

# Texas Caves Revisited

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**O**VER the weekend of 23rd-24th November 2019, thirteen cavers from four ASF clubs set off in search of the fabled drowned caves of Texas, just north of the Queensland border.

The caves of Viator Hill and Glenlyon were submerged in 1976 following the completion of the Glenlyon Dam (formerly known as the Pike Creek Dam) on Pike Creek.

There have been several periods of drought since then and some of the highest caves on Viator Hill have been out of the water a number of times in the past 43 years.

When this happens they are often visited by fishermen (and presumably also by fisherwomen) and other tourists to the area. Rod OBrien had long expressed an interest in visiting an area he hadn't been to before and he also wanted to assess the area's cave diving potential.

So Rod slotted in a visit while en route to Bullita in July 2019 and found the water level in the dam was extremely low. On hearing a final water release from the dam was slated for October 2019 and that the dam level would then drop below 3.5 per cent, we decided we should schedule a reconnaissance trip to the area sooner rather than later to see how the caves had fared after their cyclical inundation since the dam was built.

The team consisted of Rod OBrien, Phil Maynard and Keir Vaughn-Taylor (from SUSS); Cathi Humphrey-Hood, Rod Smith, Anna Ossig-Bonanno, Penny Sze and Marcia Kaye (from MSS), Garry Smith, Peter Downes, Murray Dalton and Brian Reeves (from NHVSS) and Lachlan Bailey (from NUCC).

A flood event in February 1976 prior to the dam being completed resulted in a sump forming in Main Viator Cave, which then partially drained and allowed access to a lower level that had never been seen before (see Shannon 1976 for a description of this event).

Henry Shannon observed large dinner



Marcia Kaye in a sinkhole

plate-sized current scallops in this newly revealed section and surmised that a lot of water had been flowing through it for some time.

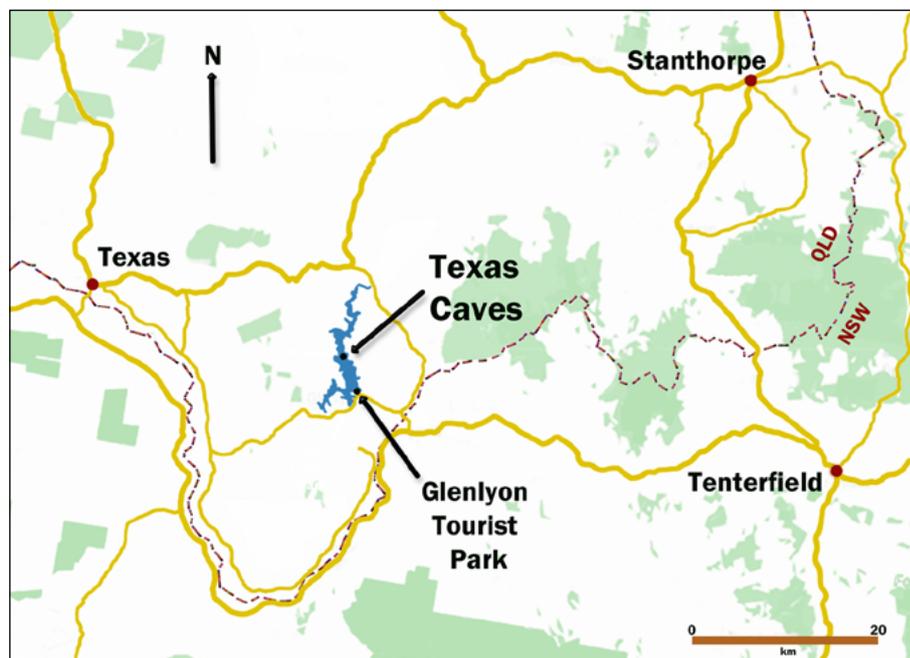
These scallops and their level suggested that there was active stream passage running underneath Viator Hill.

