

CEGSA NEWS



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CAVE EXPLORATION GROUP (SOUTH AUSTRALIA) Inc.

PO Box 144, Rundle Mall, South Australia, 5000. <http://www.cegsa.org.au> Meetings held on the fourth Wednesday of each month, except December, at 7.30 PM usually in the Royal Society meeting room, South Australian Museum.

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Cover Photograph: *Decoration in Webbs Cave 6N-132. Photo: Peter Kraehenbuehl.*

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QUARTERMASTERS NOTE.

High usage equipment will now be stored at the quartermaster's residence. Please make arrangements with the QM well in advance of required date for equipment. The QM can be contacted at the telephone numbers on the previous page.

NEWSLETTER MATERIAL

The deadline for copy or background material for Volume 66 Number 3 (Issue 263) must reach the Editor by Wednesday **11th AUGUST 2021**. Material not meeting this deadline may be retained for possible use in a following issue. The preferred method is via E-MAIL to atholjax@adam.com.au as an **attachment** or on a memory stick or CD, in Word *.doc(x) or *.rtf files. Of course other forms of communication will still be gratefully accepted. Photographs are preferred to be in colour as separate files and note in the article where to be inserted. **(*jpg format** under 500Kb unless for the cover). The views expressed in this publication are those of individual authors and not necessarily those of the Cave Exploration Group (South Australia) Inc., its Committee or the Editor.



PRESIDENTS SPOT

Only a year to go before SA hosts the ASF Biennial Conference – this time with a Nullarbor focus and to be held at Ceduna. (No, it's not *Biannual* – that means twice a year!)

There is an excellent working group consisting of CEGSA, FUSSI and Scout Caving Group members tackling all the issues regarding venue preparation, accommodation, themes, speakers, a field guide and plans for several field trips either side of the SA-WA border. I am really impressed by the enthusiasm and energy that is being put into these projects by all the team! Some particular attention and negotiation is being applied to the possibility of access into a number of caves on the SA side of the border which is under Native Title. There is no Native Title presence on the WA side of the Nullarbor. On the SA Side, several management bodies are being consulted along with National Parks. In SA, the Nullarbor is now under 'Co-Management' which means input into decisions such as improvements, asset maintenance, access of many kinds (cavers, roo shooters, drilling exploration, ecological surveys, cultural surveys and experiences, photography, camping etc) are decided by a combination of National Parks and Native Title Holders. This takes time as all parties are not usually in the same place and each group require their own consultation phases. Our working group commenced this process last year to allow for such lead times and matters are progressing steadily. More in the next CEGSA News...

My day job involves examining drillhole geological logs all over the State in a team who record and assess groundwater content and quality for irrigators, miners, town water supplies, stock and domestic use, groundwater contamination etc (yes, and blueberries!). Until recently, our own Kevin Mott also worked in the same field but based in Mount Gambier. However, beady-eyed Kevin and myself were always on the lookout for any drillers' records in limestone country where drillers had encountered cavities! Between us we have list of such drillhole locations scattered across the State. For example, the buried Andamooka Limestone in the area between Roxby Downs and Andamooka has cavities at depths of ~150-300m, some filled with saline water from the regional aquifer. In the Pinnaroo area there are a number of cavities 10-20m in height that occur in the Murray Limestone which are located when drillers put in bores for the extensive spud farms in that area. In the Myponga area there is a patch of tertiary limestone that was in-washed between the mountains 20-30 million years ago but has now been hoisted up 500m with the uplifting of the Mount Lofty Ranges. A research team is looking at drilling into that elevated limestone valley which is similar rock to the Upper South East. In the Lower South East near Ewens Ponds are three drillholes which have encountered caves at ~150m depth – deeper than any of the deepest sinkholes! The only catch with all of these is that potential entries are down through a 6" diameter borehole – none of us were ever that thin! However, it does tell us that there is more cavern development under the State than we currently know and encourages us for the search to go on! (The Myponga example is different again to the Cambrian age area that Grant is currently exploring – so two chances there not just one!) Maybe CEGSA could consider investing in downhole cameras so we can at least see these hidden wonders, record them and of course give them an OZ Karst number!

Cheers to all from Ian

TRIP REPORTS

A TRIP TO THE CAVES ON THE NULLABOR PLAINS. AN INTERESTING DISCOVERY (FROM A CORRESPONDENT).

We left Eucla township on Friday, the 27th of September, 1889, to visit a land slip on the south edge of the Nullabor Plains, and about 28 miles from Eucla, N.W. We first drove to Moopina station, where we were joined by Messrs. Nicholson and Bailes.

Our party now consisted of Messrs. Nicholson, Annear, Bailes, Squire, and myself, with a buggy and three saddle horses. For the first twelve miles we travelled through the Moopina paddocks, mostly good feeding country. After passing out of the paddock gates we travelled 16 miles through lightly timbered, open feeding country. Here we met Messrs. Melville and Osborne. They informed us that they had found a large cave, and we arranged to visit it next day.

We then went to the land slip, which was close by. This is a remarkable hole, of an oblong shape, about 70 yards long by 60 wide and 92 feet deep, with almost perpendicular walls of limestone all round. In the bottom there are bushes and grass growing luxuriantly. This extraordinary hole is situated on a level plain of lightly timbered, low and scrubby country intermingled with grass and herbage of various kinds. After inspecting this landslip, we returned to Messrs. Osborne and Melville's camp where we were most hospitably received and entertained for the night by these gentlemen.

The next morning, we were all early astir in the camp, and after a substantial breakfast, we started under the guidance of Mr. Horace Melville to see the caves. After walking half a mile, we came on a chain of small dry clay pans, which we followed in a southerly direction for another half mile, where we entered the mouth of a ravine.

Following down this ravine in a southerly direction, and gradually descending below the level of the surrounding plain for about a quarter of a mile, we found ourselves in front of a perpendicular wall of rock towering 120 feet above us. This mass of rocks presents a most awe-inspiring sight. However, we did not wait long to admire it, but entered the mouth of the cave at the foot of this mighty wall. We descended rapidly over large white boulders of rock until we reached the floor of the cave. Here we found ourselves in a large lofty chamber about 60 feet in height, with snow-white walls and roof of limestone. From here we could just see a glimmer of daylight through the entrance, far above our heads. We had now descended about 200 feet below the level of the plain. We next struck west by south along the grand corridor, still gradually descending. Here we lost sight of all daylight, and after walking 326 feet we came to the entrance of two noble chambers. Entering the one on our right hand, through an almost perfect arch 80 or 90 feet in height and 120 feet wide, we found ourselves in a circular chamber 150 feet wide and 90 feet high, with a level floor of very fine dry sand. After searching in vain for an outlet along the walls of this chamber, we retraced our steps to the entrance of the south cave, where we passed down an arched corridor about 80 feet high and 150 wide and 960 feet long, the same breadth and height from end to end. There is a dry water-course all down the north side, with high banks of sand washed up on both sides of this channel. This we followed to the south end of the cave, where the water seemed to have made its escape through the floor. As we could find no outlet from the cave, apparently large bodies of water had run down this water-course, but it was now perfectly dry.

Mr. Nicholson, a retired English officer, estimates these caves would accommodate 200,000 armed men. He says they are the largest and loftiest caves he has seen in his travels in any part of the world. We saw no trace of animal life in the caves, either past or present, and they were perfectly dry. We estimate the deepest part to be 260 feet below the level plain above.

(** Note: The misspelling of Nullarbor is as per original printed article.)

<https://trove.nla.gov.au/newspaper/article/32726460>

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Dreamland fossil-extraction project, second trip, 6th March 2021

Party : CEGSA - Graham Pilkington,
CEGSA/FUSSI - Neville Skinner, Andrew Stempel,
FUSSI – Dee Trewartha, Sarah Gilbert, David Mansueto, Gavin Prideaux.

This was the second FUSSI-organized trip in the Corra Lynn Cave *Dreamland fossil-extraction project* led by Gavin Prideaux. The achieved objective was to show Gavin the route to, and the contents of, the *Graveyard*.

Dee, Sarah, Andrew and David arrived early to bolt and rig the *Portal* so that I could be hauled up – and I only just fit after moving into the widest parts of the slot as I rose. There's definitely not enough room for me and a ladder or for me to prussic. The bolting did prove useful for others to prussic themselves up. Neville spent the morning helping the farmer, Andrew Slater, remove the cave door so that it could be repaired. The door was badly rusting and had suffered from an attempted break-in years ago.

I was on the trip because of my supposed knowledge of how to get to the *Graveyard*. I created a navigation map for us to try to follow but because my last trip to the *Graveyard* had been three decades ago, I expected that some adjustment might be necessary, and I was correct. The path had to be suitable not only for getting to the site but for ease of travel transporting fossil materials once the go-ahead was given. Close to the *Portal* is an awkward bit of cave that we needed to bypass. This was easy to do, if you went the right way! After a slight bit of sight-seeing, we were back on track. The rest of the way was accomplished without too much hassle but we did try a couple of alternate paths at constrictions that proved to be slightly worse than the proposed route.

Gavin's appraisal of *Graveyard* was that there are several tonnes of fossil material and many years needed to do the job. He also declared that after travelling to the *Graveyard*, he now knew that removal of the material via the cave was impractical and an access shaft was needed even if only big enough to pull out the fossils.

On the way back to the *Portal* we tied removable navigation ribbons to the walls so that fossil-collecting party members would not get lost.

Graham Pilkington

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Dreamland fossil-extraction project, third trip, 28th March 2021

Party : CEGSA - Graham Pilkington,
CEGSA/FUSSI - Neville Skinner, Andrew Stempel,
FUSSI – Dee Trewartha, Sarah Gilbert, David Mansueto, Gavin Prideaux.

This was the third FUSSI-organized trip in the Corra Lynn Cave *Dreamland fossil-extraction project* led by Gavin Prideaux. The achieved objective was to take Gavin to the *Koala Patch* so that for dating purposes he could collect samples of the flowstone sandwiching the fossil-bearing red deposit.

On entering the cave we stopped to admire the new door. No more need to wish for a crowbar to tease it open.

I created a navigation map for us to try to follow but because my last trip had been three decades ago, the route was highly suspect, but turned out to be very usable. It became known as the green line because that was the colour I'd put on the map. There are still some bones at the *Koala Patch*. For various reasons, especially participants wanting to get home before midnight, unlike on the last trip, we did not investigate other bone sites further on that had been noted on the cave survey.

