MC-275 River Alph resurgence (Kubla Khan)

A tale in two styles

14-18 January 2018

Janine McKinnon

Party: Tim Featonby, Janine McKinnon, Ric Tunney

Part 1: The search for the lost gumboot.

David Wools-Cobb had a problem. One of his party members had lost a gumboot and he thought it might be somewhere along the Sunless Sea section of the River Alph. That is the 1300 m of passage that runs from Cairn Hall to the resurgence of the river. Unfortunately for David's punter that section is protected by a sump at Cairn Hall, and also at the resurgence. He needed help from cave divers. Never one to fail to come to the aid of a man in distress, this (not) maiden rode to the rescue … albeit 12 years too late. Oh well, you can't have everything.

An authority to dive the resurgence was obtained from "Parks" (after three years of negotiation), a plan devised, a dive buddy found (two actually, but one failed to materialise at the last minute due to body failure ... thus the value of the clever plan to ask two) and gear organised. We were ready to go on the grand search and (hopefully) gumboot rescue operation.

Day 1 of diving Tim and I headed in, equipped with all the paraphernalia a sump diver needs. I was going to multi-task, as we all know women do particularly well, and survey the passage as well as gumboot search, and maybe look for new cave whilst at it. Tim was going to demonstrate his ability to be a girl by multi-tasking too as his job was to lay line whilst simultaneously searching for the elusive gumboot and look for new passage. It's important to keep those multi-tasking skills tuned. Unfortunately, we had reel problems at the 250 m mark, which was sad, but we found a "boot wash station" plastic bucket, which was good. It wasn't what we were searching for but it was a bonus find, as was the (very old) diver's knife Tim found as well. It was a veritable treasure trove in there! However, no gumboot. So far, at least.

Day 2, reel problems sorted, we continued the search to the end of Sump 1, some 500 m into the cave. No gumboot. But ho! there was another treasure waiting to be found. An old reel and tangled line was sitting patiently at the water's edge as we came out of Sump 1. The booty just kept coming in this cave. We also had some dry bits where we could get out of the water. This was doubly good (we could get out of the water) and bad (we had to carry all our dive gear over the dry bit). We looked around in the 100 m of dry passage for the gumboot (and other treasures), took some photos and video whilst we were at it, and surveyed too, just 'cause I had to practice that multi-tasking thing. No gumboot.

We were at our turn pressure for gas and so hit it on the head for the day and headed out (still looking …).

Day 3 we headed back in with more gas, kept looking, headed through the 120 m of Sump 2, surveyed and looked (for that damn gumboot) and finally reached the AWESOMELY big bits of Sunless Sea. This was finally in the dimensions of the Kubla we all know and love. A hundred metres of big stuff, another couple of hundred of not so big stuff, and another sump. But not to worry, this was the short (30 m) one that leads to Cairn Hall. All good then. No gumboot (or other treasures), not so good. We surveyed that stuff seeing we were there and headed for home, still with four eagle eyes peeled.

So, the job was done. Unfortunately, my "white knight" performance had been a dismal failure. No gumboot. No new cave passage either, which was also a bit sad. At least we got to do a few days of excellent diving and caving, saw passage not seen for decades, got the ingredients to make a more detailed map while we were there and had fun.

So not a totally lost cause then.

Apologies to David Wools-Cobb for using his name somewhat in vain, although the lost gumboot, dive reel and line, and boot wash station, are real.

A well-known hazard of cave diving - blackberries

Photo: Janine McKinnon

Report on surveying and exploration in MC-275 River Alph resurgence (Kubla Khan Cave)

14-18 January 2018

Janine McKinnon

Part 2: The serious version

Undertaken within an authority issued by Tasmanian National Parks.

Project co-ordinator and leader: Janine McKinnon (STC)

Divers: Tim Featonby (Cave Exploration Group of South Australia-CEGSA), Janine McKinnon

Support: Ric Tunney (STC)

Note: Both Ric Tunney and Janine McKinnon are Kubla Leaders.

I wish to thank Ric Tunney for invaluable surface support, Rob Buck (Parks Ranger) who facilitated the authority to allow diving, Chris McMonagle (Mole Creek Karst Officer-Parks) who found the contact details for the farmers whose land we used for access, and generally being very helpful, Jeff and Jenna who let us access the resurgence through their land. Nicole Anderson for letting us stay at Mayberry Hut for 10 days. Anyone else I forgot!