When we told him of our proposed trip, Henry asked if we could access this lower

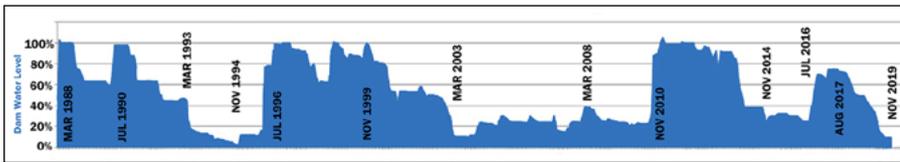
level and, if possible, take photos of the scallops.

## LOCATION AND HISTORY

Glenlyon Dam is located between Tenterfield NSW, Stanthorpe QLD and Texas QLD, about an hour's drive north of the Ashford Caves in Kwiambal National Park, NSW.



## TEXAS CAVES REVISITED



The water level plot. Graph by Rod O'Brien and Cathi Humphrey-Hood

The dam waters are stocked with fish and the Glenlyon Tourist Park operates as a successful fishing and accommodation business on the shore of the lake. Ken Grimes described the geology and geomorphology of the caves, with entrance location information and maps of the larger caves, in an issue of the *Memoirs of the Queensland Museum* (1978) which focused entirely on the Glenlyon Dam site area (Grimes 1978).

Much of this data came from exploration undertaken by the University of Queensland Speleological Society (UQSS). The caves lie within the Texas beds, described as 'a thick sequence of regularly bedded lithic sandstone and mudstone with minor chert, jasper, intraformational conglomerate, intermediate volcanics and limestone lenses', with ages ranging from Devonian to Early Carboniferous (Grimes 1978, pp. 18-19).

Between 1969 and 1976, UQSS spent a lot of time discovering and describing the majority of the caves in the area (see references for UQSS *Down Under*). They also made submissions to the Queensland government in 1968 outlining a case against construction of the Pike Creek Dam and inundation of the caves.

However, the Pike Creek Dam Environmental Study (1973), undertaken by the Irrigation and Water Supply Commission of Queensland (who may perhaps have had a slightly vested interest) did not support arguments that the dam was uneconomic and said 'the major value of the caves is in their use by the University of Queensland Speleological Society', that they were not vital to bat conservation and were not considered to have any value as a general tourist attraction (p.19)... and so the dam was built. Oddly enough Ashford Cave in NSW, which contained less decoration than Russenden and had already been partly wrecked by guano mining and vandalism but was more easily accessible, went on to be developed into a 'casual' day-use tourist destination, complete with signs, brochures, parking area and picnic tables.

Glenlyon Dam filled quickly during the wet 1970s. Shannon (1977) reported that by March 1977 they were floating lilos over the Glenlyon Caves and swimming in Russenden's main chamber. However, two dry spells since then have seen the water level fall low enough for the majority of the caves to be exposed each time.

Lachlan Bailey from NUCC has calculated that the top of the highest caves (such as Mikes Pot on Viator Hill) would be accessible at around 50 per cent to 65 per cent dam capacity and Russenden Cave when the water level reached 35 per cent (meaning it has been accessible for about 40 per cent of the time since the dam was built). At 3.5 per cent (roughly the level at the time of our visit) all the known caves should be accessible, though some water remains in the Glenlyon system.

There are two cave areas at Texas: Viator Hill and Glenlyon. The top of Viator Hill peaks above the normal high water level and still retains vegetation, including some impressively large cactus trees. Across the now exposed creek which bisects the two cave systems in the same outcrop, Glenlyon is a significantly lower streamway system that is partially day-lighted in a series of

dolines. Ken Grimes described Glenlyon as 'an excellent example of a subterranean cutoff of a meander loop', noting that complete capture of Pike Creek did not develop most likely due to collapse of sections of the caves (Grimes 1978, p. 27).

### 2019 VISIT TO TEXAS CAVES

The trip to the Texas Caves took place over four days, with days one and four being travelling days — the area is about eight to nine hours' drive from Sydney.

Prior arrangements had been made with the Glenlyon Tourist Park for accommodation and boat hire and their generous help made the trip possible. While campsites were available at the park, in the end we chose to rent cabins, which were very reasonably priced.

This turned out to be a good decision, as it reduced the amount of gear we needed to transport and the air conditioning was much appreciated.