We did have time to check out the bone site noted at the southern end of the *Freeway*. After entering the *Freeway* near the midpoint, it was immediately obvious that a bone deposit was embedded in the westerly wall. It was in the usual red matrix and about 0.2m thick but unlikely to extend much into the wall. The elevation was nearly consistent but naturally the height above floor level varied with the floor undulations. The deposit continued south down the *Freeway* almost without interruption but very variable in content. What this shows is that cave surveyors (me, since I did the survey!) are too focused on making a map of the physical cave and do not spend enough effort on documenting the cave contents.

Close to the south end of the *Freeway* it gets very constricted and the noted deposit right at the end is hard to access. However, I did extract a Thylacine lower jaw from the *Overpass* in the 1980s and noted that the bones seen at the end of the *Freeway* most likely came from the end chamber of the higher-level *Overpass*. Gavin was very interested in visiting the Thylacine site so up we went in one of the connecting slots. Again I was in for humiliation at not having noted all the bones in all the tunnels everywhere you looked. It took Gavin an hour to get to the end chamber 20m away because he was too busy looking at bones from *Palorchestes* and *Zygomaturus* and other animals seen along

every passage we travelled on and in every side passage we passed. The end chamber is about 15x6x4m high and needs a name. It's encircled by a red fossiliferous sand deposit up to a metre wide and a metre deep. This "new" deposit makes the *Graveyard* just a backwater to a major river. Both ends of the chamber have large filled rifts bringing in more infill and obviously the sources for the bone deposit. We all agreed that enough had already been collected from the *Graveyard* and the new site close to the *Portal* and easy to get to was the place on which to focus the fossil-extraction project.

Graham Pilkington

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Time is running out. Kelly Hill March 2021

Ok, so we are all systems go for this trip. Organised the boat in mid-January for the late March sail. Organised the accommodation. Now to get the final bits underway, food, gear, maps, and the paper work.

Yep, the paperwork was back, demanding our attention as we all stood around the back of Grant's Ute surveying the LIDAR and photo images provided by Joel. For this weekend's trip we divided up the work into sectors, each of which had varying numbers of points that needed to be checked out. Were these points, appearing as shadows on the LIDAR images, simply cliff lined depressions going nowhere or did they contain a hole at their base that enticed exploration?

We sorted out sectors and people were off, remembering that we had to be back at the car park by 3.30pm at the latest. If not, we risked being mistaken for a wild pig and being shot by the culling crowd in the helicopter. A national park, or in the case of Kelly Hill a lowly Conservation Park, is a multi-use place after all, so better share the ground and airspace.

Nick, Kevin, Pam, Neville and I trundled off to check KXDG38. This is a depression that Dave Gillieson had found by pouring over LIDAR images. We confirmed it is a blind depression not going anywhere, anytime soon.

Next on the list was KXGD43. This was far more interesting with two entrances in a small cliff line with a central collapse. We all got to work: Pam on camera, Kevin on GPS & measurements. Neville on underground duties, Nick on tag location, Clare on data recording.

Much discussion on how to draw this up, do we call it anything apart from the number. Do we tag it? Well, yes, it was tagged in the end.



KXDG43 @ 240degrees. Kevin Mott on GPS duties at its entrance.
Photo: Pam Payne.

At some stage Grant, whilst staring at LIDAR images of the area, saw a black smudge about a kilometre south-west of Frosted Floor cave, that he

strongly suggested that we should check out. Kevin was of the opinion that it really was a continuation of a drainage line and not much else. But in this game you have to check stuff, so off we all trundled across what was pretty open country considering that the bush is growing back very quickly, already a metre high and beginning to be more of a challenge than it was in October.

We picked up the drainage line and followed it in a westerly direction where it ran into a bit of a valley. Nothing was doing, not a hole, or depression to be found. Disappointing. It was now getting towards the bewitching hour, so a retreat was made back to the safety of camp.

A day later, we traversed out across a dry lagoon and found a section of the burnt-out walking track that runs from Hanson Bay to Kelly Hill Caves. Nick had his trusty track clearing team out cutting back the regrowth, so we took advantage and followed it until Dave Gillieson thought it was about time to find KXDG46. The crew swung into action: camera's organised and the paperwork began. What was the distance, at what angle? That can't be right, what was the angle again? On it went. Drawings made, and the depth estimated as we forgot the clino! KXDG46 was another blind depression, with bedrock on the Eastern side.



KXDG 46. Nick Heath in the centre of the depression. Photo Pam Payne

More grey patches on the LIDAR image beckoned and by lunchtime we had the find of the day.

This was a large doline with four entrances in a line, leading to something. We measured, photographed and tried hard not to go down the entrance that breathed. This was KXDG48. Time beckoned.

Dave had located KXDG44 on the edge of the lagoon and this proved to be a small rock face with three entrances. Further up-slope is another entrance to what appears, at first glance, to be a cave with a possible



The two centre solution tubes of KXDG 48. Photo Pam Payne

connection to those tantalizing entrances at the lagoon level. Neville, being adventurous, braved the entrance guard snake and undertook a brief survey of what turned out to be a low, circular chamber, about 4.8m long, but did not see any light connections through to the lagoon entrances.

The day's work finished with a return walk across the lagoon bed to check out a couple of other features, both disappointing, and through the ever increasing scrub growth. Yes, time is running out with the bush soon to make life for walking across this landscape harder.



KXDG44@024 degrees. Clare sitting at the up-slope entrance which leads to a small cave that may connect to those at the lagoon level. Photo: Pam Payne.

Clare Buswell.

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Kelly Hill March 2021 Trip Report

Attendees: Clare Buswell, Heiko Maurer, Neville Skinner, Kevin Mott, Grant Gartrell, David Gilleson, Gay Crowley, Minky Cockshell, Matt Smith, Matt Grey, Matt Brinkley, Heather Siebert, Nick Heath, Pam Payne

Continuing on from the successful Kelly Hill trip in 2020, members of CEGSA, FUSSI and the Scout Caving Group headed over to Kangaroo Island to continue validating aerial survey data, and documenting karst features. Various sites were visited over the course of the weekend, but the focus was on the western end of Kelly Hill Conservation Park. At least 28 features were verified over the weekend.



Members of the group get ready for some cave exploration!

The focus of these initial trips are generally to document surface features, typically only doing a cursory exploration of caves found. On this particular trip while plenty of shallow karst features were documented, the trip was a large amount of walking, with only sporadic cave access! Though there are plenty of new caves to be documented, the team focuses for now on visiting as many areas in the surface as possible before vegetation regrowth makes this significantly harder!



Some of the walking is through desolate burnt out wasteland, but the regrowth in most of the areas visited is progressing rapidly!

5K-195 OMG Cave was added to the karst index, with the Scout Caving Group team surveying approximately 90m of new cave, and exploring several hundred more metres. There were numerous unexplored leads, and the cave is filled with some excellent speleothems!



Surveying the entrance chamber of 5K-195 OMG Cave



5K-195 OMG Cave features a large amount of delicate decoration, with some care required through various sections



K5-195 OMG Cave has numerous examples of pristine white speleothems

The group also visited *5K-6 Mount Taylor Cave*. The large entrance has numerous beehives, with the aroma of honey quite strong. The cave features a couple of large chambers, with some beautiful decoration, unfortunately tarnished by decades of public access.



Inside Mount Taylor Cave

Trips will continue to Kangaroo Island during the rest of 2021, so please register your interest by filling out the form below:

<https://forms.gle/K8uESfjXP9UwYm4r5>

Report written by Matt Smith

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Nullarbor April 2021 Trip Report

Attendees: Matt Smith, Heather Siebert, Matthias Frasacher, Peter Kraehenbuehl , Janine Kraehenbuehl , Pam Payne, Andrew Stempel, David Mansueto, Neville Skinner, Steve Milner, David Lowe, Max Lowe, Ann Marie Meredith, Ian Collette, Fran Collette, Bert De Waele, Johanna Riddell, Harry Scholtyssek

With the 2022 ASF Conference in Ceduna approaching at a rapid pace, a team of intrepid cave planners from CEGSA, FUSSI and the Scout Caving Group, joined with some WASG members to visit a range of sites on the Nullarbor for the purposes of determining what to include in the field guide, as well as which locations we should target for field trips. The initial plan was to visit a number of SA sites, and then spend several days exploring caves in the Western Australian part of the Nullarbor Plain.