Background: The resurgence of the River Alph from Kubla Khan was first dived somewhere back in the 1970's but the first sump was not completely penetrated (anecdotal information). The first documented dive was done by a group of Cave Divers Association of Australia (CDAA) divers in 1978 (there is no written report in the archive) who completed the entire Sunless Sea passage through to Cairn Hall and did a memory sketch (which is in the STC archive). Tasmanian Caverneering Club (TCC) members did a few dives in the early 1980's *(SS* 176, *SS* 193, *SS* 199*)* and did a survey using knotted line, depth gauge and compass for the underwater bits, and straight survey for the dry chambers. Sketching was not done (or isn't on the map anyway).

The Sunless Sea passages have not been visited (at least not to the knowledge of STC or Parks) since then. Parks took over management of Kubla Khan after these dives in the early 1980's and permission to dive has not been given since.

Day one: Sunday 14 January 2018.

This first day was not intended to involve entering the cave. It was a planning, organising and reconnaissance day. At 9:30 am the team drove across farm land to the closest access point available by vehicle and walked the 200 m to the resurgence of the river. Water was resurging about 5 m away from the MC-275 entrance. The water then flowed 20 m in a small trench to sink into the entrance of MC-274. Beyond this, the surface valley was completely dry. The pool within MC-275 was still and clear. Diver access would be easy.

We set up a temporary stile across the fence dividing Parks land from the farm land, to more easily facilitate transport of diving gear across the fence. We then returned to camp and discussed how an emergency evacuation from Cairn Hall in Kubla Khan cave would work and the plan for the first dive, to be undertaken the following day.

Emergency exit from Cairn Hall plan:

Ric would rig the bottom entrance to Kubla Khan, unlock, and lock open, the bottom entrance gate to the cave, and leave both Janine's and Tim 's SRT kits at the bottom of the entrance pitch. Thus, if there was an emergency, or problem with returning through the Sunless Sea passages, and the divers were close to Cairn Hall, they could exit through the normal route out of the cave.

A vehicle would be left at the Kubla carpark, with keys hidden nearby and a phone in the car.

The Parks gate into the reserve would be left closed but not locked (but appear locked to casual observance) and the padlock hidden nearby.

The Kubla key would be hidden near the gate to the main road, as this could not be left unlocked as it is the farmer's access gate.

This was all to be set up before the divers entered the water on their first day of diving.

Gear preparation:

The afternoon was spent checking and preparing diving kit, developing the first day's dive plan, preparing survey gear and marking the dive line. The line was marked at 15 m (station) intervals with tape, and numbered, starting at 1. This meant the sump passage could be sketched at 15 m intervals to develop the shape of the passage.

Divers kit: Both divers.

Helmet with Scurion dive light

Fins, mask, weights.

Safety reel

Dive reels: 6 reels, marked with tape at 15 m intervals. 4 with 200 m of 2 mm exploration line, 2 with 100 m of 2 mm exploration line.

Drysuit

7 Lt steel tanks (X2)

1st and 2nd stage Open circuit regulators.

2 pressure gauges.

3 cutting devices

Hood

3 spare dive lights

Spare mask

Janine:

Razor harness with bum bag.

Spare tools (for emergency underwater kit repairs)

Santi 190 Flex undersuit with thermals (first day)

Santi BZ 400 undersuit with thermals (day 2 & 3)

9lt Carbon Fibre tanks (X2), day 3.

Gloves

Survey slate, with compass attached.

Survey notebook

Disto X2

Lumix Camera

Gopro camera and video light

2 dive computers

Tim:

Armadillo BC

Silt stakes

Day two: Monday 15 January 2018

7 am: Ric left camp to set up emergency exit plan. We divers were not to start diving until his return. We prepared gear and moved it to the cave entrance. We returned to camp at 8:30 am.

Ric returned to camp at 9 am. The emergency exit was in place. Ric and I took two cars to the Kubla carpark, left one as the plan outlines and set gates and keys as planned. We returned to camp.

We all then discussed rescue call out protocol. It was to be as follows:

Midnight was the call out time. If Tim and I had not returned to camp by then Ric would immediately send a warning message to the STC Search and Rescue officer (Andreas Klocker). He would leave camp and check the resurgence first, then go around to bottom Kubla Khan entrance and call down. If there was no response he would return to camp via a second check of the resurgence entrance. This process was expected to take about 1 hour. Ric would then activate an emergency rescue call-out. This would include calling Tasmania Police, STC Search and Rescue officer, Cave Divers Association of Australia (CDAA) sump rescue team co-ordinator (Dr Richard Harris) and Northern Caverneers.