Phil Maynard flew to Toowoomba, hired a car and arrived first, but everyone else (except Murray Dalton and Peter Downes who arrived the next morning) trickled in later on Friday afternoon. We picked up our



Viator Hill from above, looking south in the direction of Glenlyon Dam. The limestone outcrop has been (mostly) washed clean.



Aerial view of the Glenlyon System of caves, showing the extent of the outcrop and the series of collapse dolines. Viator Hill lies out of shot on the top left.



CARRY K SMITH

Garry K Smith takes a selfie as Brian Reeves drives the boat away from the Glenlyon Tourist Park boat launching area, heading for Viator Hill.

small aluminium hire boat that afternoon and took it for a test run — just as well, as it turned out to have a water pump impeller problem. The proprietor of the Tourist Park, Brian Dare, who has published studies on the lifecycle of cod in this dam and in other waterways, fixed the motor overnight and it was ready the next day for our 4 km ferry runs to the caves.

Walking access to the caves is possible when the dam is at low levels — Keir proved it on Saturday afternoon by losing patience

of Viator Hill, this first team carried all the gear to the top of the hill where the only shade was. It was already at least 30°C and the limestone reflected the heat relentlessly. Brian made many of these ferrying trips up and down the dam and they were essential in getting everyone to the caves and back.

Aside from the mud flats, the first thing that strikes upon landing at the Texas Caves is a sense of desolation, quickly followed by a sudden stop as the bow of the boat buries itself into a bank of thick mud.

Where once there was long grass, trees and a range of stinging and spiky things according to many UQSS reports, there is now only dryness and denuded limestone. The receding dam water level has left a wide expanse of drying mud which takes the form of huge polygonal stepping 'stones' divided by very deep cracks. These stepping stones were sometimes spongy, sometimes rocking, sometimes crunchy and sometimes they simply sank abruptly underfoot, dropping the unsuspecting walker into sticky black ooze.

On first arriving at Viator Hill, Rod O'Brien went to work locating each of the listed caves, joined by others as they

arrived. Unlike the young blokes who turned up on the Sunday and walked all over the hill without ever finding anything that resembled a cave, we were armed with some experience, an old aerial photo from UQSS annotated with the names and locations of the caves, and Ken Grimes' map (Grimes, 1978, Map 10).

The aerial photo was particularly useful as we could correlate the remaining dead trees with the live ones shown on it. Although the Karst Index mentioned that some caves had tags, we weren't sure if they would still be there.

We soon discovered that some caves were indeed tagged, but not as we expected. Instead of a utilitarian diamond of aluminium, we found lovely, neatly lettered name tags, clinging to the rock on rusted attachment points. Sadly, they will not be there for much longer.

Over on the Glenlyon system the following day, a member of the team attempted to wipe the grime from a tag to make it legible — it turned out to be for Dustbath Cave, GL-6 — and it crumbled away beneath his touch. The long immersion has taken its toll on both the tags and the pins.



ROD O'BRIEN

The Russenden cave tag - showing the extensive corrosion of the bolts after a period of submersion. These tags are beautiful and it is very sad to see them falling apart.

**MAIN VIATOR CAVE (VR-1)**

After most of the caves listed in the Karst Index for Viator Hill were located and 'GPSed', now apparently a common caving verb, two drones were sent up to take photos and Main Viator was explored. There was quite a bit of mud in this cave along with some rubbish, and Rod Smith tested the depth of this (about 50 cm) by getting stuck in it.



PENNY SZE

Murray Dalton and Phil Maynard walking toward Glenlyon. They're not wearing boots, that's mud.

with the boat shuffle and walking back to the Tourist Park from Viator Hill (in the stifling heat). But even at around 3.5 per cent capacity, boat access still remains the most efficient way of accessing the caves.

While we were there a number of fisher-people with motors more impressive than ours turned up to visit Main Viator and Russenden caves. It took several trips by Brian Reeves, our designated skipper, to transport everyone to the caves.

The first trip took those more likely to struggle with the walk, the backpacks, rigging, drinking water and Rod O'Brien's dive gear. On reaching the muddy shores



CATHI HUMPHREY-HOOD

Peter Downes, Rod Smith, Phil Maynard and Brian Reeves arrive at the entrance to VR-1, Main Viator Cave. Lachlan Bailey is already heading in.