5N-4 Koonalda Cave entrance. Photo: Matt Smith

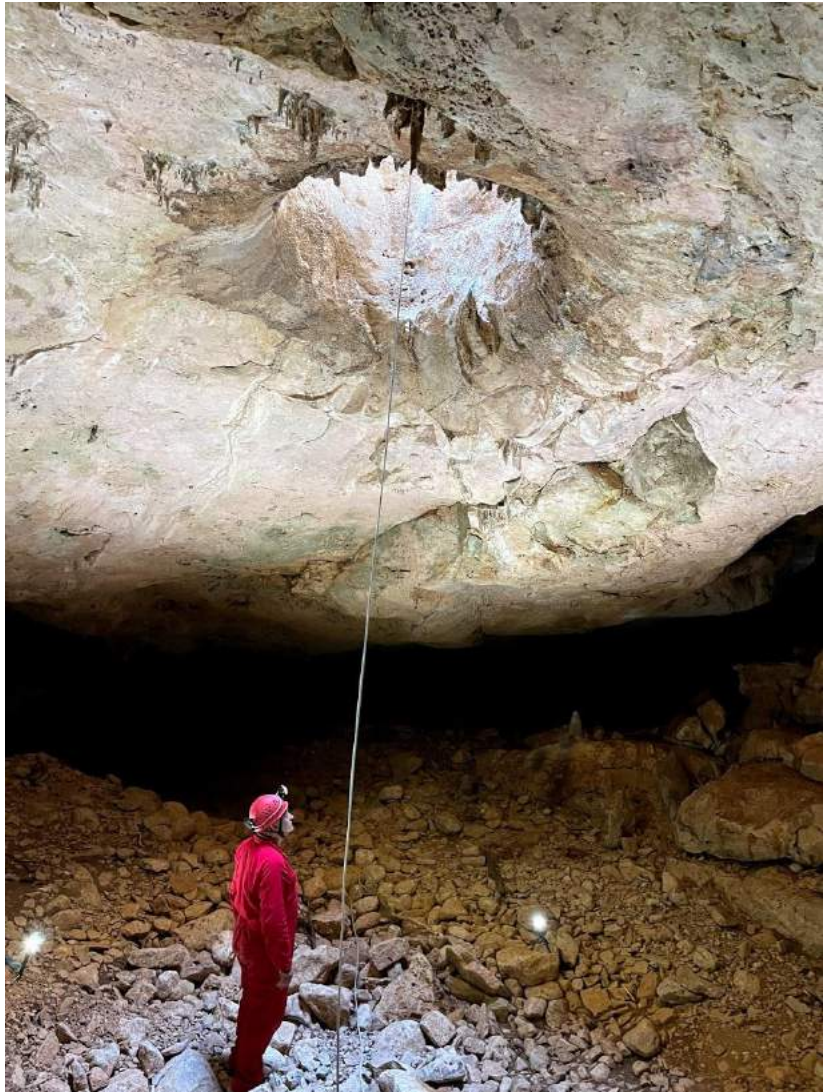


6N-132 decoration in Webbs Cave. Photo: Peter Kraehenbuehl

Beginning in SA, the team visited several locations, starting with a surface visit of **5N-14 White Wells Cave**. While we didn't enter the cave, we did notice a quite large lizard sunning itself in the entrance. From there we continued to the three **Murrawijinie Caves, 5N-7/8/9**. We entered each of these interesting and publicly accessible caves, noting in particular the indigenous hand stencils inside. The final stop for the day was **5N-4 Koonalda Cave**. Again we could only visit the surface, but were awed by its huge size. The campsite for the night was at the nearby Koonalda Homestead. The next day we crossed the border, and drove out to the next campsite near Thampanna Cave. After setting up camp, we drove to the nearby **6N-132 Webbs Cave**, spending several hours exploring and photographing it. Despite an excellent map, we discovered the navigation through the cave is a challenging exercise. The following day we spent rigging and exploring **6N-206 Thampanna Cave**. The group had a range of objectives inside the cave - some to explore and find locations discussed at recent CEGSA meetings, some to photograph and document the cave, while others were just content to familiarise themselves a bit further, and enjoy some of the pretty decorations.

The cave itself is reasonably hard work, but quite rewarding when you reach some of the well decorated sections.

We had a plan to visit a range of locations on the Mundrabilla Station, so on the following day the group ventured in a few different directions. One group visited the beautiful and impressive **6N-1369 Prostrate Pit** - this cave features some of the more impressive decorations I've seen on the Nullarbor, including the amazing Winter Wonderland section. Another team visited **6N-1411 Sentinel Cave**, before we all convened at **6N-1347 Liars Dare Cave**. Liars Dare featured a large entrance chamber, with a very impressive dry streamway running through it. Beyond this large chamber was a meandering walkable tunnel, with some beautiful dry speleothems. Once finished, we took a "shortcut" back to camp, which resulted in a few punctures... In the morning it was revealed that one puncture had soon become four, so there was a flurry of tyre repair at camp. At this point it was determined by some who ventured to the Nullarbor without an extra spare, to take the easy road back to SA, visiting the big caves near Eucla, while the rest ventured further west towards Madura Station. On the way back out to the highway, one group elected to visit **6N-360 Purple Goringe Cave**, which also had large amounts of gorgeous decoration, in some parts offset by a striking red-soil covered floor.



*The entrance chamber in 6N-206 Thampanna Cave.
Photo: Pam Payne*



*Winter Wonderland in 6N-1369 Prostrate Pit.
Photo: Peter Kraehenbuehl.*



The Rhinoceros in 6N-1347 Liars Dare Cave.

Photo: Janine Kraehenbuehl

After a quick visit to Eucla, we visited **6N-3 Abrakurrie Cave**, a classic Nullarbor cave featuring the biggest chamber in the southern hemisphere - there's nothing quite like the majesty of this huge cavern, with several bat colonies populating the very high ceiling. Later that day, we visited the nearby **6N-2 Weebubbie Cave**, once again wowed by its massive scale. With it's equally huge lake, we took the opportunity to go for a swim and wash off several days of dust.



Red soil and white decorations in 6N-360 Purple Goringe Cave.

Photo: Bert De Waele

The team heading west visited **6N-37 Mullamullang Cave**, making the epic trek all the way to the Dome at the "end" of the cave. At this point we were approaching the end of the trip, and made the final journey back to Adelaide. Having a little extra time up our sleeves, our group elected to go back via Streaky Bay, and camping at Murphy's Haystacks - both beautiful parts of South Australia.



The impressive scale of 6N-3 Abrakurrie Cave



Team photo! Photo: Steve Milner

Report by Matt Smith

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Lower South East, Monday 12 April 2021

Features Visited: **5L34** (Morgan's Cave), **5L61** (The Pines), **5L81** (Fossil Cave) and **5L220** (Hunter's Cave),

Participants: **Peter Horne**, **Ian Lewis** and **Kevin Mott** (CEGSA), with cave owners **Vanessa Richards-Fennell** and **Mark Fennell**, and family/friends **Aiden**, **Digby**, **MacKenzie** and **Mikaela**.

This very brief visit to the Lower South East was organised mainly to discuss a range of access and conservation issues with cave managers and speleo colleagues, as well as renegotiating CEGSA access to Hunter's Cave while introducing the new owners, Vanessa and Mark, to their fascinating feature. Vanessa had earlier explained her family's interest in exploring the cave (and supporting visitation by suitable-qualified and insured people) after having purchased the property from Fred and Val Hunter a few years ago, and this was my first visit to the cave in some 12 years.

Ian and I arrived at the property right on time at 10:00am, where we met Vanessa and followed her



Hunters Cave when it first collapsed in 1983

out to the cave via an unmarked lane. Compared with how I had first seen the cave the day after it had collapsed on Sunday 3 July 1983 it was now almost unrecognisable; the trees had grown into mature beasts now, and the collapse mound had really degraded over the years, making the entrance look like it had been open for hundreds of years!



Hunters Cave as it appeared during our visit.



The caving party!



Entering the western walk-in passage

We hopped the barbed-wire fence and carefully descended the unstable dirt mound before heading off to the left (west), ducking under the ceiling and spreading out in the twilight zone of the main passage. The water level was well down, and it would have been very easy to stay dry while exploring the entire known cave if we had wanted to do so. Mark, MacKenzie, Aiden and Digby eagerly pushed the western passage to its limit while the rest of us waited in the less-restrictive areas closer to the entrance, chatting about karst formations and fossil sea urchins etc. I was also quite surprised to discover that some of my bright pink 1983-vintage survey tape markers were still in place and just as readable as when they were installed 38 years ago! Soon afterwards, Ian, Vanessa and Mikaela remained in the entrance while the other party members moved across the base of the talus mound where they briefly explored a number of the many

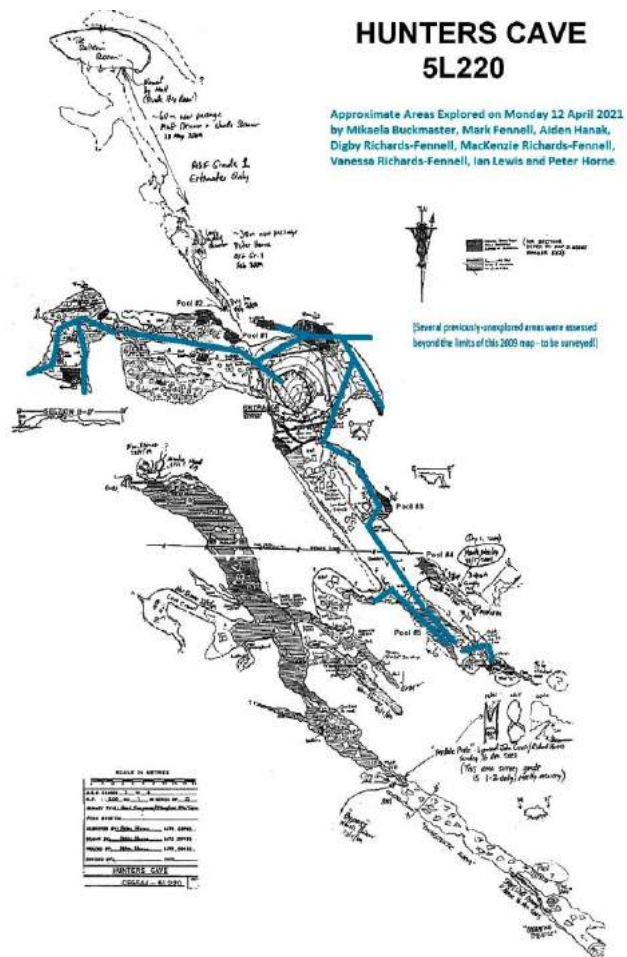
The lowered water-table also made it possible for us to have a pretty good grovel in what is now called the “Sheep Dip”, but once again no new discoveries were made due to the extremely tacky, deep mud and the narrowness of the horizontal tubular passage there. The unbridled enthusiasm demonstrated by Mark, MacKenzie, Aiden and Digby again shone through as they disappeared into the distance and headed off to the final mud-cone blockages beyond the “J Tag” before briefly looking at the start of the claustrophobia-inducing “MarsBar Squeeze” passage (undoubtedly for them to explore at a later date!). About halfway along the main drag, I found a comfortable lump of rock and waited for the team to return, acting as a light reference point to help guide them out if necessary. I used this brief period to more closely examine the ceiling; it was really fascinating to see the incredible detail in the brittle fossil matrix here.

A photograph of a fossilized specimen, likely a piece of fossilized wood or plant material. The specimen is light brown/tan in color and has a complex, fibrous, and porous structure. It is set against a dark background.

Sea urchin fragments and other fossils.



Regrouping near the entrance before heading eastward into the crawlways.



Map of areas explored.

Lewy and I said our goodbyes at about 1:00pm and headed out to the old Tantanoola Forest, where we had a brief look at former Forest Ranger Trevor Wynnaiat's terrific stairway in The Pines as well as the gated entrance of Morgan's Cave nearby before heading across to Fossil Cave to meet up with Motty at 2:00pm.



We spent an hour or so having a fairly detailed look at the many interesting features adorning the doline's walls and chatting about possibly installing a new water-level nail or bore because of the lowered water-table which can no longer be conveniently measured from the old reference point. Kev, being nearly as tall as the surrounding pines, also discovered some strangely-cut animal horns tucked in one of the wall alcoves, and I also noted some strange, "chocolate-block" features in one spot which really left a few questions!