10 am. Tim and Janine leave camp for the resurgence. The first diver (Tim) entered the water at 12 pm. Tim laid the line and I followed closely behind sketching the passage, and measuring, at 15 m intervals, as planned. The flow rate was very low, in fact undetectable. Visibility was about 3 m. This was all looking good.

Reports from the previous trips talked about hauling gear the first 100 m of passage before the first sump started. We found no dry passage and were able to dive from the entrance pool, although there was air space above us for quite a bit of this first 100 m.

At the end of the first reel of line (250 m) Tim tied off the reel and pulled out the second reel, preparatory to continuing, however the line was jammed on the reel. He spent about 5 minutes trying to un-jam it, whilst I waited nearby (after I caught up). He then moved to the next reel (#3), which was also jammed. Reel #4 jammed too. Reel #5 was good but was insufficient to continue to the end of sump 1 (another 250 m). I was cold by now and, knowing that we would not get to the first dry chamber this dive, decided to "call the dive" (Divers' term for returning to the entrance).

We reached the entrance at 1:06 pm.

Dive time: 66 minutes.

Maximum depth 4 m

Gas used (Janine): Start pressure: 250 bar per tank

Finish pressure: 210 bar per tank.

Gopro footage was taken by Janine.

Tim hoping he is carrying enough reels.

Photo: Janine McKinnon

Analysis:

Tim and I thought that the reel jams were due to the previous day's marking of the lines. We thought that we hadn't put sufficient tension on the lines when we reeled them back onto their spools after marking, and that when the reels got wet the line loosened just sufficiently to jam.

Otherwise, the dive had been successful as a

familiarisation dive for the conditions. I determined that the undersuit I was wearing had insufficient thermal insulation for the water temperature. I planned to use a warmer one for the next day (hopefully I wouldn't get too hot in the dry cave passages). Sketching had been done to the point of turn around.

Observations:

The rock was very friable and fragile.

There were large numbers of troglobitic (totally white) shrimp-like invertebrates swimming in the water. They looked like troglobitic *Anaspides tasmaniae* that I had seen in other caves in Tasmania, but without proper identification this cannot be determined.

Water temperature was 9-10° C

At the point of turn around (co-incidentally) a large black plastic tub of the type used as boot wash stations in Kubla Khan was found. Tim carried this out.

NOTE: When David Wools-Cobb was queried about this that evening (by email) he reported that a boot wash tub had disappeared from the base of the Pleasure Dome during the large flood event the previous year. This was quite a distance for this tub to travel.

Tim also found a diver's knife, presumably from the initial exploration party in 1978, or the divers in 1984.

Day three: Tuesday 16 January 2018.

The plan was to reach Sunless Sea chamber, having surveyed along the route, and to survey that chamber. If time permitted to continue through to Cairn Hall (CH) and return the same route.

Each diver would also look carefully for previously undiscovered passages running from the main route.

Tim would continue laying the line to the end of Sump 1, with Janine following and continuing sketching and surveying. There was no intention of keeping together. Both divers were happy diving "alone" and this would speed up the processes of both line laying and surveying. Tim would wait in the dry chamber for Janine, and they would reassess the plan.

At 10 am Tim lead into the resurgence and I followed 5 minutes behind, confirming the sketching of the previous day up to the start of the new line, and then starting to sketch and survey the rest of Sump 1. I also looked for side passage as I surveyed. I arrived at the end of Sump 1 after a 1-hour dive. Gopro footage was taken en-route.

I surfaced to see Tim's dive kit but no Tim. He reappeared as I finished de-kitting. He had walked to the end of the dry chamber and inspected the start of Sump 2. I took a few still photos (Lumix), some video, and we did a sketch and survey of the chamber. I had carried a Disto X2 into the cave in double pelican boxes.

We found a very old, rusty, dive reel with tangled line still attached, at the edge of the pool.

We then discussed where we thought we were. There was some confusion as our interpretation of the old reports, and memory maps and line survey, was a little at odds with the distance we had come. We weren't sure if we were in Sunless Sea (SS) passage, or the dry chamber before it. If the latter, then we had a 117 m sump to traverse before reaching SS. If SS, then only a 30 m sump separated us from CH. We assessed our gas supplies. I still had 30 bar before reaching thirds turn pressure. Tim was at turn pressure. This decided the action. We had to return to the entrance and do the next dive with extra gas in case we had the 117 m sump to dive.

Janine in the small chamber after Sump 1. Note the "tide line" of black mud coating the flowstone where the presumed normal water level sits.

Photo: Tim Featonby

Tim started the dive out at 1 pm and dived independently to the entrance. He would inspect the passage for possible unexplored passage as he went. I followed 5 minutes later, with the same intention, although reduced visibility would hamper any possibility of finding side passages.