PENNY SZE

ROD OBRIEN

Marcia Kaye in VR-1. The shafts of sunlight were so intense they raised steam from the damp mud.

Peter Downes also observed a bone breccia deposit in the wall at the lower entrance of the cave. This bone breccia has already been documented and is also present in Russenden (VR-2) and 'The Joint' (VR-5), where sampling had revealed fragments of many different kinds of mammals, some extinct and others not previously known in SE Queensland, and dated as Pleistocene (Archer, 1978, p. 61).

The main chamber of VR-1 is quite large (about 30 m x 20 m at the widest, longest point) with a high roof. The sump was located approximately in the middle of the chamber against the right hand wall when facing inwards.

This cave is fairly shallow and has a number of daylight holes. Shafts of sunlight poured in, raising wisps of steam from the mud beneath. The mud in Main Viator was still very damp and was a slippery mess to walk in.

Phil Maynard, Murray Dalton and Peter

Downes completed a line traverse through the cave so that Phil could model the cave in 3D, with Peter pointing out faults and mega breccias in the walls and roof. Certainly, much of the decoration appears to be controlled by faulting and palaeobreccia.

### RUSSENDEN (VR-2)

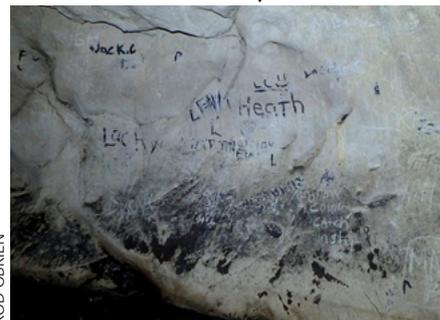
Russenden is located on the west side of Viator Hill. The temperature in Russenden was quite pleasant compared to the baking heat above ground, so most of the team were happy to spend time examining the cave, acting as photographic models for Garry Smith and/or taking photos of their own. Phil Maynard, who we all know can't be in a cave for more than five minutes without feeling the need to survey it, again roped in Murray and Peter and, assisted by Anna Ossig-Bonanno, very quickly and efficiently put together a line traverse through the cave showing the strike of the major branches.

This allowed for the subsequent 3D modelling of Russenden and Main Viator and a comparison of the relative levels between these two large caves. Phil was of the opinion that the initial cave surveys made by UQSS prior to the flooding were very well done.

Rod O'Brien spent a little bit of time searching for Margots Shawl, but found he could not access the chamber as the way on was choked up and so was the other entrance leading to it.

That said, being slightly higher than Main Viator Cave and without an obvious drain, Russenden had very little mud in its upper parts and still retained much of the original red dirt floor described in the UQSS reports.

The decoration was dirty and there was a large amount of graffiti on the walls. Most of the dates we saw were very recent, from around July 2019 when the cave would have become accessible. However, there were older dates and a lot of scratched writing with bits of flaking black on them that we suspect was previous graffiti where the pigment had been eroded by the water.



Older graffiti is being eroded from the walls of Russenden cave by the dam water, leaving scratch marks behind



