

Vertically Challenged (Low Flat) Maze Area

exploration was cursory, but sufficient to indicate that further dives were needed. It was clear that this section had never been visited by cave divers as there was no tell tale 'line' there and the disturbance of the ceiling by the divers' air bubbles caused a rain of sediment to fall. On subsequent dives, this effect subsided.

The next dive that day was to go straight through into the new section and explore it. A small rock tunnel was penetrated some 20m before the visibility reduced so much that the divers had little choice but to turn around, following the line back to safety and clear water. Several other tunnels were explored in the new area, one of which has subsequently connected back to the entrance lake via a 200m underwater circuit.

Subsequent dives in February and March revealed even more passages as the divers went past the rock tunnel and discovered the Tree Root Chambers 1 & 2. After that, another air chamber was found

Cave Diving Exploration of Tombstones Cave (SH-21)

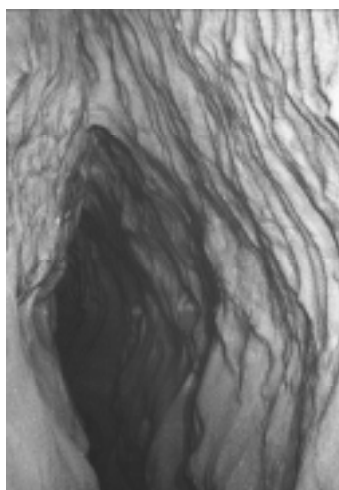
by Paul Hosie

The year 2001 saw a major breakthrough in this cave for Perth based cavedivers including the author. Prior to these discoveries, there was approximately 100-150m of submerged passage. Now there is at least 1km of submerged passages

and many side tunnels were explored leading from an area dubbed the Dune Room for it's numerous sand piles of various sizes. Some of the side tunnels are up to 50m long and one comes to an area where the sand is completely white - 'White Sands'.

A series of small tunnels heading into an extensive low flat maze area was penetrated some 100m during March and April.

Vertical fissure passage in Tombstones Cave



leading to some fascinating features such as tree root chambers, crystal deposits and the perfectly conical underwater sand cones.

The first exploratory dives in the cave were in February 2001. On this dive, the author pushed through a vertical fissure (like the one pictured) which opened into a very large room with tunnels heading off in several directions. With only limited line available, the



The author in the Tree Root Chamber

Dubbed the Vertically Challenged (or VC) Maze, the passage dimensions are decidedly un-diver friendly being on average 60cm high and in some places far less ! One thing cave divers rely on is a secure place to tie off their guideline. A real problem in the VC Maze is the lack of suitable tie offs. The rock is very crumbly, so many of the tie offs in the VC maze simply disintegrate while in other places there is nothing to tie off to and the risk of creating a line trap is very high.

THE WESTERN CAVER, VOL 41, 2001

Surveying the underwater passages in this cave is difficult in the tighter and remoter sections. Some efforts have been made and to date some 500m of passage has been surveyed, with a further 500m still to be completed. The cave has small leads in many places and the use of dual manifolded, single

cylinder off-mount techniques will enable further exploration (and surveying !) which is planned for 2002. Also planned for 2002 is baiting for troglobitic fauna in the remote, dry chambers of the cave and this is being co-ordinated with Bill Humphreys.

SURVEYING



Craig Challen with a big dune.

DISCOVERY



The Far Lake



Karl Hall lays line to the Tree Root Chamber

EXPLORATION



Karl beneath 'The Stal'

TOMBSTONES

CAVE!

Trip Report - A Summary of Cave Diving Activities by Paul Hosie

Summary of Cave Diving Activities for 2001

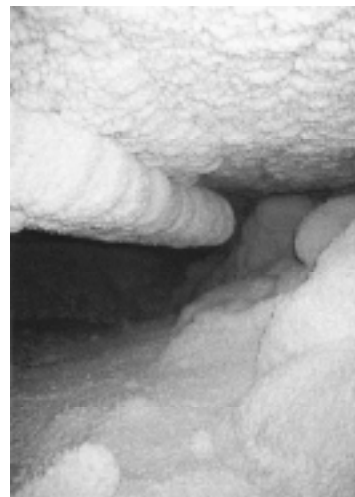
By Paul Hosie

2001 was indeed a year of some fabulous discoveries for cave divers in WA.