Fossil Cave 2021.



Rare *Sphagnum mottite* and *IDLewisite* fossils from the Late Plasticine period!



Weird "chocolate block" features on an alcove near the top of the doline.



Interesting comparison of Hunter's Cave (left, from an earlier trip) and today's Fossil Cave entrances showing similarities of angular joint-controlled features.

Before heading for home we also did some forest-bashing across the road from Fossil Cave to check for surface expressions that might have been indicative of subterranean chambers below. It was a short but very interesting trip, and a great opportunity to revisit some of my favourite old Mount Gambier sites again to see how much they had changed over the years.

Peter Horne.

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Past Trips from General Meetings

February 2021

- **Grant Gartrell:** visited two properties at Delamere. The ownership of the first property had recently changed hands but the new owner was welcoming. The previous owner of the second property had died and the new owner does not want caving activities on his land. Grant informed the manager that should issues involving caves ever arise, CEGSA was available for assistance if requested.
- **Graham Pilkington:** described a trip to Dreamland in Corra Lynn Cave on the 6th February, involving members of CEGSA, FUSSI and a group of palaeontologists under the leadership of Gavin Prideaux. Bolts were first placed at the top of the Portal and bone deposits at The Graveyard plus other places were assessed. Gavin Prideaux opined that further visits were well worthwhile. Further possible fossil sites in Dreamland still await assessment. More trips are planned but State Heritage approval is first needed to extract any fossils.
- **Mark Corbett:** described a recent Scouts trip to Punyelroo and Gloop caves.

March 2021

- **Matt Smith** and others gave a detailed report on the most recent trip to Kangaroo Island. A significant and well decorated new cave was discovered and partially surveyed.

April 2021

- **Peter Kraehenbuehl** reported on surveying work at Weebubbie Cave during the recent conference planning trip to the Nullarbor. **Matt Smith** described the other caves visited on this trip which were being assessed for including in the ASF conference program.
- **Graham Pilkington** described a trip to Corra Lynn with FUSSI members and a palaeontologist to assess fossil deposits. They found substantial deposits along The Freeway and even more in The Overpass. As a result future work is likely to prioritise these areas.
- **Michael Woodward** and a group of venture scouts went to Mullamullang, Weebubbie and Thampanna in the Nullarbor.

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TECHNICAL and OTHER ARTICLES

MEMBERSHIP FEES

CEGSA MEMBERSHIP FEES become due on January 1st. To ensure continuity of membership and privileges (particularly insurance) please pay before March 31st.

Joining fee applies to renewal after March 31st.

CEGSA MEMBERSHIP FEES FOR 2021 YEAR

Full Membership	\$30.00
Associate Membership	25.00
Long Term Associate (more than 2 years as an Associate)	30.00
3 Month Introductory	5.00
3 Month Introductory family	10.00
3 Month Associate Membership (including joining fee)	19.00
Joining Fee (not applicable to 3 Month Introductory)	12.00
Country Membership discount (residing more than 80 km from Adelaide GPO)	
Single member or one-parent family	6.00
Two- parent family	12.00

ASF LEVY FEE FOR 2021 YEAR

Single	\$70.00
2-parent Family	123.00
1-parent Family	88.00
Retired, pensioner, student, or unemployed	46.00
Honorary (not caving)	21.00
12 Month Introductory	20.00
12 Month Introductory family	35.00

Example 2021 YEAR FEES

	CEGSA	ASF	TOTAL
Full Membership	\$30.00	\$70.00	\$100.00
Full Membership retired	30.00	46.00	76.00
Full Country Membership	24.00	70.00	94.00
Associate Membership	25.00	70.00	95.00
Associate Membership student	25.00	46.00	71.00
Inactive Full (needs Committee approval)	30.00	21.00	51.00
3 Month Introductory	5.00	20.00	25.00
3 Month Associate Membership	19.00	18.00	37.00

Examples for Family Membership

1st Full Member + 2nd Full Member	\$60.00	\$123.00	\$183.00
1st Full Member + 2nd Associate Member	55.00	123.00	178.00
1st Assoc Member + 2nd Assoc Member	50.00	123.00	173.00

NOTE Country Membership discount on the above examples would be \$12.

Full Member 1-parent Family	30.00	88.00	118.00
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Please make sure your payment of fees includes CEGSA and ASF, if applicable.

Membership Fees can be paid directly into CEGSA Account

CEGSA

BSB 105-900

Account No 950661040

Reference with your Name or Membership Number and fee year; eg 7201-21.

Graham Pilkington. Membership Officer.

Approved CEGSA Trip Leaders

Name	Caving Leader levels
Stan Flavel	Horizontal and Laddering
Grant Gartrell	Coordinator
Paul Harper	Horizontal and Laddering
Richard Harris	Horizontal
Peter Horne	Horizontal and Laddering
Peter Kraehenbuehl	Horizontal, Laddering and Vertical
Ian Lewis	Horizontal and Laddering
George MacLucas	Horizontal, Laddering and Vertical
Steve Milner	Horizontal, Laddering and Vertical
Tim Payne	Horizontal, Laddering and Vertical
Graham Pilkington	Horizontal and Laddering
Mark Sefton	Horizontal and Laddering
Neville Skinner	Horizontal, Laddering and Vertical
Matt Smith	Horizontal and Laddering
Tom Szabo	Horizontal and Laddering
Michael Woodward	Horizontal, Laddering and Vertical

All the above named are also CEGSA Trip Coordinators.

Members may query the classification of any Trip Leader at any time with the Committee.

It is a requirement that each trip be organised by an approved Trip Coordinator to be classed as an official CEGSA trip. It's also a requirement that all trips be led by an approved Trip Leader at the appropriate skill level for the cave being entered. Trip Leaders ensure that every caving party has a member with current First Aid training.

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MYPONGA, March 31 2021

CENTENARY CAVE

I didn't **actually** find a new cave at Myponga on 31 March, but perhaps I did. Just in case I had found it, and didn't know, I named it "Centenary Cave" in recognition of the Centenary of the establishment of the RAAF, the Royal Australian Air Force, falling on the same date.

Centenary Cave is one of the strangest caves in South Australia. It might possibly even have sharks swimming in it. I have never seen Centenary cave. I have never been in it, and don't even know precisely where the entrance is, or what it looks like. March 31st was the date on which I located an entrance for the cave, well almost. I did it the easy way, from the comfort of my swivel chair in front of the computer screen. Although it would be more of a thrill to shine a torch down a real black hole in a real gulch, there are excellent precedents for remote discovery, and it can still be exciting.

We take it for granted these days that we can find cave entrances using aerial photography. We are doing it successfully on the western end of Kangaroo Island right now, but the first time that the method was used, to my knowledge, was about 60 years ago, at the same time the work on the Myponga Reservoir dam discussed later was being completed. The late Professor Joe Jennings was finding new Nullarbor Caves by studying aerial photographs at the Australian National University in Canberra. Joe, who would be turning 105 this year if still alive, located a number of new cave entrances, including Mullamullang, admittedly a bit easier to see than anything we would expect to find at Myponga.

THE INTERNATIONAL YEAR OF CAVES AND KARST

The year 2021 is being recognised around the world by the UIS (International Union of Speleology) as the International Year of Caves and Karst (For information see IYCK2021.org). I suggested in a letter to the Premier of South Australia, the Honourable Steven Marshall MP, dated 28 January 2021, that this would be a wonderful opportunity for South Australia to participate in, and celebrate this occasion, by recognizing, and taking the initial steps towards recovery of access to a couple of significant cave systems, one of which formed initially within what is now the Reservoir precinct at Myponga.

My enquiry was forwarded from the Premier's office to the Honourable David Speirs MP, Minister for Environment and Water, to respond on the Premier's behalf, and Minister Speirs' positive response (4 March 2021) has opened the way for discussions with SA Water staff whom I have also found to be interested, positive and supportive.

Although nobody has ever extensively explored a significant cave system at Myponga, please accept for the moment that there has been such a cave, and that it still exists. As will be discussed later, there is plenty of evidence for its continued existence. One of the principal features of caves such as this that seems to be least understood by the community at large, apparently including some mining engineers, who you would imagine should know better, is that they are generated as integrated drainage systems in the same way that valleys of erosional origin are formed. The difference is that karst caves are principally created by the accumulated impact of solutational processes over similar timescales, although erosional processes may also make an impact.

An important point to understand at the outset is that, just as for valleys, caves must form when the conditions are right. That is to say, when the factors that cause them all align, there is no choice in the matter. They are not optional, any more than the outcome of the force of gravity or other laws of physics is optional.

In my experience, one of the more difficult concepts to grasp in regard to the formation of caves is our appreciation of the impact of the passage of time. We are on earth for such a short time ourselves that we learn to simply accept the current landforms as we find them, to perceive them as static. We know that hills green up in winter and dry off in summer, but we generally don't perceive valleys deepening, nor, until recently, significant climate change, in our lifetime.

The Precambrian Brighton Limestone in which the cave has formed is some of the oldest limestone on Earth. Limestones are composed of the calcium carbonate based skeletal remains of living creatures, and Precambrian limestones are based on the very earliest of such lifeforms that ever existed. They were laid down on a sea floor approximately 600 million years ago, while Australia was part of the Gondwana supercontinent, and much has happened to that seafloor since then. It was tipped up on edge during a major mountain building period known as the Delamerian Orogeny from 520 to 490 million years ago, and has survived until the present through a long sequence of equally impressive changes such as the relatively recent separation of Australia from Antarctica, naturally accompanied by substantial variations in climate. It is not yet known just when, over this period, the cave first started to form. There is a reasonable expectation that this may have been a very long time ago, and that evidence of some of this ancient geological history may still be preserved within the cave. If so, and there is one day in the future an opportunity for scientists to have a close look at this cave, some fascinating insights into our geological pre-history may be revealed.

When we have accepted that the cave does exist, then like any other cave it represents a significant asset for the state that can, if managed appropriately, be held in perpetuity. It is very much in our interests that any engineering project which might impact upon it includes an adequate environmental impact assessment, not only in the interests of protecting, or at least including in the equation, the true asset value of the cave, but, as was highlighted particularly vividly in this case, in assessing the viability of the engineering project itself.

