be under the one roof and a laboratory and fossil store are also included.

Wellington Caves anticipates being able to showcase the new Visitor Experience Centre with its surrounding landscaping at the time we host the Cave Guides' School and ACKMA AGM in May 2021.

**The first frame elements of the new Visitor Centre are up!**



## Jenolan Caves

In his presentation for the 2020 ACKMA Conference, Scott Melton also gave some news concerning a second major upgrade funding announcement made for facilities at the Jenolan Reserve. The only proper way to explain it is to show it as Scott presented it to the AGM!

## Some great Jenolan news...!!!



(L to R) Member for Bathurst Paul Toole,  
Jenolan Caves General Manager Jodie Anderson  
and NSW Deputy Premier John Barilaro.

In February 2019, Jenolan Caves received the exciting news that a \$10.4 million funding commitment to the refurbishment of the historic Jenolan Caves House had been made by the New South Wales Government.

This news was delivered by the member for Bathurst Paul Toole and Deputy Premier John Barilaro. This follows an \$8.5 million grant made in April 2018 for improvements to the visitor precinct as well as improvements to the existing walking tracks and new boardwalks & remedial works around the Blue Lake precinct.

## **Waitomo, NZ— local news from Peter Chandler**

### **News from Spellbound Glow-worm and Cave Tours**

#### Winter cave flushing

Our trading name, Spellbound Glow-worm and Cave Tours, is because, as much as our visitors are expecting to go underground, they are principally doing so to see the spectacle of tens of thousands of these creatures at the same time.

It being June, we are in our winter recess. During this time, we remove the small weir/dam for which we have resource consent. The dam is needed to enable the inflatable raft to operate on flat water, from where the majority of the New Zealand Glow-worms are viewed.

This removal enables the Mangawhitikau Stream to flush out of the cave the silt and leaves that accumulate at the downstream end and the gravel that builds up at the top end of the cave. June may also bring a flood event to help this process.

The dam is also removed, for a night, at any time of the year before or just after a major flood event to let the stream gravel wash through.

It is to be noted that the free draining volcanic soil overlying clay in the region, along with wetlands and indigenous forest cover, buffers the stream flow to an extent from runoff from its 2000 hectare catchment.

#### Staffing changes

Over the past summer, our guiding team has increased to include part-timers Kieran Chandler, Anna Drabble and Mieke Heyns - all past Black Water Rafting guides but also now generally qualified outdoor instructors. Kieran will also be lending a hand on maintenance and operations.

#### Visitor facilities and tour changes

Here at Spellbound, finishing touches are also being made to an outside shelter for improved visitor facilities. And we have serious plans to establish a visitor meeting point closer to our caves. With Google maps now being ubiquitous, we believe many would be happy to travel closer to our caves. This would reduce our shuttle to our caves and back from 31 km to 5 km, and give more opportunities to have a one cave/one hour (or so) tour option. Watch this space!

#### General Waitomo news

Visitor dynamics at the Waitomo Caves' destination has changed somewhat from the previous summer as the Waitomo Glow-worm Cave concessionaire, THL, through the science advisory group and the owners' group (Hapu Trust having a 75% interest with the Department of Conservation holding the remainder) was able to increase the operational

CO<sub>2</sub> limit from 2400ppm to 3000ppm (but only for 5 % of the time).

This meant that they did take most glow-worm experience seeking visitors, and fewer visitors were diverted to other glow-worm tours. Most would now agree that this iconic cave has become over commercialised for much of the time.

#### News of long time ACKMA member, Derek Mason

This June, Libby and I visited Derek Mason and his wife, Jill, now happily ensconced at their residence in Havelock North. They are strategically located near two daughters and their families. Derek and family remain the owners of the glow-worm cave where we operate, having retained 10 hectares of their farmland before they sold the remainder of their farm in 2001. Derek ran tours based from their farmhouse between 1994 and 1999 – a tour which featured during the ACKMA Waitomo conference in 1997.



**Visiting the Masons**

#### Finally, occasionally cave managers do get to undertake cave exploration

Dave Smith and I recently revisited Stonemason Cave, which is a tributary to Luckie Strike Cave, a cave located on the Chandler/Ash wilderness land.