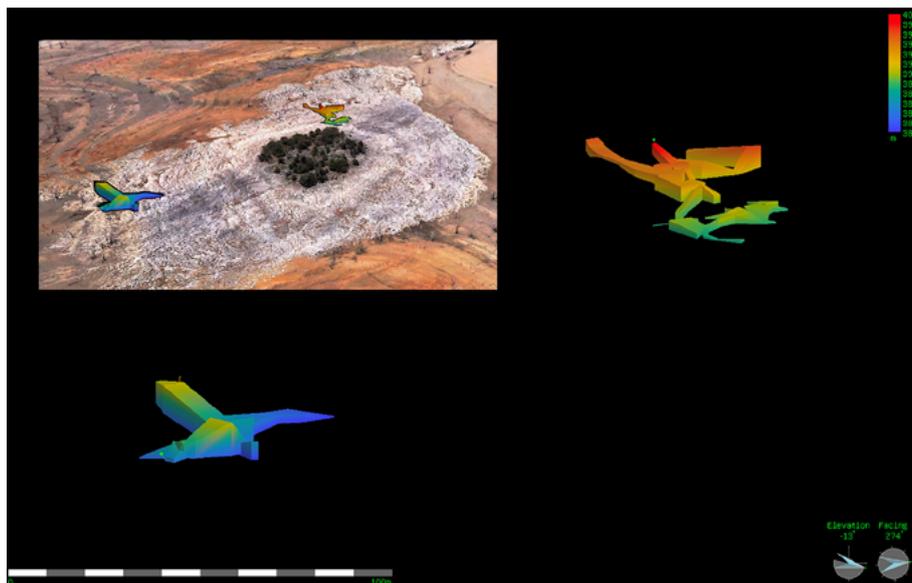
GARRY K SMITH

The one that didn't get away... future fossil in VR-2

Deeper into the cave a shallow river of dried mud held the remains of a decent-sized fish, probably a catfish, that had become trapped when the water receded.

A couple of bats were also noticed in the main chamber and we wondered if they were taking up residence again, though the Texas Caves were never considered to be a major bat breeding area (*Pike Creek Dam Environmental Study*, 1973, p.19).

After leaving the cave we had a quick lunch beneath the thriving cactus trees on the crest of Viator Hill, then some of the team returned to Main Viator to help Rod O'Brien with his sump dive.



The survey done in the field by Phil Maynard — in less than half a day — showing the relative levels between the two large caves on Viator Hill. Phil has also overlaid his survey on Rod O'Brien's drone image to show their positions.

Meanwhile, the others returned to the boat to start the trip back down toward the dam. Unfortunately, Brian had trouble starting the engine, and after many attempts, called the Tourist Park office for help.

This call was diverted to Lismore and then forwarded on to Brian Dare who quickly mobilised his much faster boat. Due to the long wait, Keir took off over the hills and returned on foot. Brian Reeves finally managed to get the hire boat going and with two boats the team and rest of the gear was quickly moved back to the tourist park boat ramp.

### DIVING THE SUMP IN MAIN VIATOR VR-1

In 1970 UQSS cavers had free-dived Cloister Cave (GL-7) in the Glenlyon system and had made a connection with Efflux Cave, GL-8 (Brown 1970) but not without mishap.

However, as a whole, the submerged passages in the area had not been properly explored using diving equipment. Rod O'Brien considered the water-filled hole in the floor of Main Viator Cave a good candidate for a cave dive and Henry Shannon had put in a request for some photos of the scalloping if possible.

A number of small fish could be seen swimming around on the surface, but the sump itself was not very clear. Garry, Marcia, Cathi, Keir and Penny were the dive support team.

Rod geared up, entered the water and moved some branches that blocked the underwater passage. After this he was able to slowly squeeze down a small vertical tube by manoeuvring his dive cylinders around the rock obstacles.

Some of these rocks were unstable and fell out when disturbed. The water visibility, poor at the start, quickly dropped to zero. As the passage became horizontal Rod found that this area was also silted up. He dug for a while with his back against the roof and his body half buried in mud.

Pushing branches out to the side and dragging himself through the mud, he progressed about four metres along this passage before turning back in total black-out conditions. Even if he had managed somehow to locate the scallops, fulfilling Henry's request for a photo would not have been possible.

Peter Downes suggests the sump and passages below act a bit like a drainpipe for Main Viator cave. When the water level falls quickly to low levels (due to water releases from the dam) and the lower

entrance is above water, the sump acts like a drain and sucks mud, silt and debris into the lower level of the cave. Eventually this lower level will silt up and become entirely inaccessible.

After the dive, Rod O'Brien and the dive support team left VR-1 and planned to look at some of the other pot type entrances on the hill.

Anna had earlier investigated Crystal Cave (VR-3) and was dismayed to find the way on had been blocked up with dirt not far below the entrance and the cave could not be accessed. However, soon after leaving Main Viator Cave several people had already lined up for the voyage back to camp and serious heat-induced nausea finally got to Rod Smith, so we left the other caves without doing a complete examination.