From bitter experience I have to point out something that I wish was far more obvious. Being an excellent engineer, or a really competent bull-dozer operator, doesn't automatically qualify a person as an expert on karst values, any more than it would qualify that person to carry out brain surgery. Cave exploration and assessment can often be a slow and careful process, and necessarily of long duration. Our fossil cave discovery back in 1969 at Naracoorte happened after the cave in which it was made had already been open to the public for 75 years. As it is now World Heritage listed, it attracts a range of visitors from all over the world to South Australia, or at least will again be doing so once tourism recovers in the post pandemic era. Amazing discoveries are being made right now under the Nullarbor in caves that have been known for decades. Extremely important evidence of the earth's early history may be lost when newly unearthed caves are not given the benefit of sufficiently expert assessment prior to decisions being made by inadequately qualified people about their intrinsic asset value to the state.

The second aspect of poor decision making, as will become clear below, is that when we don't properly take into account the consequences of karst development, we do so at our peril.

CONSTRUCTION OF THE MYPONGA RESERVOIR

South Australia has had its outstanding successes, as well as episodes which could have been handled better, as in any society. One of the latter occurred about 60 years ago and was associated with the construction of the Myponga Reservoir. A substantial cave system that would have, and should have, been predicted by more comprehensive and karst aware environmental impact

assessment processes, was instead unexpectedly encountered during dam construction. This was first mentioned in a short report I made in the Cave Exploration Group of South Australia's CEGSA



Myponga Dam under construction and in flood.

News No 178, published in May 2000, which included a report from former CEGSA Member, the Late Len Dallow, who was employed at Myponga as a Technical assistant for the Engineering and Water Supply Department during the construction of the dam.

Construction for the concrete dam wall and spillway for the Myponga Dam commenced late in 1957. As would be expected for a project of this expense and magnitude, geological expertise was sought from the SA Department of Mines in regard to the suitability

of the limestone and slate bedrock to take the footings for the dam wall. Unfortunately the advice received was far from accurate because the Mines Department geologist(s) involved were clearly not up to speed on karst processes. One could perhaps in mitigation offer the defence that not many people at that time were well versed in karst processes, or karst values, but that would be no excuse today. The advice received was that while some minor cracks could be expected in the bedrock, and therefore some minor grouting would need to be undertaken, the location was quite suitable for construction of the proposed dam. It was therefore a big surprise to find that when the dam wall was almost completed, after the expenditure of 1.1 million pounds (in today's money about \$37,000,000), the dam would not hold water. While the Mines Department's assessment of the rock was quite reasonable in general terms, they had failed to take into account the capacity of the pre-Cambrian limestone to develop over millennia significant karst drainage features, and its relationship with the topography of the former Lovely Valley was such that that karst drainage commenced a short distance upstream of the dam wall and ran directly underneath it.

The situation was so serious that even at that late stage, the project was within a gnat's whisker of being abandoned, because while additional grouting might be possible success was not guaranteed and the magnitude of the increase in unexpected extra expense possibly somewhat exponential. Eventually the extra work was carried out and the cost of the project increased, to the best of my knowledge, by around 350%.

A large amount of cement slurry (estimated to be as much as 30,000 cubic metres) had to be injected under pressure into several hundred 2 inch holes drilled up to 200feet deep to seal the network of cavities. It might have been a good idea to drill at least a few of those holes prior to completing the design stage.

What has not been mentioned, up until now, is that, apart from Len's report of a Mines Department geologist climbing into a chamber of the cave, uncovered during excavation of the earthworks for the concrete spillway, breaking off a stalactite and observing at least a 20 metre deep shaft going down, there was never any serious assessment of the extent or heritage qualities of the cave system, other than an attempt to gauge the extent of the cave by pumping a large quantity of water into it.

It is clear that the cave system must have been, even if undiscovered and at the time unappreciated, a significant asset for the State of South Australia, just as the Naracoorte caves are today, and therefore an asset the value of which should have been factored into the total cost of the project. It should be a basic part of the Environmental Impact Assessment process prior to undertaking the project, and if the Department of Energy and Mining does not have the expertise, then it should be

obliged to seek it out. One of the basic difficulties in any scientific investigation of this sort is the old conundrum of not knowing what it is that you don't know, which is why it is particularly important to carefully prescribe well ahead of the need arising the expertise that should be engaged to carry out such assessments.

But of course, that is not the end of the matter either. The configuration of the bedrock in the area is such that the Brighton limestone is nominally a hundred or so metres thick, steeply dipping and constrained between beds of far less soluble rock. It is quite clear that the section of cave into which the grout was injected was by any measure a very small part of the full extent of the cave system, which would of necessity extend for pretty much the full length of the Brighton limestone bedding until it has an opportunity for the water draining through it to reach the sea. Further to that, it would appear that the bedding has lain in approximately the present orientation, with the complication of continuing adjustment of various fault lines, since the Delamerian Orogeny, and would have adjusted appropriately to sea level changes of as much as 200metres over that time (pers. com. R. Jenkins, U. of A.) A large quantity of water containing concentrated fluorescein colouring was pumped into the cave when it was first located. Fishermen reported the sea turning green several kilometres from the coast several days later.

Even though expert cavers were not called in to determine the extent of the intersected cavity, much can be inferred by analysing the grout injection. If we begin by considering a cave with all tunnels no larger than 2m in width and 3m in height, then 30,000 cubic metres of grout would occupy a total tunnel length of 5km. Even if the cave had five such tunnels in parallel under the dam wall, they would all have to be blocked for 1 km to take all the grout. For reasons which will be made clear, this is a most unlikely scenario, so we come back quite quickly to considering a larger tunnel, possibly 10m wide and 20m high, which would perhaps fill from floor to ceiling for 100m and then taper down to floor level over a further 100m at quite a low angle of repose. This model seems a far more likely scenario for an extremely substantial grout plug. At the same time it infers that a further 5 to 10km of limestone bedding downstream will still include potentially accessible cave of similar dimensions, perhaps with larger chambers interspersed with constrictions and more rapid drops in floor level as seems to be the situation in most caves in similar circumstances. Such a cave must clearly have existed, and even despite the events that have happened to it so far, including blockage of an upstream section by grout, and the associated diversion away from it of what would in the past have been significant underground stream flows, something like 98% of it should still be intact.

FURTHER CONSIDERATION OF THE GROUTING OPERATION

Although only a small section of the cave was entered when cavities were broken into during construction of the dam spillway, in totality, even at this stage we know a surprising amount about it. Firstly, we know that when 36,000 cubic metres of water was pumped into it over a 12 hour period, the cave showed no indication that acceptance of this water was being limited by the capacity of the cavity. Indeed, the reports from fishermen of the sea turning green several miles out from Myponga Beach were a clear indication that water must have flowed quite freely for a long distance through the cave, which therefore had to be reasonably accessible over that entire distance.

Secondly, although we have not been able to access detailed records of the grouting program, if any such records even exist, or once existed, anecdotal accounts when combined with a basic understanding of the properties of cement grout, tell us a great deal more about the dimensions of the main cavities under the dam wall, and consequently, because of the inherent purpose of the cave as a karst drainage system within the limestone bedding, also tell us that such dimensions can be expected to be indicative of the rest of the cave between Lovely Valley and the efflux of the cave now believed to exist out from the coast, underneath the sea.

The grouting program was carried out by drilling a curtain of 2 inch diameter holes 200 feet deep close to the base of the dam wall. Each hole has a cross-sectional area of about 20 sq cm, and a total volume of approximately 0.12 cubic metres. If no cavities were intersected, that volume would represent the total amount of slurry able to be injected into each hole.

However, it was reported by Len Dallow that many holes each took as much as 4000 bags of cement, a volume of 120 cubic metres, and in some instances a second hole drilled only 12 inches away, would take a similar amount of slurry. It is understood that in total, over 200 such holes were drilled, taking a total of around 800,000 40kg bags of cement, for a total of over 24,000 cubic metres.

One might imagine that the slurry might flow for large distances, but a separate property of the slurry is that once the cement is mixed with water, the mixture has a lifetime of 1 hour or less before a chemical change causes it to set. It is also clear that although it may be pumped into the initial bore-hole under pressure, in the majority of instances where it escapes from that bore-hole into a larger intersected cavity, it spreads out under much reduced pressure from the injection point, forming a

cone with a natural angle of repose of about 20 to 25 degrees. Once that cone rises up to block the drill hole, it may limit the ability to pump further slurry down the hole. Most holes stopped taking slurry after accepting 4000 bags, but some blocked after a lesser quantity. Given that it would be logistically a very demanding job to mix and pump as much as 4000 bags into a hole over a period of an hour, this could be expected to impose a physical limit on the horizontal migration of the slurry as well. My back of the envelope sums suggest this would require a 5 cubic metre concrete mixing truck to be backed into place, dump out a full load into a pump, and get out of the way to make room for the next truck all within a period of 2 minutes. I guess that you can take longer if you don't mind the early loads setting before the last portions of the 4000 bag batch are being pumped, and that process would simply tend to result in much steeper angles of repose and therefore more compact grout plugs on average which would further limit the horizontal spread of the grout. This should not be an issue for the overall effectiveness of the grouting program, but would further support the notion that the grout curtain would tend to be confined to the more immediate vicinity of the dam wall.

For a slurry cone with an angle of repose of, say, 20 degrees and height of the cone 3 metres, then the maximum radial extent of the cone would be about 80 metres.

By the time a second, or supplementary hole was drilled, the slurry from the first hole would be pretty much set, and it would be difficult to inject any significant part of another 4000 bags into that same tunnel, let alone block the tunnel for a distance anywhere near approaching a kilometre. This therefore tells us quite unequivocally that the tunnel dimensions are substantially larger in cross-section and volume such that a number of the drill holes being sequentially injected didn't individually block off the tunnel, but instead collectively and additively did so.

So it is far more likely that a much larger cavity occurred close to the dam wall. With a cross section of, say, 10m x 10m, the total cement slurry plug should still stretch less than 250m. Less still, if larger chambers were encountered.

WHAT REMAINS AND THE IYCK

What we have demonstrated so far is that despite the injection of a considerable quantity of grout into the cave, potentially over 95% of the downstream section of the cave should remain basically in pristine condition, and therefore a potentially important asset for South Australian, and perhaps even global, science and tourism. Access to this cave system in the Myponga area would be consistent with the recent very positive moves towards community access for recreational purposes to the Myponga Reservoir Site and would be a most fitting way in which the South Australian Government, who have been showing a generally very positive approach to environmental matters, could extend this to recognition of the state's valuable karst heritage as a symbolic contribution to the International Year of Caves and Karst, and of course deservedly enjoy the resultant positive publicity which would arise.