After not finding it a year ago when we went looking for it, this time we made our way down the 50 metres or so of narrow passage to the spot where, in about 1993, Kip Mandeno hammered open, and squeezed through, an aperture to the concern of an onlooking John Ash!

The squeeze is still there and, this time, in winter, there was a good breeze issuing from it, so it definitely remains a lead worth pursuing!

**Peter Chandler looking at the squeeze hole (and hoping to get back to test it at a future date!)**



# Neolithic sites of Malta

## Tim Moore

The island of Malta, the larger inhabited island in the eponymous nation, has five World Heritage listed Neolithic sites. Two of these are caves (one being highly significantly human modified) whilst the other three are stone temples. In December 2018, my family and I visited both underground sites and two of the temples.

The earliest of the sites, a Neolithic habitation cave known as Ghar Dalam Cave is situated halfway down the side of a gentle valley leading to a low point in the cliffs on the south-eastern coastline of the island. Dating of the bones found in the lowest stratum of the depositions layers in Ghar Dalam reveals that habitation commenced in approximately 7,400 BCE and ceased in approximately 5,400 BCE. Ghar Dalam is 144 m deep (with about the first third accessible for visitors) into the slope from the overhang at the mouth of the cave. The palaeontological excavations which have been undertaken within Ghar Dalam have revealed significant deposits of the bones of unusual fauna which no longer exists on Malta.

The second element of the museum at Ghar Dalam comprises a spectacular collection of bones of fauna long disappeared from the landscape. The bones (not all found in the cave) range from small fragments to complete skeletons of animals such as a miniature elephant that had inhabited the Maltese islands. This collection was well interpreted. Indeed, the collection was of such breadth that one was left with a sense of intellectual indigestion in trying to understand the whole of the material on display!

The next two sites we visited, after leaving Ghar Dalam, were temple complexes which had been constructed some 450 m apart, on a windswept escarpment above the sea on the southern edge of the island. When arriving at these sites - they are in a common fenced reserve - one parks near the comparatively new museum constructed only some 100 m or so to the east of the younger of the two temples, the Hagar Qim Temple. Before moving to describe the two temples, it is appropriate to note that the museum comprehensively explains what the archaeologists and palaeontologists have been able to establish concerning these two temples and such information as has been able to be gleaned about what might have been the ritual practices in each of them.



**Above: Looking into Ghar Dalam**

**Left: The stratum in Ghar Dalam showing the levels in the excavation**

**Above right: Model of Hagar Qim**

**Lower right: Model of Mnajdra**

**(Author's photos)**

At the entrance to the reserve within which Ghar Dalam is located, there is a small museum essentially in two parts. The first is given over to interpretive material explaining the little known of the Neolithic inhabitants of the cave. The explanation is necessarily limited as there is no record of whence these Neolithic people came nor is there anything to explain their disappearance at some time in the period between approximately 3,000 BCE and 2,800 BCE. These peoples, inhabitants of the island for some 4,500 years or so, left no written record of any type and, as a consequence, they remain an enigma to us.



The museum, the artefacts contained in it, and the interpretive material were almost worth the visit by themselves. Both Neolithic structures are now protected from damage by weathering.

Mnajdra, the slightly older of the two temples, is closer to the edge of the escarpment to the sea. It is located down a gentle slope accessed by a well-constructed paved pathway leading across the low coastal heath separating the two structures. Mnajdra is dated at approximately 3,600 BCE. It is an impressive arrangement of a number of small interconnected rooms within their common perimeter wall.



**Above: The path from Hagar Qim looking to Mnajdra**

**Below: Main entrance to Mnajdra**

**Right: The suburban street entrance to the Hypogeum**

**(Author's photos)**



The structure of Hagar Qim is somewhat more complex than that of Mnajdra. A plan of its arrangement discloses that there were effectively two separate enclosures for this temple. The reason for this evolution in structure is unclear. Hagar Qim also dates from 3,600 BCE. Hagar Qim has the largest of the stones that has been placed at the two complexes, with one of the stones, over 5 m high, estimated to weigh 57 tonnes.

All the stones of each of these temples are limestone, reflective of the fact that much of the geologic structure of the whole island is of this material.