### THE GLENLYON SYSTEM

On the following day we shuffled the team back upstream to the Glenlyon side of the creek, which is lower than Viator Hill.

These caves are the last to be exposed by the receding water and the dolines were full of silt.

It was another very hot day and, as this area is often a long way under water, there were no live trees to provide shade. In spite of being close to Viator Hill, the curve of the river made the boat trip a lot longer and the last group to arrive did not get much time to walk around the caves.

Walking across the west side of the creek while waiting for the last boat shuffle enabled that group to look at another outcrop of limestone, noting smoothed rillenkarren patterns being dissolved by the dam water.

Rod O'Brien arrived first at Glenlyon and once again set about locating the cave entrances, but not many had tags and Dust-



CATHI HUMPHREY-HOOD

Keir Vaughn-Taylor handing Rod O'Brien his dive tanks before Rod dives the sump in Main Viator Cave.



bath soon lost one. He found Efflux Cave (GL-8) completely blocked up, as were several of the other entrances.

Murray Dalton examined an opening for Cloister Cave (GL-25E), but did not think he would fit into it while others including Penny, Phil and Peter investigated a number of entrances and checked out various passages.

The Glenlyon Stream Cave still had water in it, sitting stagnant in a brown-coated anoxic ooze that was jet black underneath and distinctly uninviting. Garry Smith somehow managed to coax Marcia Kaye into posing for a photo on the other side of the stream and we were lucky to get her back again as she sank waist-deep while returning.

Anna enthusiastically crawled in to investigate mud-filled passages, while Phil tentatively did a 'through trip', squelching his way from what was probably the GL-17E entrance to the GL-2E entrance, which had a neatly lettered 'GLEN LYON' tag on it that was still in fairly good shape).

Peter Downes noted little sign of turbulent flow in the mud deposits within the caves he entered, nor did the recent cave sediments show a distinct layering as observed in the mud flats outside the cave entrances, which would suggest that the cave fill was being deposited by sediment-laden dam water.



KEIR VAUGHN-TAYLOR

Drying sediment filling the holes in the Glenlyon dolines.

surface rather than material that had come from a more distal source.

The old undated UQSS air photo enlargement of the caving area shows significantly more soil and regolith adjacent to the cave entrances than is evident today where there is much exposed karst outcrop to be seen.

Much of the vegetation covering both Glenlyon and Viator hill was stripped away prior to dam completion, as evidenced by numerous stumps which are shown as trees on the old air photo.

Peter suggests it is likely that the majority of recent fill was washed into the caves during the initial pre-completion flood of 1976 or shortly after during the initial filling of the dam rather than during subsequent events.

More drone flyovers were made over Glenlyon in spite of the hot and fairly strong wind. The landscape looked extremely bleak with the skeletons of long dead trees littering the expanse of deeply cracked mud, and with a reddish cast of bushfire smoke haze over all of it.

Lunch of sorts for those who felt like eating was had under the 'shade' of one of those trees on the rocks above Cliff Pit (GL-9).

We again called the day earlier than we would have liked because of the heat, but not before Garry Smith managed to take the standard team photo (minus Anna and Keir, who had already started walking back by wading through the mud and crossing Pike Creek).

As before, it took a while to transfer everyone back to the Tourist Park. Later that evening a welcome cool change came through, causing a massive temperature drop but sadly bringing only a few spots of rain.

On the following day Rod Smith, Garry, Marcia, Murray, Peter and Lachlan returned south via Ashford Caves, while Rod O'Brien, Keir and Cathi left via Tenterfield, learning that a large hailstorm had gone over the night before but very little fell in the catchment area.

**COMING OUT IN THE WASH**

Exploring the Texas Caves felt like walking into the remains of a lost city that had once been sunk beneath the waves.

Caving was made easier by the lack of vegetation, but instead of having to fight our way through foliage we had teetering columns of semi-dried mud to contend with and no shelter from the searing heat.

Accessing the area threw up a few logistical problems but fortunately nothing insurmountable. The remaining cave tags may not be there next time the caves are out of the water and even though we now have good GPS readings for most of the cave entrances, initial mistakes were made in identification for two caves before a cave tag was located for one of them, which helped us pinpoint the correct location for both.