Phreatic passage - Nurina Cave

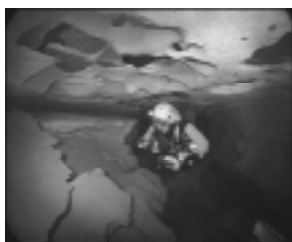
The year began on the Nullarbor Plain with the author discovering new sections of underwater passage in Nurina Cave and completing an initial survey of the submerged passages which was presented at a WASG meeting early in the year, together with a video by Paul Boler (SUSS) of diving these beautiful passages. The cave has more underwater



Subaqueous crystal deposits in Mullamullang Cave.

continuations which will be pursued in 2002.

Some amazing discoveries in the lakes of Mullamullang Cave tickled the interest of geologists at Sydney University – several new forms of subaqueous helictites were observed and photographed [Another type was found during a recent Jan 2002 visit]. No extensive underwater passages were found in Mullamullang (as was hoped !!) [Again, the Jan 2002 revisit has revealed

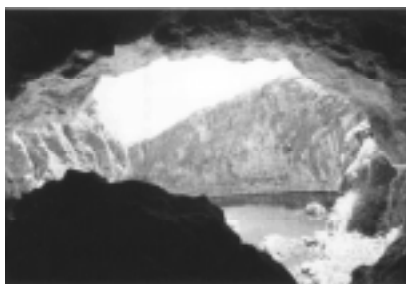


Main passage - Nurina Cave

such passages in other lakes of the cave – stay tuned !!].

During February, March and late April, Tombstones Cave near Cataby revealed extensive and fascinating new sections of underwater cave to divers who pushed through tight vertical fissures. The explorations are further described along with a

map in another article in this issue. The cave now has approximately 1km of underwater passage and further work will be needed in 2002 to further explore and survey it.



Yardie Creek gorge

April saw the author and his wife visit Exmouth for their annual pilgrimage ! Darren Brooks demonstrated his deep seated sadistic tendencies by showing the author Gnamma Hole (I'm still mentally scarred !!!). The dive was memorable for all the

wrong reasons, however a sketch of the underwater topography was produced and is separately described in this issue. More importantly, the troglobitic blind eel was seen and photographed – apparently the first photos of a live, swimming specimen !

Whilst in Exmouth, the opportunity was taken to dive cave C215, believed to be a short, choked submerged passage. Much to everyone's surprise (and Darren's dismay !) the passage continued in a shallow, small phreatic mode for 100m before dropping into a larger, deeper conduit via floor holes. The return trip in June and exploration to a 300m+ terminus is also separately described in this issue along with the survey map. C215 is now a confirmed anchialine site and it is hoped that the remipede may be found here in the future.

Many water filled solution tubes and rockholes on the plain south of Yardie Creek were checked and recorded following Darren's advice. Most of these holes had the blind gudgeon fish in them, indicating the presence of extensive mesocaverns

beneath the limestone surface. The legend of massive endless tunnels beneath the cliffs of Yardie Creek gorge proved to be very interesting, but basically overhangs full of Mangrove Jacks !

The remainder of the year saw the author working to make up for the exploits of the first half, but his cave diving buddies explored some flooded open pit mines near Kalgoorlie with Portals (tunnels the ore trucks drive down) to depths in excess of 90m using closed circuit rebreathers. There are many more deep, flooded mines awaiting exploration and there will be lots more done in the coming years. The attraction for the author remains with incompletely or unexplored caves rather than poor man made cousins !!

Just prior to the new year 2001/2002, some fantastic discoveries were made on the Nullarbor with new tunnels and crystal coated passages. As this work continues into 2002 and most of the trip was during January, the report of these findings will wait until next year's TWC.



Mangrove Jacks at Yardie Creek

To wrap up the year, some remarkable discoveries were made during 2001 and the potential for further underwater cave exploration for 2002 is exceptional. A lot of work needs to be done in surveying the

new findings and creating quality maps of the submerged passages. The addition of submerged passage information to the existing dry cave maps will allow us to provide a complete picture of our beautiful, dynamic vadose AND phreatic cave systems. Next year's cave diving summary in TWC should be an absolute bottler !!!

Author's Note:

Anyone interested in becoming a cave diver is welcome to contact the author for more info: Phone/fax 9593 4156, email: cavediver@iprimus.com.au Or alternatively, visit our website at www.trimixdivers.com

Humour?