There is no readily available evidence as to where the stones for these two temples were quarried or how the builders of the structures managed to convey them to their present location. This is, as it were, a subsidiary enigma to the arrival of, and the fate subsequently befalling, the Neolithic builders and worshippers at these structures.

As is not uncommon in ancient structures of this nature, a number of apertures and their alignments coincide with solar events - leading to some speculation that there were calendar or season marking associations with the nature of the structures.

Impressive and fascinating though the three Neolithic sites we visited on our afternoon tour on our arrival in Malta were, Hal Saflieni Hypogeum, visited the following day, eclipsed them all.

Its entrance is located through an unobtrusive and modestly signed doorway on a quiet suburban side street some 7 kilometres from the centre of the mediaeval fortifications of Valletta.



Access to Hal Saflieni Hypogeum is restricted and tightly controlled. This was not the case prior 1991. However, in that year, Heritage Malta realised the cumulative damage that was being caused by the lack of restrictions on visitor numbers impacting on the internal micro-climate generally (and, specifically, on the red ochre paintings) and closed the site for nine years. During this period, works were undertaken that have, effectively, hermetically sealed the site (so that entry and egress is now effected via airlocks) and installed a sophisticated internal climate monitoring system.

When Hal Saflieni Hypogeum reopened for visitors in 2000, it was on a much more controlled and restrictive basis. Now, access is permitted in small groups only (maximum 10 people) and for a guided tour of some 50 minutes duration. Tours are spaced at one hour intervals with 6 tours per day - meaning a maximum of 66 people, including a single guide per tour group, go through Hal Saflieni Hypogeum each day. It is also to be observed that, as part of these major protective conservation measures, a new, five minute audio-visual presentation was developed and is delivered to each tour group before it enters Hal Saflieni Hypogeum proper.

Although the vast bulk of the tourists coming to Malta are drawn by the spectacular and intact mediaeval fortifications of Fort St Elmo and Fort St Angelo and the Grand Harbour of Valletta, there is great cultural reward for those who research a little deeper when planning their trip and take the trouble to go online to book a tour of Hal Saflieni Hypogeum. Tours are usually booked out at peak visitor periods (in summer or at Christmas or Easter) many months in advance. For our visit between Christmas and New Year, I needed to book three months or so in advance to be able to obtain sufficient places on a tour for the five of us, and even then, there was only one option available during our three day visit to Malta.

Visiting Hal Saflieni Hypogeum, the oldest (dating from at least 4,000 BCE), intact Neolithic structure known was revelatory. Although the Neolithic peoples who inhabited Malta for some three millennia have left us with no explanation as to the method of their arrival, or the reason for their disappearance, that which they have left in their habitation sites and structures truly warrant their celebration as being worthy of World Heritage status.



Hal Saflieni Hypogeum remained undiscovered for thousands of years as its entrance had, apparently, collapsed. It was only in 1902 that it was discovered. Because of the low rainfall on Malta, each new suburban house had had a cistern/well dug to capture such precious rain as actually fell. This system operated until comparatively recently. From 1982, the pressure on water supply has been relieved by desalination plants. In the era of discovery, one where the urban area of Valletta was expanding, workers constructing a cistern for a new dwelling on what was then the fringes of the city, broke through into Hal Saflieni Hypogeum - by accident leading to the discovery of this spectacular underground structure.



**The well entrance that caused discovery of the Hypogeum**

**(Photo Heritage Malta)**

Pottery remnants were discovered in Hal Saflieni Hypogeum during various archaeological excavations and many human skeletal remains were discovered leading to the hypothesis that it had been a funerary temple for the interring of the dead.

The Neolithic excavators, working with only rock or bone hand tools, have taken advantage of various fault lines in the rock (between the two types of limestone material below the surface) to maximise structural stability. However, this has also contributed to the slightly anarchic layout of the three levels and the excavated structures within each of them.

**A bowl discovered during excavation at the Hypogeum**

**(Photo Heritage Malta)**

Why the fuss, you might ask?