Cave tags are an important identifier and it would be especially sad to see these particularly beautiful and unusual full name tags corrode away to nothing.

We found the caves near the top of Viator Hill to be in reasonably good condition, though additional sediment has been deposited into Main Viator Cave. The deep entrance shaft to Mikes Pot (VR-6), the highest cave, still looked to be open and free of debris, whereas some of the lower ones, such as Crystal Cave, have become inaccessible, although might be possible to access with some digging.

Rod O'Brien did not consider the



PENNY SZE

Marcia Kaye regretting her decision to cross the creek for Garry Smith's photo shoot.

The massive nature of the recent sediment fill in the caves and abundance of organic material — sticks, leaves etc — led Peter to suggest that the majority of recent sediment in the caves was topsoil that had slumped into them from the adjacent





CARRY K SMITH

*Marcia Kaye and Penny Sze in Russenden Cave, which is still showing the original red earth floor.*



CARRY K SMITH

*The team at Glenlyon (missing Anna and Keir, who have already crossed the creek) Standing, L-R: Phil Maynard, Peter Downes, Brian Reeves, Rod Smith, Garry Smith; seated on the precariously weathered log: Marcia Kaye, Murray Dalton, Rod O'Brien, Cathi Humphrey-Hood, Penny Sze and Lachlan Bailey.*





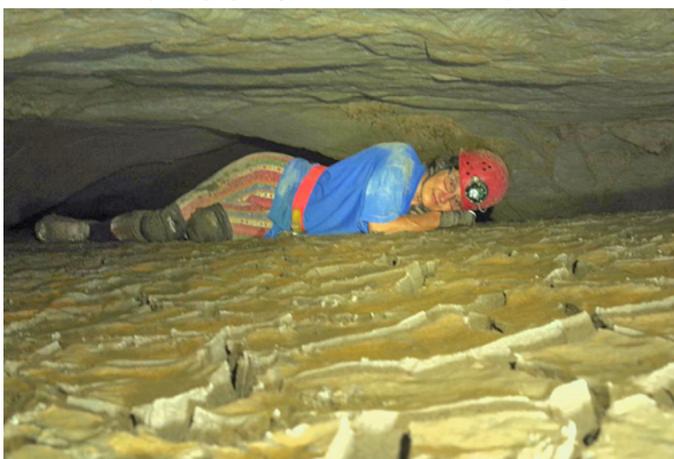
PENNY SZE

Phil Maynard preparing to brave the anoxic mud of Glenlyon



GARRY K SMITH

Penny watches Marcia wade into the muddy unknown of Glenlyon Stream Cave



KEIR VAUGHN-TAYLOR

Anna Ossig-Bonanno lying down on the job in the Glenlyon mud



GARRY K SMITH

Marcia Kaye on the baking mudflats near Dustbath Cave

area would make a quality cave diving destination.

Without comparison photos it is difficult to estimate just how much sediment has been deposited into the various cave systems since the dam was filled 40-plus years ago. For several, the answer would be a little while for others it may be significant.

However, given that the current sediment fill for Viator and Glenlyon is water-saturated and the clays forming the fill probably would have expanded due to being wet, it appears likely that the majority of new sediment in the lower caves is topsoil

that slumped into the various entrances from the adjacent surface (i.e. it only has come from within a few metres of the entrance) rather than material transported by dam waters. Given that there is little water movement through the caves when the water levels are higher and hence no current, this soft sediment can only be removed by erosion when dam levels are very low — for example, when the sump in Main Viator can act as a drain.

**BIG, BIG THANKS TO:**

Henry Shannon for inspiration, back-

ground information about the area and advice about what to look for; Brian and Debbie Dare from Glenlyon Tourist Park for helping us with information and for providing us with such wonderful help and hospitality; Brian Reeves for driving the boat and providing much-needed technical know-how and for the entire team who were dragged into the mud and heat without a clear plan and who still offered up the best caving company and assistance anyone could ask for. Thanks also to everyone who helped with the reviewing of the article and supplied images.

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