A caver is out near Mt Etna and his car breaks down. He manages to buy a horse from a cocky to get to the nearest town. He rides into the town on his horse. He's dusty, tired, sunburnt and wants a cold beer. He fastens the horses reins to the verandah post outside the pub. He pats the horse down as he works his towards the back of the horse. Finally he reaches the horses tail, lifts it right up in the air and plants a big kiss, square on the horses bum. He drops the horses tail and shuffles off towards the pub. A cobbler in a nearby ute says, "Hold on there, mate. Did I just see what I think I saw?"

The caver looks at him and says, "You sure did mate, I got badly chapped lips".

"So, does that cure them?" asks the amazed cobbler.

"No," replies the caver, "but it sure stops you lickin' 'em!".

The Cape Range

Trip Reports, Photo's and Maps

By Darren Brooks.

Date: 26-3-01

Participants: Paul Hosie, Darren Brooks

Features: C-105, The Gnamma Hole

Paul arrived in town this afternoon and he was keen to go to C-105 as he had talked to Malcolm East and was enthused with the prospect of possible leads.

I met him at the caravan park and noticed he had a loads of gear in his car so we piled into his vehicle and headed out of town. Upon arrival at the site I informed him that the entrance was vertical and he would need a harness. It was the one piece of equipment that he didn't have with him. I lent him mine. I couldn't go down because of this and I was rather glad. Another reason not to go in was that the entrance is so tight I was worried that we wouldn't be able to get out without someone outside to help us.

Paul found the entrance a little tight with his wetsuit on. I passed his equipment down to him once he was in the cave. He was having a little trouble donning the gear as the water, which in the past has usually been about 1m deep, was up to his eyeballs, (and no, he's *not* only 1.1m tall!) which made it fairly difficult for him.

The first thing of importance he noted was a blind eel lurking in a hole in the rock with just its head poking out. He first called out that it looked like a large white worm but after a closer investigation he confirmed my first suspicions about its identity. He then went off to explore the rest of the cave, taking direction notes.

After finishing the dive he loaded up the haul rope with the gear and after it was out he sorted out his harness for the climb out. I waited around for what seemed like about two hours but by my watch was actually only about one hour and fifty minutes. Finally, after the torture of waiting and watching the sun go down and wondering if there were going to be real problems he made it up to the tight entrance section.

For a while he struggled upwards until one of his hands was at the surface but couldn't get any further. I gave him a hand up to finally get out. I thought he did rather well considering he was wearing a full wetsuit at the time and the chest ascender was just barely functioning. This hole is so tight that it can be a real struggle even when not encumbered with a wetsuit.

Date: 27-3-01

Participants: Paul Hosie, Taka Hosie, Ken Cameron, Paul Brooks, Darren Brooks.

Features: C-215

We helped Paul transport his dive gear down to the start of the canal passage where he donned wetsuit and BC. We helped him transport his dive cylinders to the other side of the mud floored aven halfway along and once past this he got fully kitted up. Upon reaching the sumped passage section he tied his dive line to a projection disappeared. We sat around in the aven area observing fauna, dozing, listening to tummies rumbling in the quiet, (sounded rather like sneaky farts) and generally whiled away the 70 minutes until his return.

Paul was pretty excited when he got out to us and proceeded to fill us in on the hidden delights that we will probably never set eyes upon, except through the shutter of his camera. He dived horizontally for 120m through snug passage about the same diameter as the canal negotiated to get to the sump. At this point the floor opened up and he descended 9m into a muddy floored passage with another hole in the floor. The muddy floored passage continued on at considerably larger size than the original passage. At this stage he had run out of dive line and had to return to the sump and his eagerly awaiting sherpas.

He noted the column and stalagmite previously reported by Andrew Poole in April, 1993 These are not far from the sump.

We exited as soon as we could and Paul, Ken and I headed back to Exmouth whilst Paul (Hosie) and Taka headed south down the coast to camp and check out some features that Paul had heard about before. I gave him directions to some fairly unlikely prospects (so I think) and he promised to send me a map of the new section in C-215.

Date: 6-5-01

Participants: Ken Cameron, Paul Brooks, Darren Brooks.

Features: C-712, C-288.