Dive time 40 minutes (homeward leg).

Maximum depth: 4 m

Gas used-total (Janine): start pressure: 250 bar per tank.

finish pressure: 120 bar per tank

Addendum:

As stated, the water in the dived cave was still, or very close to. The sump pool at the entrance is still water. However approximately 5 m down the dry streambed water reappears from a spring and runs down stream for 20 m before disappearing back into the cave wall at MC-274. This is flowing water. The spring was investigated by Tim, who tried to excavate it a little to no useful effect. The spring is considerably smaller than a human could enter. Tim investigated the sink at MC-274. He reported that the passage was navigable for approximately 40 m, but of small dimensions. The stream then sank into the gravels and the cave terminated.

A survey of this small cave was not done.

Wednesday 17 January 2018

Plan: Continue through to SS, survey, video, go through Sump 3 to CH, return and pull out all lines if job completed.

I changed to 2 X 9 litre, 300 bar Carbon Fibre tanks. Tim had added a 7 litre steel stage tank to his kit.

Tim started into resurgence at 10 am, planning to lead and run line to SS. He would continue at his own pace. I started in at 10:10 am. I swam straight through Sump 1 and arrived at the dry chamber as Tim was about to start into Sump 2. Tim was able to walk across the chamber carrying all his kit. I am not so strong. I took three trips to get my kit across the chamber, which added considerably to the time I took to get to SS. I also surveyed in Sump 2 (which proved to be the 117 m passage), and looked for side passages, which further slowed my progress.

On arrival in SS neither Tim, nor his kit, were present. I assumed he had moved to Sump 3 and thus went to the end of SS, where I found a dive line heading in to sump 3. Cairn Hall was the other side.

Once we had rejoined we discussed our next moves and decided we both felt comfortable to complete the task to video and survey Sunless Sea that day. The main (dry) chamber of this cave passage is several hundred metres long, and 40 m high, this section alone took one and a half hours.

The job complete, I started the dive out at 3:05 pm. Tim would follow and retrieve the lines. We had decided to remove all lines as we had not been given permission to leave them in-situ, and they were unlikely to be intact whenever any future dive party visited (as this may be some time in the future, possibly!). As the floor of SS main chamber is mud and water, the time spent walking up and down had disturbed this considerably. As the flow is downstream a lot of this flowed into Sump 2 during our time in the chamber. Thus, we both faced zero visibility as we started back through Sump 2. The visibility improved to approximately half a metre periodically by two thirds of the way back to the first chamber. The water in Sump 1 was not affected as there was no flow through the chamber at the time of the project.

I was back at the entrance at 4:30 pm. Tim was 15 minutes behind.

Gas used total (Janine) Start: 280 bar per tank

Finish: 200 bar per tank

All line was removed from the cave. Survey completed.

Thursday 18 January 2018

Ric retrieved Kubla Khan key from its hiding place, locked Kubla bottom gate, hauled out the two packs of SRT gear and de-rigged Kubla Khan bottom entrance, removed safety vehicle, locked Parks gate, and locked farmer's gate.

Divers tidied up the dive site and removed the stile.

Conclusion:

- The project is completed. No further diving is planned.
- The dive was completed from the resurgence of River Alph at MC-275 through to Cairn Hall in Kubla Khan.
- Sketching of both underwater and dry passages was done.
- Measurements of underwater passage dimensions at 15 m intervals was done.
- Video of underwater passage (representative, not all passage) and both dry chambers was done.
- Still photos in the smaller dry passage with a Lumix camera was done.
- All line was removed from the cave.
- Invertebrates that appear to be *Anaspides tasmaniae* (troglobitic) were seen.
- No side passages were found. The single, main passage appears to lie along a very straight line for over 1000 m.
- Flow was almost non-existent due to low summer water levels. However, "high tide" marks were seen in both dry chambers indicating a regular (normal?) water level 2-3 m higher than at time of visitation.
- The surface stream bed appears to be an overflow route when the cave is at high levels. It was completely dry at time of project. Flowing water bubbling out of the surface stream bed approximately 10 m from resurgence pool, and disappearing into the cave a short distance away, indicates that the low-level flow follows a route too small for human navigation, and possibly a plethora of micro conduits. The river only flows along the surface streamway when this conduit is overwhelmed.
- The unusually straight line of the entire route, coupled with the lack of side passages (found) indicates the flow is along a fault line or major joint in the rock.
- The shorter video version can be found here: https://youtu.be/uUHW4kEdv5M
- A map will follow in due cause