When you enter the airlock to go down into the uppermost of the three lower levels of Hal Saflieni Hypogeum, you are entering what is understood to be a funerary temple excavated from its humble small cave beginnings, over a period of hundreds of years - commencing in about 4,000 BCE. From this, Hal Saflieni Hypogeum became, by the labours of its Neolithic excavators, a spectacular three level subterranean temple complex.

It is also believed there was a surface level monumental structure which, from the few remains that have been able to be found at about the present street level, would have been the largest structure on the site.

Hal Saflieni Hypogeum had been excavated over three levels. The upper portion of the first level, some two metres or so below the current street level, had been excavated from within the promontory in the landscape upon which it is located. The upper level has a number of chambers, through the roof of one can be observed the entrance aperture when those digging the cistern broke through.

Much of the structure, including the main chamber and the area beyond it, known as the Holy of Holies, has been carved out of the living limestone to mimic doorways, lintels, columns and other structural elements that would have been features of aboveground complexes (and were subsequently reflected in the structures at Hagar Qim and Mnajdra). At several locations there remain visible red ochre spiral designs on roof and wall elements.



**The Holy of Holies (Photo Heritage Malta)**



**Above: Red ochre spirals**

**Left: An upright and lintel likely carved on site**

**(Photos Heritage Malta)**

In the upper level, there is a feature of an upright stone some two high with a lintel from it to an adjoining rock shelf. These two elements appear to have been carved in situ and there erected.

The middle and lower levels were excavated by the Neolithic builders over the 500 or so years following completion of the upper level. The later excavations into the lower level are of similar complexity. The middle level is slightly larger than the upper level whilst the lowest level is of much smaller dimension.

However little is known about the ritual and practices at these temples, it is clear that an element of the worship related to an earth mother goddess - again, a common theme across much of the time within which these Neolithic inhabitants of Malta have erected their various structures.

Prime examples of this have been found in Hal Saflieni Hypogeum. The small, headless statue (9 cm tall) and the reclining figure (12 cm long) are believed to date from ~ 3,500 BCE. The style of the first of these statues has much in common with other deity statues of a similar nature found elsewhere in Europe from similar dates.

No photography is allowed so the only images taken away by visitors are those on postcards or in the comprehensive guide published by Heritage Malta as part of its series about the major heritage sites of the nation.

The collective view of all five of us was that it was worth visiting Malta just for Hal Saflieni Hypogeum!



**'THE SLEEPING LADY'**  
c. 3000 B.C.

This unique creation represents a singular achievement in Maltese prehistoric art. This beautifully rendered figure of the reclining lady was discovered in a pit in one of the painted galleries of the Hal Saflieni Hypogeum. Often hailed as a 'sleeping mother goddess', the figure may well be an eloquent representation of Death or the eternal sleep.

**Above and below: Statues found in the Hypogeum and now housed in the National Museum of Archaeology.**

**Left: Museum explanation of lower statue**

**(Author's photos)**





## Recent developments at Cotter Cave, ACT

### Text and photos by John Brush Canberra Speleological Society Inc

Representations by the Canberra Speleological Society Inc (CSS) to the Australian Capital Territory Government (ACT) over many years to improve management of Cotter Cave have finally borne fruit with construction of a new entrance barrier and a commitment from the ACT Parks Service to increase its management presence in the area.



**The entrance to Cotter Cave as it was in 2005. The steel gating structure dates from the 1970s**

Cotter Cave, also known as Paddys River Cave, has little more than 100 metres of passage, but it is easily the longest cave in the ACT. It is also quite spacious with the main passage averaging about 6 m in width and 4-8 m in height.

Over the years, the cave has been variously used as a bat roosting site, a show cave, a school excursion site, a venue for satanic (?) rituals, a rubbish dump, a canvas for wannabe graffiti artists and a 'mine' for mineral collectors. In short, Cotter Cave has been well used and, in recent years, increasingly abused.

The cave occurs in a small outcrop of Silurian marble in the lower reaches of the Paddys River valley. It is within easy walking distance of popular picnic areas along Cotter River about 20 minutes' drive to the west of Canberra. It is also possible to drive to within 70 m of the entrance on an open 2WD forest road. About 15 years ago, the ACT Parks Service constructed steps and a path from the road to the entrance and erected a large viewing platform nearby. In short, the cave is not hard to get to and it is easy to find - both facts which add to the

management challenges. An additional challenge is that the cave is a roosting site for the Bent-Winged Bat (*Miniopterus schreibersii*), a listed vulnerable species in NSW and the ACT.