ACCESSING THE CAVE – THE THEORY

Although Mr Reg Oldfield, proprietor of the Lovely Valley property prior to it being incorporated into the Reservoir, noted that when he attempted to smoke foxes out of cavities on a hill to the immediate east of the dam wall, smoke came out of holes all over the place, there had been no serious examination of the known beds of Brighton Limestone for caves prior to the dam being built.

As events subsequently transpired, this was a serious oversight, but perhaps we need to reflect that the world was a different place back in those days, and that karst science was nowhere near as well developed as it is today. People certainly explored caves well before that time, as evidenced by the historical writings of the Rev. Julian Tenison-Woods in the mid-1800's. But the Cave Exploration Group of South Australia, with its history of compiling a record of cave data for South Australia in association with the South Australian Museum, first came into existence in 1955, only a couple of years before construction of the Myponga Dam started.

So while we may need to cut our forebears a little slack in this matter, there is no excuse for us not to make the best of the situation in terms of our modern understanding of karst processes, and do our very best to access what remains a significant state asset, the existence of which may never have been confirmed but for this fascinating story.

While we have been greatly assisted by the above analysis to arrive at the firm knowledge that such a significant and substantial cave must exist, we have yet to gain access to it.

Fortunately, there is yet another property of massive limestone which may perhaps help us in this regard. The limestone will include a natural network of joint cracks, some of which will be more successful than others at providing pathways for groundwater to access the cave.

While clearly the main channels in the cave started somewhere in Lovely Valley, and are now blocked by the engineering works, other secondary channels will undoubtedly exist that may or may not be immediately accessible to cavers, but which would offer opportunities for exploration/ perhaps enlargement/ following drainage pathways, to gain access to the cave.

There should be an opportunity to conduct a thorough investigation of the limestone and valley(s) downstream of the reservoir wall with a view to possibly locating one or more locations downstream for access to the remainder of this cave.

Some of this work may fortunately already have been done for us. Thanks to the amazing capabilities of the publicly available computer program "Google Earth", combined with the historical geological mapping of the Department of Energy & Mining, it is possible to superimpose an image of the geological strata over an image of the surface features of the land, and use this to identify the best places to look for such possible access points.

Thanks particularly to good fortune, the latest aerial imagery used in Google Earth suitable for this purpose at Myponga was photographed on March 23, 2020. The special attribute of this particular time of the year, almost exactly one year ago, is that it was at the end of a particularly hot and frankly quite dreadful summer, including a number of extreme heat events which made bushfires in the Adelaide Hills and especially on the western end of Kangaroo Island so devastating.

What that same weather did to the landscape west of the Myponga Dam wall was to severely dry off the hillside vegetation leaving greenery confined to areas with any remnant water such as the bottom of valleys. This contrast between green and dry is particularly notable in the photography of the vegetation immediately adjacent the Myponga River in the steep gorge below and downstream from the dam wall, and even on two major bends in the river which are about the only downstream places where the river itself intersects the limestone.

Progressing a short distance further to the west, the geological map shows the limestone beds breaking away from the river and starting to head in a more south-westerly direction. The limestone crosses a valley containing a tributary to the Myponga River flowing from South to North which joins the main river a little further to the west.

Even at that dry time of the year, that tributary valley also has green growth, along the bottom only, for most of its length, only half a kilometre or so in total, but the green growth ceases at the point at which the valley crosses the limestone, strongly suggesting that, particularly at times of low flow, the water flowing down the valley is completely captured by the limestone, and therefore follows a more vertical pathway down into the cave. This looks like a very good place to start investigating access.

SA Water's Myponga Supervisor acknowledges that the green vegetation all year round in the bottom of this particular tributary may well be a consequence of seepage running down the hillside from a nest of settling ponds constructed on the top of the hill. These ponds are part of the filtration plant which was installed many years after the initial construction of the reservoir. They were designed and installed to dry out sludge regularly being removed by the filtering process. The sludge, once dried, is then trucked elsewhere, and the process rotated to the next in the series of ponds. There is no particular problem with a percentage of the water seeping from the ponds, as long as the sludge itself remains contained.

We can infer from this observation that without the seepage from the settling ponds the valley floor would be unlikely to be green at the end of summer. There would be no obvious indication of interception by the limestone of water flowing down the valley, and consequently much less chance of locating a suitable spot for accessing the underlying cave system. Thank you settling ponds, and thank you seepage.

It is important to note that this does not imply that the only water ever flowing down the valley is from the settling ponds. Clearly the quite substantial valley has been shaped by largely erosional forces over most of its life, and even at the point at which it crosses the band of limestone, those erosional forces will still be present. However, additionally within the limestone there will have also been capture of water by joint cracks over an equally long period of time and enlargement of joint cracks by solution. There is therefore a reasonable chance of locating a significant solution feature at the point at which the creek floor vegetation changes back from green to brown, even if we have to dig for a while to get past a choke of rocks generated through erosion.

There is at least one other inference that we are quite clearly able to draw from this observation. Below this particular entry point for water into the cave below, the cave itself must be open and accessible to the water entering at this point. If that were not the case, then instead the indicated shaft would not take all that long to fill with water, after which the water would then continue to flow further down the tributary, causing a continuation of the green vegetation down the rest of the valley.

Experience in many other caving areas, including Naracoorte and Sellicks Hill, tells us not only that a shaft is very likely to exist at this location, but that the shaft will have been in existence for a

considerable period of time, and even if partially blocked near the surface may have been sufficiently enlarged by the action of water over a long period of time to facilitate access. There is a reasonable expectation that we should, perhaps after digging, be able to locate at least a small opening in which it may be possible to detect airflows correlating with atmospheric pressure variation and perhaps even in this particular instance tidal fluctuations in Gulf St Vincent.

Over recent years similar shafts, starting off with holes barely big enough to put a hand in, have been located and investigated at Sellicks Hill. Two of these have now been descended to depths of 70 metres, following quite substantial airflows, and tend to access larger cavities the deeper they go.

While there may be other shafts to be located at Myponga, successfully accessing the cave through the first shaft would enable experienced cavers to conduct systematic exploration of the system and produce a detailed survey as well as a photographic record. All of this would contribute to a better appreciation of the eventual opportunities for science and tourism, as well as possibly identifying other potential access locations for what is expected to be a very extensive and reasonably complex cave system.

ACCESSING THE CAVE – THE PRACTICE



Sheep country.



Wall to wall blackberries.

One would expect that on the basis of the information already revealed it would be a simple matter to go to the spot marked “X” on the map and find the entrance waiting for us with a neat little sign saying “This Way, Please”.

So far, it hasn't quite worked out that way, for several reasons. The first is that it is not just that the country is hilly, but rather that the hills, while not quite steep enough to be more accurately known as cliffs, are still certainly steep enough to fall off. Local advice is that they are bad enough in the dry weather, when the grass is dry and slippery, but if it ever rains heavily again around here, then the

wet months will be something else again. Early trips involving digging equipment, and if successful, later trips involving caving equipment, will require it to be carried in. so we will at the very least have to set up a couple of solid belay points, and use ropes to go up and down the hillside

The second problem is that close inspection shows the green vegetation along the bottom of the valley to be “wall to wall” blackberry. The rope will be particularly handy if we have to lug a brush cutter or two in there, because, without a doubt, that elusive cave entrance is bound to be in the middle of the densest stand of blackberry.

There have been several brief visits to the area over the past month or so, and I particularly wish to acknowledge the assistance provided by the relatively young and fit Frank Hankinson and Neville Skinner in worrying about my old bones climbing down and up the hill. But I am disappointed that neither has been willing to plunge headlong into the thickest part of the blackberries at this stage. With that sort of attitude, how are we ever going to find the entrance?

The third problem is that while the upper reaches of the blackberry gulch start off on SA Water land, below their silt settling ponds, further downstream where the gulch intersects the limestone, it has at that point wandered away from the government land and into the neighbour's place. Luckily for us, we have already met him, and our preliminary discussions with him have been positive. In fact, if we can access as much of the cave as we hope to be able to do, then it must run under a number of neighbouring properties and eventually right down to the coast and even for some distance under the sea floor and out into the gulf. When things get to that stage, hopefully our cave diving members will be inspired to take an interest in the exploration. Hopefully, if so, they won't encounter too many white pointer sharks also engaged in exploring the cave from the seaward end.

And of course, there is a fourth problem as well, which relates back to the first two. Climbing down a shaft that descends directly from a creek-bed is just asking for cloud bursts to appear out of blue skies and initiate the occasional flash flood.

SUMMARY

To summarize, what has happened in the past is in the past, and the purpose of this exercise is not to lay blame for what, clearly in hindsight, could have been handled better. Of course, it is nevertheless important that we learn from past shortcomings if we wish to avoid repeating them in the future.

My only regret, even at this early stage, is directed more at myself than anyone else. I wish to some extent that I could have started pushing this “barrow” a long time ago, so that I could have some chance, before I get too old, of seeing some spectacular outcomes for what will inevitably turn into a lengthy project. On the other hand, the time is clearly right in many other ways. Without construction of the reservoir the filtration plant would not have come to pass. Without the filtration plant, the settlings ponds would not have come to pass. Without the settling ponds, the valley floor would not have stayed green over summer, and without the implications of the limits to that green indicator, we would not be aware that water sinks where the valley intersects the limestone, even if we have yet to find the exact spot at which it does.

Despite my own concerns about the passage of time, thanks to the forward thinking attitude of the current South Australian Government and its recently adopted policy of opening up the Myponga Reservoir for carefully managed community recreation, the timing could not be better for initiating a project to gain access to a major cave system that was briefly revealed by construction of the dam over 60 years ago.

It would be a wonderful outcome if we could, to the degree possible, restore one of South Australia's significant natural assets and realise its potential as a future tourism drawcard for the Fleurieu Peninsula in particular and South Australia in general. It would be even more positive for South Australia if this activity could be presented to the world as a land-mark gesture of the South Australian Government in recognition of the International Year of Caves and Karst.

Grant Gartrell.