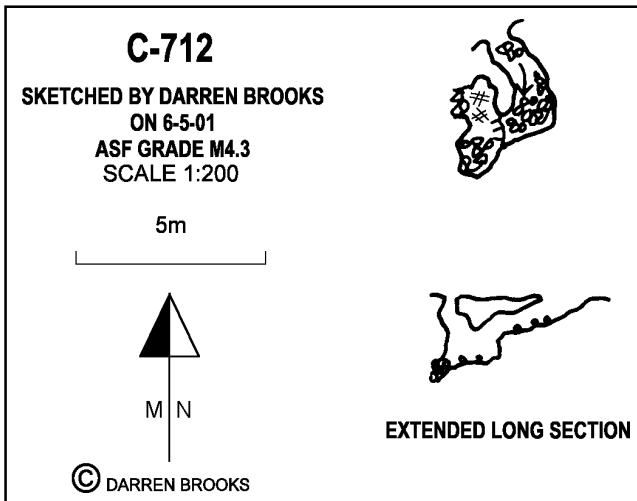
Drove up on the range on the afternoon of the previous day and camped to the south east of Central Hill and not far from C-138, Ringworm Cave, so as to get an early start the next morning.

The idea was to survey C-291 but as I forgot to bring the tape measure we abandoned that plan and decided to look for C-288. First I believed we had to find the survey marker that Malcolm East mentions in his 1989 Museum Expedition to the Cape Range report on page 39. This was believed to be a spot elevation marked on the then current topo' map of the area as 194m. After some searching around this area, which was an area looked at on the 1999 WASG expedition, Paul and I finally found the survey marker. This was located about 500m to the east south east of the supplied grid reference but was in line with the spot elevation and Central Hill in the distance. I assumed that a bearing from the marker would have been taken to the hill back in 1989 and the spot elevation assumed to be where the survey marker was. Walking on this line allowed us to hit paydirt.

The survey marker consisted of a steel pole with a vane on top. We stood this up and wedged it as best we could with some rocks (as did Malcolm East and cohorts in 1989). I returned to the spot elevation to get my pack while Paul wandered around to find the cave. On the way back to my pack Kenny called out that he had found a cave *and* a survey marker on a hill. Well, that was *two* survey markers and one cave. Interesting stuff. When I caught up with Ken at the packs he pointed out the survey marker he had spotted and it was the same one that Paul and I had just re-erected. After a somewhat confusing conversation we established that he must have spotted the marker seconds after we stood it up and had

C-712.

The next problem was finding C-288 with the supplied bearing from the cave to the marker. Paul had already looked in one direction without any luck so we tried in the opposite direction in case the back and front bearings were confused. Already



Decoration in C-288

the grid reference was putting the cave on one side of the survey marker and the supplied bearing was indicating it was in the other direction. After some time with no luck I remarked to Paul that maybe there had been a 100° added or deducted from the bearing by mistake as sometimes happens when reading a sighting compass (as in the type commonly used for cave surveying). We returned to the marker and were nearly there when Kenny called out that he had found a cave tagged C-288. The cave wasn't supposed to be already tagged and he wondered if this was the cave we wanted. So finally, after a lapse of nearly 12 years, and a few hours of concerted search 2 years ago, C-288 had been relocated.

gone down the other side of the hill looking for C-288.

We shouldered our packs and carried Paul's pack between us to Kenny's cave. Paul arrived soon after, to be greeted by some questioning as to why his pack weighed only a few grams whereas ours seemed to weigh about a tonne each. He