The significance of the Cotter Cave area was formally recognised in 2011 when the ACT Government placed the cave and its surrounds on the ACT Heritage Register following a recommendation by the ACT Heritage Council, an independent statutory body that advises the government on heritage matters.

It is not known when the cave was first discovered. Certainly it would have been known about by the mid-1890s when small-scale mining for copper and silver commenced in a skarn deposit on the fringes of the marble body about 200 metres away.

In the 1930s, Stan Margules, a local resident, constructed wooden stairs down the 5 m entrance drop and conducted regular but low-key tours of the cave for more than 20 years.

Over the years, the wooden stairs were replaced on at least one occasion and several attempts were made to fence off or gate the entrance to control access for public safety reasons and to protect the cave.

CSS first became interested in Cotter Cave and two small adjacent caves in the 1950s. In the mid-1970s, members mapped the three caves and, after a major bushfire passed through the area in January 2003, they documented several more small caves.

In February 2005, CSS worked with ACT Parks to remove the remains of the wooden stairs that had been damaged by the 2003 bushfire.



**The remains of the fire-damaged entry stairs just prior to their removal in February 2005**

At that time, ACT Parks and CSS agreed that complete removal of the stairs in conjunction with installation of a new entrance barrier would enhance visitor safety and reduce unauthorised access. Ideas for a new structure were subsequently exchanged. However, the communication lines later broke down as key Parks staff moved on and CSS focussed on other karst areas.

On CSS's next visit to the cave in mid-2007, members were appalled by the new structure that had been constructed over the entrance. It was highly visible from afar and appeared to be neither very vandal-resistant nor 'bat-friendly'. Although the barrier had a strong frame, the bulk of the structure was made from thin (25 mm diameter) vertical steel rods. Vertical bars can hinder entry and egress of bats and the only horizontal gap was near the top of the new structure – a gap which was also not ideal for the bats.



**The new (2007) entrance was not 'bat-friendly' or vandalism resistant. Subsequent modifications were of limited success in overcoming these basic design flaws.**

It soon became apparent the new structure was not very resistant to vandalism and, with the additional concerns about public safety and bat access, CSS called for the structure to be modified or (preferably) replaced. Over the next decade, several modifications were made but these were of limited success in overcoming the original design flaws.

As the integrity of the entrance barrier was often compromised by vandalism, graffiti attacks inside the cave were common and, of course, the effects were cumulative. In addition, empty drink bottles and cans were frequently dropped into the cave. On occasion, the evidence left behind suggests there were campfires,

fireworks displays and amorous encounters.

CSS made many trips to remove rubbish from the cave. It also conducted graffiti-cleaning trials in 2016 and 2017 but members decided it would be futile to initiate a major cleaning project until a more secure entrance barrier had been installed.



**Spray-painted graffiti occurs throughout the cave obliterating, in places, pencilled inscriptions from the first half of the 20th Century**

Staff at ACT Parks have been sympathetic to our representations about the need for a new entrance structure but were unable to address the matter adequately for budgetary reasons. In 2017, they suggested CSS apply for a grant from the ACT Government and then hand over the money for ACT Parks to undertake the work. This was not an ideal solution, but one that CSS was prepared to pursue for the sake of the cave. Unfortunately, the application fell over at the first hurdle as the level of CSS's Public Liability cover through the Australian Speleological Federation was deemed inadequate. While \$10 million cover was fine for the Society to obtain a permit to visit the cave or, should it so desire, to stage a major pop concert on ACT Government land, it was not nearly enough to apply for a \$20,000 government grant for a cave gate.

In 2018, the need for action became more urgent. The entrance barrier was breached on several occasions and, in April, the gate was completely removed and thrown into the cave. Vandalism within the cave also became more serious with portable power tools being used to cut off stalagmites and slabs of flowstone. Additionally, new spray-painted graffiti appeared throughout the cave. CSS ramped up its representations and also lobbied politicians. Once again there were sympathetic responses but there was not much action apart from temporary repairs to the entrance structure.