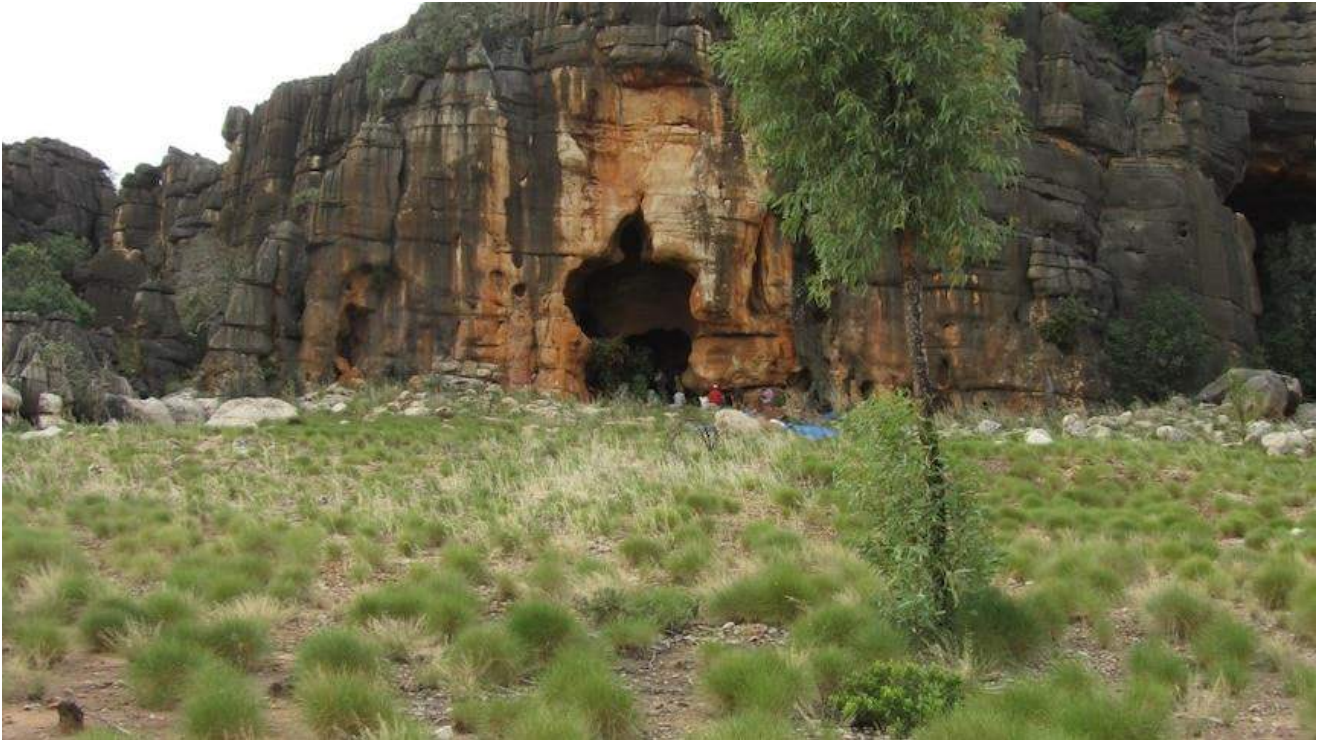
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Kangaroo-bone tools found in Riwi cave in the Kimberley are thought to be 35,000 years old

ABC Kimberley

Vanessa Mills

8 April 2021

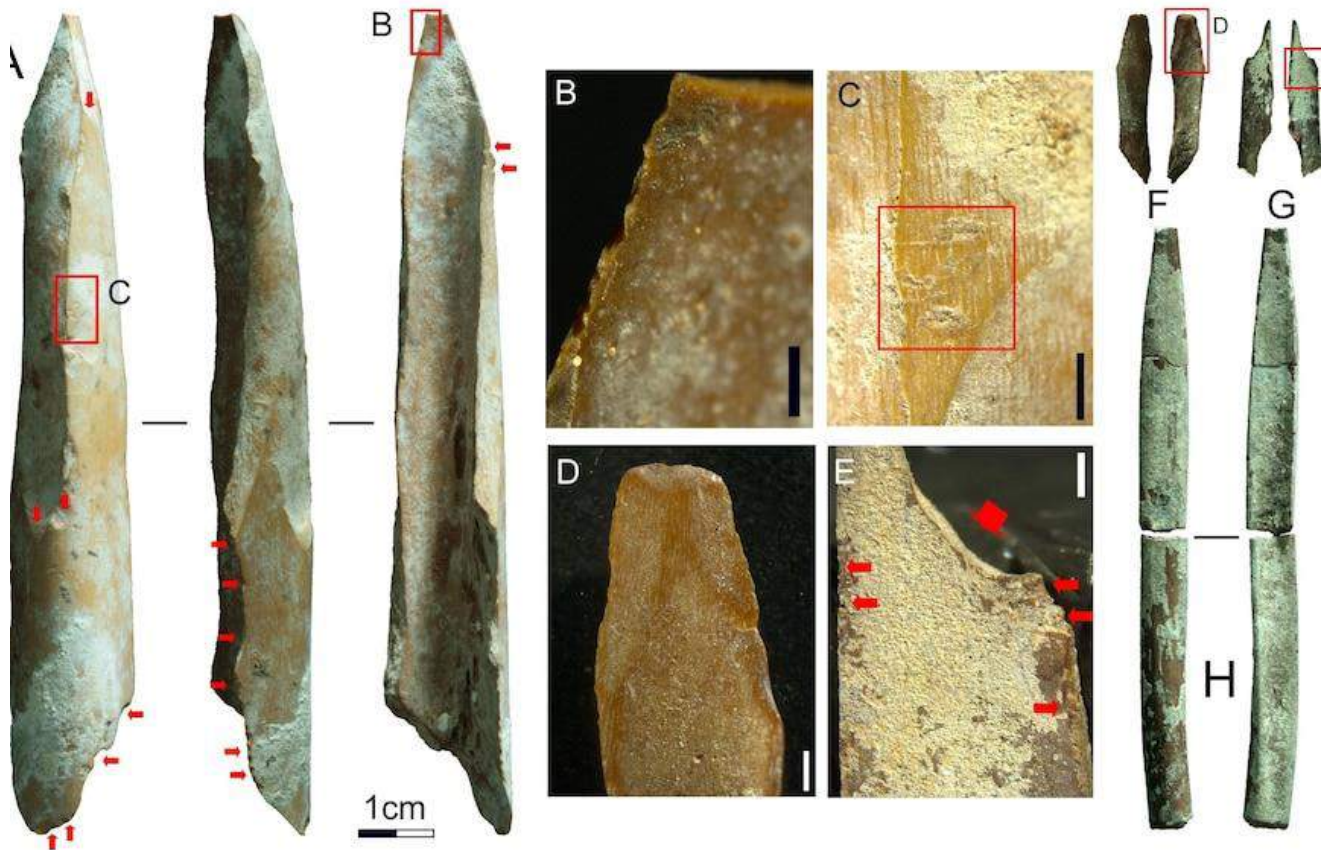


Riwi Cave in the southern Kimberley is an important archaeological site where people once lived.

Bone tools found in a remote north Australian cave have been dated as being more than 35,000 years old, making them some of the oldest in the nation. Eight tools made from kangaroo bone have been excavated from Riwi Cave in the southern Kimberley, by archaeologists in the early 1990s with support from the nearby Mimbi community. It's only now that better dating techniques could put the tools at between 35,000 and 46,000 years old.

Carved from Kangaroo ulna, tibia or fibula, the pointed bone tools were used to process spinifex resin, basket weaving, working with plant fibres or to hunt birds and fish. It's rare the tools survived northern Australia's harsh climate for almost 46 thousand years and shows the range of skills first Australians were using. "Bone technology in Australia tends not to survive the long periods of time that people have been here," Michelle Langley from Griffith University said. "Getting them at this age, especially up in the north, is extremely rare. We knew bone tools were being used but we simply weren't finding them. They were decomposing before we could pick them up again."

Riwi is a limestone cave on Gooniyandi country 90 kilometres east of Fitzroy Crossing and has previously yielded shell beads, a boomerang, seeds and charcoal from cooking fires.



Bone tools analysed by archaeologists date them between 35,000 and 46,000 years old

Window into early technology

Archaeology Professor Jane Balme from University of Western Australia has spent many hours in Riwi cave and worked with experts across the nation to identify the tools. Professor Balme said the tools showed the importance of organic materials in the early technologies of First Nations people. "They provide a window into a greater diversity of activities undertaken by people than are revealed by stone artefacts alone," Professor Balme said.

Dr Langley said the tools would have taken time and skill to make. "Using the natural anatomy of the bone, they've been pointed at one or both ends depending on what they're used for. They've been flaked or ground into shape." Dr Langley said her work allows her to make connections to the past. "It's always exciting, especially when you get something unexpected," she said. "It's always nice thinking about who might have used that. Is it a woman's tools, men's tools or was it something children were playing with." The research, which also involved Australian National University, has been published in the International Journal of Osteoarchaeology.

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Cave diving emerged into the spotlight during the incredible Thai cave rescue. Is it the sport for you?

ABC Esperance: Emily Smith: 16 Aug 2020

Perth-based cave diving instructor, Joseph Bicanic often heads to the Nullarbor to go cave diving. Joseph Bicanic's regular trips to the Nullarbor are not due to its famed highway, big skies and arid landscape. But his eyes light up when you mention what lies beneath its sun-baked surface. In his opinion, the Nullarbor is home to "the best cave diving in Australia and possibly the world". "People think that if they go to the Bahamas or if they're in the ocean on a good day and they've got 30-40 metre visibility, they think that that's great," he said.

"But the water in the caves below the Nullarbor has been recognised as the clearest water anywhere in the world." "It is just so crystal clear."

Thai rescue puts cave-diving on the map

According to the Cave Divers Association of Australia, the Nullarbor's Cocklebiddy cave was first dived in 1961, and it has since attracted cave divers from all over the world. Other major cave-diving spots in Australia include the Mount Gambier region of South Australia and near Yass, Aberdeen and Wellington in New South Wales. But the sport probably never gained as much attention as it did in 2018 when cave divers came together to save a Thai soccer team.

The boys were trapped in a Thai cave for 17 days before being rescued by cave divers.

At the time Perth based cave-diving instructor Mr Bicanic was doing a diving course in Bali, and remembered listening out for news and updates whenever he could. "Not being there myself and knowing how every cave varies so much, I did not want to speculate as to how it was going to end up," he said. "What I did know is that I had no idea how this miracle was going to be pulled off." But against the expectations of even those at the frontline of the rescue, they did pull it off, and the cave divers became national heroes — with Richard Harris and Craig Challen named Australians of the Year in 2019 for their efforts.