Ken Cameron at entrance of C-288

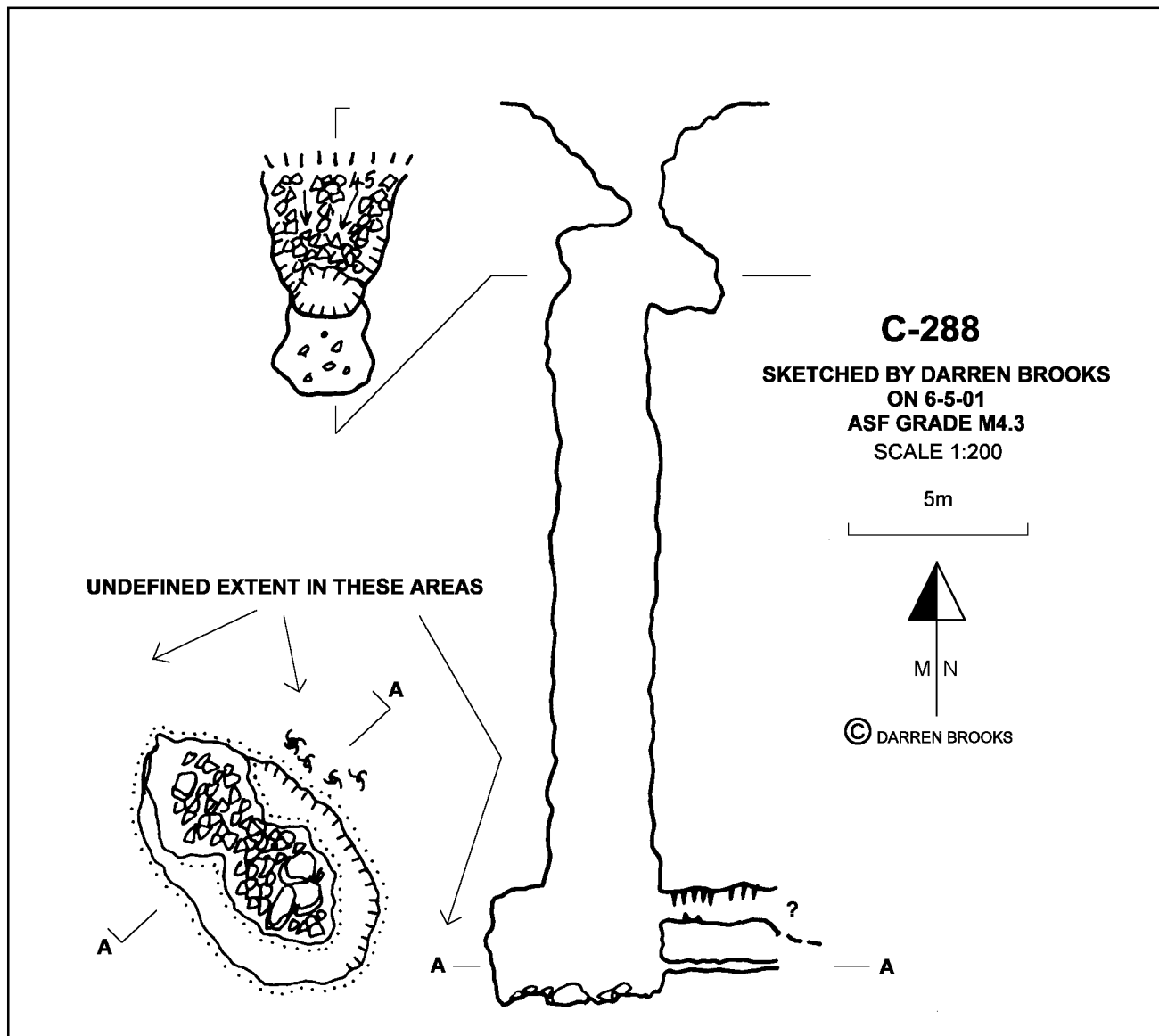
claimed seniority. (ha! a poor excuse). After some exploration we realised that this was a new feature. Ken removed quite a bit of small rubble from the entrance and I went down with a light and a notebook to sketch the cave.

The entrance slopes down at a shallow angle and around a bend to a small chamber with a narrowing and impassable, rock and soil filled lead in the floor. A small daylight hole in the roof above the small chamber lets in enough light to see a little. Total extent is about 2m square and 2m deep. Tagged as

The actual location was just on 520m east south east of the original grid ref', showing just how difficult the members of the 1989 museum expedition found it to fix a position accurately in the relatively featureless Cape Range in the pre GPS years. Also, as sometimes happens, there *was* a discrepancy of 100° in the bearing.

The entrance to C-288 is in a small doline with a sheer wall on one side and an unstable rock slope leading down to the top of the pitch on the other. The pitch is easily rigged right over the entrance and the rope deviated over a ledge about 3m down. Kenny rigged and went down first, followed by Paul and I finally finished farting around with gear and followed them down. At the bottom I found a fairly high level of CO2. I first noticed it about halfway down the approximately 24m pitch. (I forgot the tape, remember?) At the bottom Kenny had just about finished exploring the full extent of the cave, despite the increase of CO2 in the lower levels. Paul was waiting my arrival and I recommended that if Kenny was finished looking around we should all exit forthwith. Kenny left first, followed by Paul and while waiting my turn I amused myself by taking a photograph of a column in one of the bedding plane spaces and sketching the immediate surrounds.

On exiting I found the first 10m to be hard going until I broke through the CO2 layer into fresher air. The others said the



also noticed the distinct layering of the CO₂ and the fresh air on top.

Once outside we were all a bit tired and it was hot so we headed back to the vehicles.

Date: 22.5.01

about 8m down I used a rather long deviation to get a free hang to the floor.

The survey went off pretty smoothly. I relocated a stalactite that Perry Raison noted back in 1999 during the WASG trip. This curious feature has come off the roof at some time in the past and is now sticking up out of rocks on the floor. It has