The contractor commenced on-site work on 21 January 2019. ACT Parks decided to keep the framework of the existing structure so that the round bars would be simply cut off and replaced with larger square-section tube, which included features to increase resistance to damage. The round bars were replaced on a panel-by-panel basis so that the cave was not left unprotected overnight. Staff of ACT Parks closely supervised the work and were equipped to deal with any stray sparks resulting from the cutting and welding work.

Fabrication was substantially completed by late February and at the time of writing (mid-March), all that remained was to add some metal guards better to protect critical parts of the gate and the locking mechanism.

ACT Parks has agreed to take a more pro-active approach in managing the cave. It plans to install a security camera and will increase the number of ranger patrols in the area. It has also purchased a portable welder so that it can deal promptly with any damage to the gate.

For CSS, the new gate represents a significant milestone in the lengthy campaign to improve management of the cave. If the new structure proves to be more resistant to illegal entry, it will open the way for CSS to initiate a major graffiti removal project in partnership with ACT Parks.



**Above: The first day of work in January 2019 to replace vertical rods with horizontal square-section tube**



**Below: The new entrance barrier at Cotter Cave (March 2019)**

## Dan O'Toole

Dan started caving in the mid-1980s and is a former President of the Victorian Speleological Association. He is now a geotechnical engineer in an engineering and environmental consultancy. He also has been an ACKMA member (and I hope he will be again). I worked with Dan on a consultancy on Christmas Island in 1998. He recently encountered a case where it was recommended that geotechnical hazards in a show cave be managed using methods applicable to a mine. That provoked him to write the following piece. His final paragraph suggested a future course for ACKMA.

## CAVES ARE NOT MINES

### Dan O'Toole

As a practising geotechnical engineer, with an interest in caves and karst, I have been asked on a number of occasions to provide advice on issues related to cave stability, rock fall risk and other issues such as construction on karst. Over the years, in undertaking this work, I have come across instances where mining industry professionals have looked at caves and drawn conclusions in relation to geotechnical hazards and risk management based on mining practice.

This is understandable given their professional frame of reference. However, underground mine tunnels are often a dynamic environment. Tunnel blasting results in damage to the rock mass in the walls and roof. Mine tunnels are created over a short timeframe resulting in rapid redistribution of stresses around the excavation. This can result in zones of loosening and instability or high compressive stresses that can lead to rock bursts or squeezing. Excavation of adjacent ore bodies can also influence stability of mine tunnels. Ground support (eg rock bolts and mesh) are used to manage these geotechnical hazards. Practices such as sounding the rock with a steel bar and "baring down" loose material are also used in mine tunnels.

Mine tunnels are workplaces where individual workers can be exposed to these hazards over a relatively long period (consider the annual exposure). It is in this context that mining regulations and codes of practice are written.

Limestone caves are not mines. Solution caves develop over very long periods of time. Stress redistribution happens very slowly during cave formation. Dynamic

events such as collapse, sudden draining or erosion during flooding can occur in caves. However, cave passages and chambers tend to be a more stable environment compared to a similarly sized mine void. This may be due to one or more of many factors including:

- the nature of the limestone rock mass;
- the slow solution process of cave formation; and
- the recementing characteristics of calcite in the rock mass.

In this context, the frame of reference that informs mining regulations and codes of practice is quite different from the cave environment.

Of course, show caves are workplaces and the relevant workplace health and safety laws enacted in Australia apply. There are guidelines in several Australian States pertaining to caving as an activity (eg Adventure Activity Standards). Various standards are available to address infrastructure in caves (eg stairs, handrails, lighting). The issue of radon gas in caves is addressed in various guidelines. However, there appears to be little in the way of geotechnical codes of practice or guidelines with respect to show caves as workplaces.

There may be benefit in filling this vacuum to avoid situations where some well-intentioned practitioners may apply a mining frame of reference to a cave. To this end, it is suggested that ACKMA consider developing "best practice" risk management guidelines for:

- show caves as workplaces;
- visitor safety; and
- infrastructure maintenance.