A rise in popularity

But what impact did all that attention have on the sport of cave diving? A cave diver in Mount Gambier told the ABC he saw a 5-to-10 per cent uptake in the sport, mostly from former cave divers returning to the sport. Mr Bicanic also said interest in cave diving certainly rose in the aftermath of the rescue. But the sport is hugely technical — and that proved a challenge in translating rising interest in the sport to a rise in the number of qualified cave divers.

The Cave Diving Association of Australia (CDAA) requires divers to have had an open scuba-diving qualification for at least a year and an advanced scuba-diving qualification, as well as at least 50 logged dives totalling at least 25 hours, two night dives and five dives deeper than 25 metres, before they can even take part in their basic cave-diving program.

However there is good reason for this — prior to 1973 the sport was unregulated and there were a number of fatalities. Although there have been deaths since then, the formation of the CDAA in 1973 hugely improved safety and training standards.



The Thai soccer team 'Wild Boars' before their misadventure.

Scuba diving losing appeal?

Some believe scuba diving — the gateway to cave diving — is dropping in popularity in Australia. "[Interest has fallen] just massively. If we just did diving we wouldn't be in business anymore," Esperance dive shop owner, Jaimen Hudson, said. "Scuba diving has lost its appeal compared to its heyday in the 90s when that was the fashionable thing to do," Mr Bicanic said.

There are a lot of theories as to why interest in scuba has fallen — Mr Bicanic suggested people were switching to skindiving, in which the diver is equipped with just a mask and aqualung or snorkel. Others in the industry told the ABC that people were becoming increasingly concerned about shark attacks, were left uninspired by coral bleaching on the Great Barrier Reef or were simply choosing to only scuba-dive in cheaper places overseas.

Danny Dwyer, from the Professional Association of Diving Instructors (PADI) Australia, spoke to the ABC before the coronavirus pandemic, and said even then there were fewer people taking scuba courses in Australia. But he said the same number of Australians were taking courses worldwide. And he countered the claims that scuba diving was going out of fashion — saying that according to figures from PADI, which operates diving-skill courses around the globe, more people around the world took scuba-diving courses in 2018 than ever before.

Joseph Bicanic has 20 years diving experience and says he prefers cave-diving because there are no sharks in caves. Mr Bicanic said there was also now a greater proportion of scuba divers getting technical and cave diving qualifications. "If you went back say 20 years ago, of the 100 per cent of divers, 10 per cent might become technical divers and 10 per cent of those might become cave divers," he said. "But now the number of technical divers has risen, to say 20–25 per cent, and the number of cave divers has also increased slightly."

But once cave divers become qualified, planning a single cave diving trip can be an onerous process. Mr Bicanic had just come back from 17 days cave diving on the Nullarbor when he spoke to the ABC, and described the approvals process he went through beforehand. "You have to fill out an application form, you've got to provide proof of insurance, you've got to provide proof of qualification as well," he said. "And then that all has to be submitted to the relevant government department at least four weeks ahead of the planned dates. "And then it usually takes about two weeks for that to get approved, you get the letter, and then you're allowed to go out there."

No 'big bitey things' in a cave

So why cave dive when you could just stick with scuba diving? Mr Bicanic had a simple answer — there are very few sharks in caves. "Anyone who knows me knows I'm a big chicken," he said. "Once [while scuba diving] I got circled by a big bitey thing and I wasn't too happy about that. "And if you're diving in the ocean and you've got mandatory decompression obligations — where you may have to be sitting there for 10 minutes, 20 minutes, two hours etcetera — you're out in the blue, so you're quite exposed. "Now if you're in a cave — there's no 'big bitey things' in a cave — so that's one of the biggest appeals."

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Protecting Koonalda Heritage Precinct

In April this year a team of National Parks and Wildlife rangers as well as project firefighters and Far West Coast Aboriginal rangers spent a week at the heritage-listed Koonalda Homestead, helping to make it even better for visitors.



In seven days, 328 posts, 2.1 km of chain, five signs and a picnic table were put in place, transforming the site and providing clear guidance for vehicle traffic and camping.

Located 450 km west of Ceduna, Koonalda Homestead was first built in 1938 as a part of the Nullarbor pastoral station. During this time the homestead provided fuel and workshop facilities for people travelling across the old Eyre Highway, as well as rendering first aid to sick and injured people prior to the establishment of the Royal Flying Doctor Service.

Due to failings of the pastoral enterprise and the relocation of the Eyre Highway 15 km south of the homestead, the property was sold to the government and proclaimed a park in 1988, now known as the Nullarbor Wilderness Protected Area (WPA).

The Nullarbor WPA is co-managed with the Far West Coast Aboriginal Corporation (FWCAC), through the Nullarbor Parks Advisory Committee. The committee consists of four FWCAC representatives, three DEW staff and a ministerial appointee, and provides advice to the Minister on management of the park.

Koonalda Homestead is open to the general public to visit and camp. The site includes a large homestead and small hut, both made from railway sleepers, a small tin shearing shed and lots of old vehicles and bits and pieces that come with pastoral stations.

During recent years, an increase in visitors has seen degradation of the surrounding vegetation due to there being no restrictions on where vehicles could be driven, or directions for where people could camp.

Heritage consultants are currently in the process of developing a Heritage Management Plan for the precinct which will provide direction on maintenance works for the future management of the buildings and surrounds.

For more information on the Nullarbor WPA, visit the National Parks and Wildlife Service website.

Source: 'The Weekly', SA Department for Environment and Water, May 2021

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Missile tech and microbats, using thermal imagery in wildlife rescue

By Peter Hannam

April 19, 2021

When ecologist Doug Mills started out trying to tally threatened Australian microbats as they streamed out of their caves, traditional methods of tag and recapture or physical counts were tedious, expensive and carried a mistake rate approaching one third. That error range made tracking the fate of species such as the large bentwing bat particularly difficult. The microbat, large only in relation to the even tinier little bentwing variety, weighs only about 13-14 grams, and is already listed as vulnerable in NSW.

The application of advanced monitoring technology is enabling scientists to keep a better track of how the threatened tiny microbat populations are faring. Dr Mills, though, learnt that US counterparts had started to adopt software and thermal imaging technology derived from tracking missiles and developed in the US Army Environmental Laboratories to monitor threatened species such as bats. In 2008, he started applying it in Australia with the large bentwing bat as his target. "I'm pretty sure I'm the first in Australia to use [this technology]," he said. "It's made a huge difference ... I sit there in complete darkness and the bats are hardly aware that I'm there. "If you can't tease out these year-to-year changes, it's hard to attribute [any population shifts] that are happening in the environment."

'Best job on the planet': Wildlife carers go from rescue to recovery

Large bentwing bats – so named because a long bone in their third finger gives it a "bent wing" appearance – are found along Australia's eastern seaboard, from Cape York in the north to a region around Castlemaine, north-west of Melbourne. Some debate over the mammals' varieties – Australia has more than 60 microbat species – has meant they may not be getting the national protection they deserve, Dr Mills said.

The vulnerability of the large bentwing bat comes down to their unusual nursery habits and the fact they may be Australia's only migratory microbat species. After mating, the females leave their males behind and congregate in their thousands in certain caves to give birth.

In NSW, the caves are located at Wee Jasper in the Goodradigbee Valley near Canberra, Bungonia near Goulburn and near Kempsey in the state's north.

New technology derived from the missile industry is aimed at improving the chances of survival of the bent-winged bats. Dr Mills said the decade-plus study period is too short to say for sure the microbats are holding their own against multiple threats. While the three sites can have in the order of 20,000 individuals each year, there is some drop off during years of drought when the insects they feed on are harder to find. "They can eat their own body weight in insects in one night," he said, adding that they need to consume vast amounts to meet their metabolism demands including a heart rate nudging 1000 beats per minute. Individuals have also been known to fly 50 kilometres or more to forage.

The research is funded jointly by the NSW Parks and Wildlife Service and the government's Saving Our Species program, which is due for review by the end of this fiscal year. "This is really a fantastic project – funding and investing in science and cutting edge research is exactly what the NSW government should be doing," Environment Minister Matt Kean said.

"We need to pull out all stops to help threatened species like the bentwing bat and through this creative use of technologies we are going to get a much better understanding of how these little guys live."

Researchers, led by Doug Mills of the NSW Parks and Wildlife Service, are using the missile tracking technology near the three main cave areas in the state used by the microbats as maternity sites. Dr Mills said the technology may be applicable to tracking other species but it favours those gathering in one place without too many other objects in motion.

Efforts, for instance, to monitor flying foxes in Sydney's Royal Botanic Garden had failed because of the many places the bats flew and the distorting signals sent from the movement of cars and boats nearby.

(Permission: Sydney Morning Herald)

Calendar of Events

	Type of Event	Description	Contact
26/05/21	General Meeting	SA Museum Royal Society Room 7:30pm	Ian Lewis
??/06/21	Committee Meeting	TBA	Ian Lewis
23/06/21	General Meeting	SA Museum Royal Society Room 7:30pm	Ian Lewis
01-18/ 07/21	Caving	Bullita Expedition. Trip Full	Mark Sefton
03-18/ 07/21	Caving	Exploration of the Baxter Cliffs. Trip Full	Steve Milner
28/07/21	General Meeting	SA Museum Royal Society Room 7:30pm	Ian Lewis
??/08/21	Committee Meeting	TBA	Ian Lewis
11/08/21	CEGSA NEWS	Articles due	Athol Jackson
25/08/21	General Meeting	SA Museum Royal Society Room 7:30pm	
22/09/21	General Meeting	SA Museum Royal Society Room 7:30pm	Ian Lewis
	Committee Meetings	Continuous email meetings between meets	
	Caving	Regular KI Restoration Trips See	Matt Smith
	Caving	Continuing Fleurieu Peninsula Exploration	Grant Gartrell

****Extra trips will be notified in the Calendar on the Website or at General Meetings****

To be covered by insurance it is mandatory that caving trips involving club members must be registered as CEGSA Trips. To do this, the nature and timing of the trip must be entered in the Calendar of events in CEGSA NEWS, minuted at a General Meeting of Members or entered in the Website Calendar. The member registering such a trip must be an accredited CEGSA Trip Coordinator and must agree to act in this capacity for the trip. There must also be an accredited trip leader with the appropriate skill endorsement to take a party caving.

Also, please ensure that a report of the trip is submitted to the Records Officer and editor in a timely manner.