**SAVE THE DATES FOR THE 2020 CONFERENCE**

**@ Jenolan from Sunday 3 to Friday 8 May 2020**

## Oldest Neanderthal DNA Found In Italian Skeleton



The remains of the so-called Altamura Man, now considered a Neanderthal, encrusted with calcite formations in Altamura, Italy. Credit: Ministry of Cultural Heritage and Activities, Superintendent of the Archeology of Puglia.

The calcite-encrusted skeleton of an ancient human, still embedded in rock deep inside a cave in Italy, has yielded the oldest Neanderthal DNA ever found.

These molecules, which could be up to 170,000 years old, could one day help yield the most complete picture yet of Neanderthal life, researchers say.

Although modern humans are the only remaining human lineage, many others once lived on Earth. The closest extinct relatives of modern humans were the Neanderthals, who lived in Europe and Asia until they went extinct about 40,000 years ago.

Recent findings revealed that Neanderthals interbred with ancestors of today's Europeans when modern humans began spreading out of Africa — 1.5 to 2.1 percent of the DNA of anyone living outside Africa today is Neanderthal in origin.

In 1993, scientists found an extraordinarily intact skeleton of an ancient human amidst the stalactites and stalagmites of the limestone cave of Lamalunga, near Altamura in southern Italy — a discovery they said had the potential to reveal new clues about Neanderthals.

"The Altamura man represents the most complete skeleton of a single non-modern human ever found," study co-author Fabio Di Vincenzo, a paleoanthropologist at Sapienza University of Rome, told Live Science. "Almost all the bony elements are preserved and undamaged."

The Altamura skeleton bears a number of Neanderthal traits, particularly in the face and the back of the skull. However, it also possesses features that usually aren't seen in Neanderthals — for instance, its brow ridges were even more massive than those of Neanderthals. These differences made it difficult to tell which human lineage the Altamura man might have belonged to. Moreover, the Altamura skeleton remains partially embedded in rock, making it difficult to analyze.

Now, new research shows that DNA from a piece of the skeleton's right shoulder blade suggests the Altamura fossil was a Neanderthal. The shape of this piece of bone also looks Neanderthal, the researchers said.

In addition, the scientists dated the skeleton to about 130,000 to 170,000 years old. This makes it the oldest Neanderthal from which DNA has ever been extracted. (These bones are not the oldest known Neanderthal fossils — the oldest ones ever found are about 200,000 years old. This isn't the oldest DNA ever extracted from a human, either; that accolade goes to 400,000-year-old DNA collected from relatives of Neanderthals.)

The bone is so old that its DNA is too degraded for the researchers to sequence the fossil's genome — at least with current technology. However, they noted that next-generation DNA - sequencing technologies might be capable of such a task, which "could provide important results on the Neanderthal genome," study co-author David Caramelli, a molecular anthropologist at the University of Florence in Italy, told Live Science.

Whereas previous fragmentary fossils of different Neanderthals provided a partial picture of what life was like for Neanderthals, the Altamura skeleton could help paint a more complete portrait of a Neanderthal — for instance, it could reveal more details about Neanderthals' genetics, anatomy, ecology and lifestyle, the researchers said.

Thanks to Greg Beckler who said "Since '23 and Me' says I have lots of Neanderthal DNA... thought I would share this." The story comes from [Geology.com](http://Geology.com).



Altamura Man is the oldest Neanderthal to have his DNA extracted

## EcoGuide Certification - a Reward for Great Cave Guides!

Regina Roach from Yarrangobilly Caves was certified as an EcoGuide at the recent ACKMA Guide School at Naracoorte Caves. Regina has been a dedicated guide at Yarrangobilly for over twenty years, showcasing the caves and surrounding landscapes to a wide range of guests and participating in research and other projects with the NSW National Parks and Wildlife Service.

Regina is a wonderful example of how the assessment and acknowledgement of tour guides can reward experienced guides as well as those building a career.



Regina Roach (left) and Amanda Hinton

The EcoGuide Program offers an accessible certification that addresses the guiding skills and provides a tangible reward for great performance.

The benefits of becoming an EcoGuide include:

- Practical guidance to implement sustainable practices and give more meaningful experiences to visitors
- A recognised industry qualification and competitive edge in the tourism market
- Friends of Savannah Guides Membership and networking with over 500 nature-based guides and operators
- Discounts to the annual Global ECO Conference and Savannah Guides Field Schools.

To be eligible for EcoGuide Certification you must have at least 12 months' guiding experience, or hold a guiding qualification (eg Certificate III or IV in Guiding) and have a minimum of three months' full-time guiding experience.

The EcoGuide Certification process uses a workbook and guiding assessment to examine:

Generic Guiding Skills, including knowledge of the tourism industry; roles and responsibilities of a guide; communication skills; safety and risk management; group management; developing and delivering tour activities; and content knowledge

EcoGuide Specific Skills, including minimal impact principles; a commitment to ongoing professional development; and respecting Indigenous culture.

Savannah Guides runs the EcoGuide program to help individuals achieve certification and work with attractions to integrate EcoGuide into their training and staff reward systems. The cost per guide is \$130 to apply and \$99 per year (discounts for groups).

Please e-mail Sam or Russell at [info@savannah-guides.com.au](mailto:info@savannah-guides.com.au) or call 0408 772 513 for more information.

### Field Schools with Savannah Guides

ACKMA members and friends are welcome to join Savannah Guides at their Field Schools across northern Australia. The next Field School will be in the Atherton Tablelands, near Cairns, from 14-17 November 2019, and the registration fee of around \$495 covers all activities, food and transport over the four days. The next Field School will be held in Kununurra in April 2020.

Wet Tropics Field Schools are also held twice a year for two days, with one in late 2019.

# Tantanoola Dolomite

Mary Traves

Tantanoola Dolomite is found in small patches along the Limestone Coast of South Australia.



**A small sample of Tantanoola Dolomite**

A Sibelco subsidiary, Unimin Australia, operates the Tantanoola Quarry, which lies in an irregularly dolomitised zone adjacent to the Tartwaup Fault, five kilometres south-east of Tantanoola - a coastal village about 350 kilometres south-east of Adelaide in South Australia.

The quarry was originally opened to supply rail ballast and other construction materials, but the dolomite has been used for glass-making flux since 1961. Quarried rock is screened, crushed and blended to give a 3 mm product, with an average grade of 42% magnesium carbonate.

The pictured sample was taken from the quarry which is located just off the Princes Highway at Tantanoola (west of Mount Gambier). The quarry management gave ACKMA members a short tour of the quarry at the 2015 Conference (based at Naracoorte). The quarry produces about 45,000 tonnes per annum. Most of the rock is blasted, sorted, ground up and exported to Sydney or Melbourne for use as flux in the manufacture of plate glass.

Agricultural dolomite is also produced as a by-product.

The average proportion of  $MgCO_3$  in the rock is 12%–15% but the rock is sorted and quality tested to ensure a higher grade is sent for glass-making. The bulk of the rest of the rock is  $CaCO_3$ , with small amounts of silica sand, iron and manganese. The latter minerals give the rock its salmon-pink colour. Similar rock from other quarries in the area has also been used for building stone.

At the quarry, photo opportunities were limited to general views and none allowed of plant or equipment (their policy to minimise industrial espionage). There are caves in the formation, with one farther west being used as a show cave (Tantanoola Cave).

In times past, Tantanoola Dolomite has been used as a decorative building stone (in conjunction with limestone) – producing buildings of a certain grandeur in the centre of Mount Gambier.



**Left: The 2015 ACKMA group at the quarry entrance listening to an introductory talk after their safety induction. The rock pictured with the group is conglomerate which is found around the periphery of the quarry.**

**Below left and below: Two fine examples of the use of dolomite as building stone in Mount Gambier**



ACKMA gratefully acknowledges the support of



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**2019 CAVE GUIDES' SCHOOL**

**Wednesday 15 May – Friday 17 May 2019**

**and the 2019 ACKMA AGM**

**Saturday 18 May – Sunday 19 May 2019**

# ***“2020” Vision for Cave & Karst Management***

***The Jenolan Caves Reserve Trust and the  
ACKMA 2020 Organising Committee  
invite you to attend the 23rd Conference of the  
Australasian Cave & Karst Management Association***



# **Jenolan Caves NSW**

**Sunday 3rd - Friday 8th May 2020**